
The Philosophia Perennis of the Catholic Church

As Revealed in the Philosophical Works
of
Fr. Celestine Bittle



THE PHILOSOPHICAL WORKS OF FR. CELESTINE BITTLE

COMPLETE IN SEVEN VOLUMES

CELESTINE NICHOLAS BITTLE, O.F.M. CAP.

Edited by

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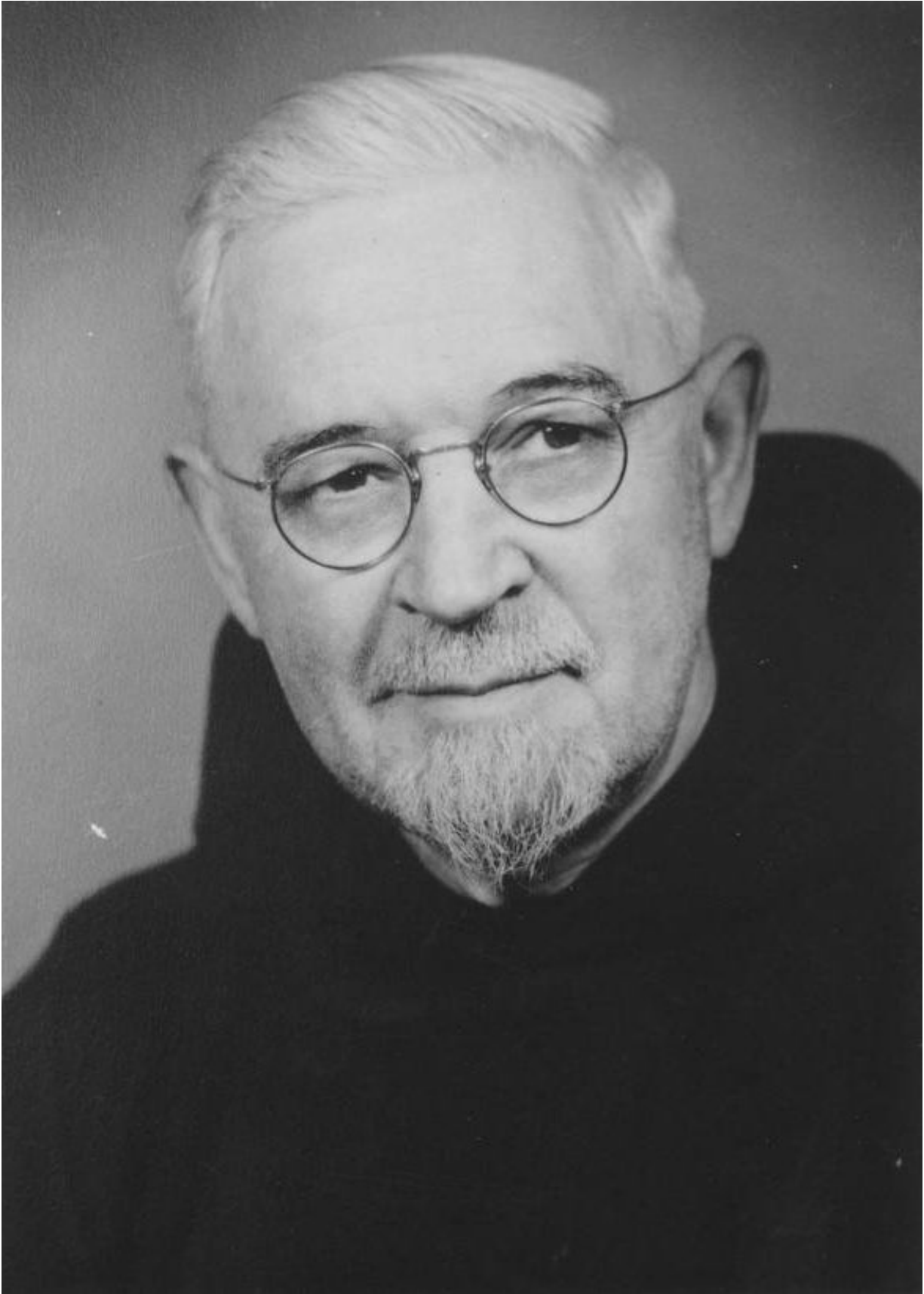
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ABOUT THE AUTHOR

Celestine N. Bittle (1884 - 1960).

An Alumnus Of St. Lawrence Seminary High School, Mount Calvary, Father Bittle Was A Noted Author And Philosopher. He Served As Military Chaplain, And As The First Principal Of Messmer High School In Milwaukee.

In 1925, with the support of Archbishop Sebastian Messmer, Monsignor George Meyer began to work at establishing a Catholic high school on the north side of Milwaukee. The high school opened the very next year with 166 students in the St. Elizabeth School building on the corner of 1st and Burleigh. At that time, it was called Diocesan High School. A Capuchin, Fr. Celestine Bittle, was the first principal and six religious sisters comprised the faculty.



Jesus, My All, My Own

Celestine Bittle

Michael Haller

$\text{♩} = 90$

Je - sus, my all, my own, I would be
 Je - sus, my heart and soul In - to Thy
 Je - sus, I pledge my life Ev - er in
 Far as the heav - en's height Flash - es Thy

5

Thine a - lone, Liv - ing and dead. That I may love but Thee,
 sweet con - trol Trust - ing I give: Keep me with - in Thy Heart,
 peace and strife, List to my strain! Al - though the world be mine,
 love's pure light, Je - sus, my Lord! High in Thy realm a - bove

13

Give Thou Thy love to de - me, Life_ giv - ing Bread!
 Nev - er_ to de - part, There_ let me live!
 Still am I al - ways Thine, Thine_ to re - main!
 Give me Thy Heart's fair love As_ my re - ward!

THE SCIENCE OF CORRECT THINKING

LOGIC

AUTHOR'S PREFACE

Our present day, is rather disputatious. New ideas and theories in economics, science, statecraft, philosophy, and religion clamor for recognition. Some of these issues have been slow in coming to the fore; others have been violently thrust to the surface in the catastrophic upheaval of the World War. They will demand attention for decades to come, and they cannot be side-stepped. From soapbox and rostrum, through the medium of the press and the radio, these problems are filtering from the higher levels of the intellectuals down to the common people.

Many of these issues will have to be decided by the rising generation. They must reason their way through the new theories and the novel experiments. That a knowledge of sound principles is a prime requisite for this, goes without saying; and that a thorough understanding of the science of correct thinking should prove a valuable aid in this task, is equally certain. Far too many errors in the solution of problems are due to loose reasoning and to an ignorance of the laws which govern our mental operations. We must be able to think logically before we can act logically. Hence, the study of logic should be time well spent for the educated

person and particularly for the student, for they will be the leaders of tomorrow. Books on philosophy, and therefore also on logic, are usually of two types: textbooks and monographs. Most textbooks are so brief and skeletonized that the ordinary reader fails to grasp the full significance and value of the material; monographs, on the other hand, are so complicated and technical, that they appeal only to the professor and the professional.

Yet it should not be impossible to combine the advantages and avoid the disadvantages of both types of books: relative completeness of material, with the absence of undue complication and technicality. The author has attempted to treat this most fundamental department of philosophy along these lines. For this purpose he has endeavored to use simple language and copious illustrations, so as to render the subject understandable. Philosophy cannot be made easy, but it certainly can be made less difficult. At the same time, the technical side of logic has not been omitted, but has been built up in gradual stages, so that the mind of the student can grow with the subject. The more controversial points have been left aside as being less in keeping with the positive purpose intended; after the reader has grasped the fundamentals, he should be able to wrestle with the monographs.

Since logic treats of the purely mental operations of ideas, judgments, and inferences, which always remain the same, no radical departure from traditional teaching need be expected. Nor can a large amount of explanations, definitions, divisions, and rules be avoided in a subject of this kind; they are a necessary burden which cannot be

shirked without detriment to a proper understanding of the nature and function of these operations. In explaining the syllogistic figures and moods the author has used a set of symbols of his own devising; he has found them very effective in his work in the classroom, and he hopes they will be equally helpful in enabling the reader to understand this difficult but important part of logic. To make the subject more readable, the ordinary textbook arrangement was dropped in favor of the chapter form. It was hoped that in this way the book would be made palatable not only to the student, but also to any person desirous of self-education. The book is intended, therefore, as a textbook, if so desired, or as supplementary reading in classwork, or as an introduction to philosophy for the general reader. In any case, a well-grounded knowledge in the science of correct thinking should be a valuable asset in these troublous times confronting the nation.

February 22, 1935.

INTRODUCTION

PHILOSOPHY AND LOGIC

We live in a mechanical age. During the last century and a half the natural sciences have received a tremendous impetus; their scope of investigation has been widened to a remarkable extent; their achievements have been of an extraordinary nature; and their material benefits to mankind have become really phenomenal. Thinkers and investigators have turned more and more to these positive sciences as the great field in which to apply their powers of research, with the result that they have come to look upon them as the only legitimate source of knowledge, since they present facts which alone can be proved by the exact demonstration of observation and experiment. The telescope, the microscope, the test tube — these have become the standard and measurement of truth. Nothing else has real value. They greet the mention of philosophy with a cynical smile or at best with the tolerance of a deprecating shrug of the shoulders. Philosophy, to them, is nothing but the vaporizations of speculative dreamers; it deserves no serious consideration as a science.

PHILOSOPHY AND SCIENCE

This attitude is based upon an ignorance of the nature and function of philosophy. Philosophy and the exact sciences are not in opposition to each other; their origin and scope are fundamentally the same. Both originate from the unquenchable thirst of the human mind for a deeper knowledge of the world within and around us. This, in the individual as well as in the race, begins with birth and ends only with death. Knowledge starts in the senses and finishes in reason. The child obtains one sense impression after the other and gradually recognizes the relations between things. Soon its mind asks the eternal questions of "How ?" and "Why ?"; it insists on knowing the hidden causes. As the years roll on, the fund of accumulated facts grows incessantly, and the mind's demand for an adequate explanation proceeds apace. A merely superficial knowledge of the phenomena of nature no longer suffices; the mind endeavors to break through the surface of things and appearances, in order to study the deeper causes of nature and its workings. This is the starting point of the natural sciences.

The mind accepts the world at large as a great fact and portions it out among the various sciences. Each science has its own particular field of research. Astronomy studies the outside universe; physics studies the forces of nature in its manifold operations; chemistry studies the elements and their compounds; botany studies the plants; zoology studies the animals; physiology studies man in his bodily construction and the functioning of his organs; biology

studies life and its development; and so with every special science.

Science does not desire a mere enumeration of facts; it seeks to discover the underlying principles, the causes and the laws behind these facts, so as to explain them and arrange them into a comprehensive system of knowledge. For the phenomena of nature in a particular field are not isolated and independent, but interrelated and interdependent. It is the scope of science to discover these relations and to formulate them into laws of universal value which will apply at all times and in all places and under all conditions. A few examples will illustrate the point. Mankind has always known lightning and its effects; but it was only after the discovery of electricity and the famous kite experiment of Benjamin Franklin that the physical nature of lightning became clear. Water had always been merely water to people, until science revealed the fact that it consists of one part oxygen and two parts hydrogen. Nations have always experienced epidemics; the discovery of disease-bearing germs, however, explains the nature of contagious infection and gave rise to the new science of medical bacteriology. Everybody has observed the fall of bodies; but a scientific knowledge of this phenomenon was only attained when Newton attributed it to the attractive force of the earth, and scientists formulated the law of accelerated motion. These are only isolated instances, but they show how the mind of man is dissatisfied with commonplace explanations and tends to delve beneath the surface of phenomena to discover their hidden relations and causes.

Now, philosophy is based on this same innate thirst of the mind for deeper knowledge. There are many problems which lie beyond the reach even of science. Why should the mind of man not try to solve them? If science with its observation and experiment cannot reach an ultimate explanation, might not reason find a way? After all, science must also use reason to prove its conclusions, and philosophy simply goes a step farther. Science presupposes many things which philosophy would fain investigate. If science has the right to analyze nature and reduce its many phenomena to their simpler elements and laws, thereby increasing man's knowledge, who would gainsay to philosophy the right to strive for a still greater unification and systematization of the laws and principles of nature? It were different if philosophy refused to accept the proved conclusions of science; but that is not the case. Philosophy accepts the legitimate findings of science and then pushes its investigation still farther into the regions of the unknown, thereby attempting to widen the boundary line of knowledge. Philosophy is thus an extension of science. Chemistry, for instance, has discovered over ninety different elements, ranging from hydrogen to uranium, and these compose all the different kinds of bodies in the world; this is as far as science can go. Here the problem naturally arises: Since all these elements consist of matter, why their essential difference among themselves? Are they composed again of atoms, electrons, protons? What forms the ultimate constitution of bodies? Again, many sciences, like biology, botany, zoology, etc., treat of living things and accept life as a given reality. But what, precisely, is life? Whence does and

can it originate? Is it fundamentally distinct from the chemical elements that constitute the body? Is it merely a force, or is it a substantial principle? Experimental psychology makes a special study of man's mind in all its moods, states, and operations. However, what is the nature of the mind? Is it material or immaterial? Accidental or substantial? What is the nature of the soul? Mortal or immortal? Astronomy and astrophysics make the universe their special object of research. But whence the stars? What is the origin of the world? Is it eternal? Does chance account for the existence and orderliness of its arrangement? Must it have been created? Is there a God? If so, who and what is He? Anthropology treats of man. Now, is man a responsible agent, endowed with free will, or merely a sublimated ape? Is there a fundamental distinction between right and wrong? Is expediency or divine law the norm which must govern man's actions?

The very foundations of the natural sciences may be questioned. The Principle of Causality — has it objective value or is it merely a figment of our mind? The laws of nature — are they constant and immutable or are they in a continual state of change like nature itself? Can the mind really know truth? What is truth? Is it based on permanent realities or does it shift with time and place? How can we know that our senses give us a true picture of the surrounding world and that the mind can reach the hidden cause behind the phenomena of the senses? If these questions cannot be satisfactorily answered, then the very foundations of the sciences are insecure and the entire

systematic structure built upon them will collapse like a house of cards.

These are not idle questions. They are important, vital, all-embracing, and affect every part of the natural sciences, from their first principles down to their last conclusions. These problems are worthy of every attempt at solution, and the human mind has the right and the duty to find the answers with the aid of its reason. That is the purpose and function of philosophy. It is the super-science which seeks to bring all the special sciences and their scattered data into a higher system of unity — a veritable world-synthesis. Philosophy, therefore, begins where science ends. It is fundamental to all sciences, delving down into the deepest and ultimate reasons and causes of nature, thereby endeavoring, so far as human intelligence can reach, to solve the riddles of the universe. The right of the human mind to search for truth gives to philosophy its right to existence.

From the above it will be clear how we must define philosophy. *Philosophy* (from the Greek *φιλεῖν*, to love, and *σοφία*, wisdom; 'love of wisdom') is *the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone*. A brief explanation will clarify this definition.

Philosophy is a *science*. It is not based on mere opinions or theories or hypotheses, but is certain knowledge derived from reasoned demonstrations of causes and reduced to a system. Philosophy is a 'science of *beings*'; that is, of all things which can be reached by the human mind. This includes man, the world, God; everything that is, or

becomes, or is known. Other sciences have as their special field of research some particular province of natural phenomena but philosophy has as its object the whole universe and the Supreme Being. Philosophy is the 'science of beings *in their ultimate reasons, causes, and principles.*' A 'reason' is that by means of which a thing is known and can be understood; a 'cause' is that which contributes in some positive manner toward the production of a thing; a 'principle' is that from which something proceeds. The other sciences give the proximate causes of things, while philosophy searches for the *ultimate* reasons and causes and principles. Thus, physiology treats of the organs and functions of the human body, while philosophy explains the nature of man in his body and soul, in his vital principle and its connection with 'the body. In other words, philosophy endeavors to understand and explain the fundamental essences of things. Finally, philosophy is the 'science of beings in their ultimate reasons, causes and principles, *acquired by the aid of human reason alone.*' This means that philosophy does not base its knowledge on authority, but solely on the reasoning power of the human mind. Divine revelation, therefore, is formally excluded as a source of information in philosophy, although it can and should assist the mind of man by pointing out the proper direction for the philosophic solution of a problem along purely natural lines.

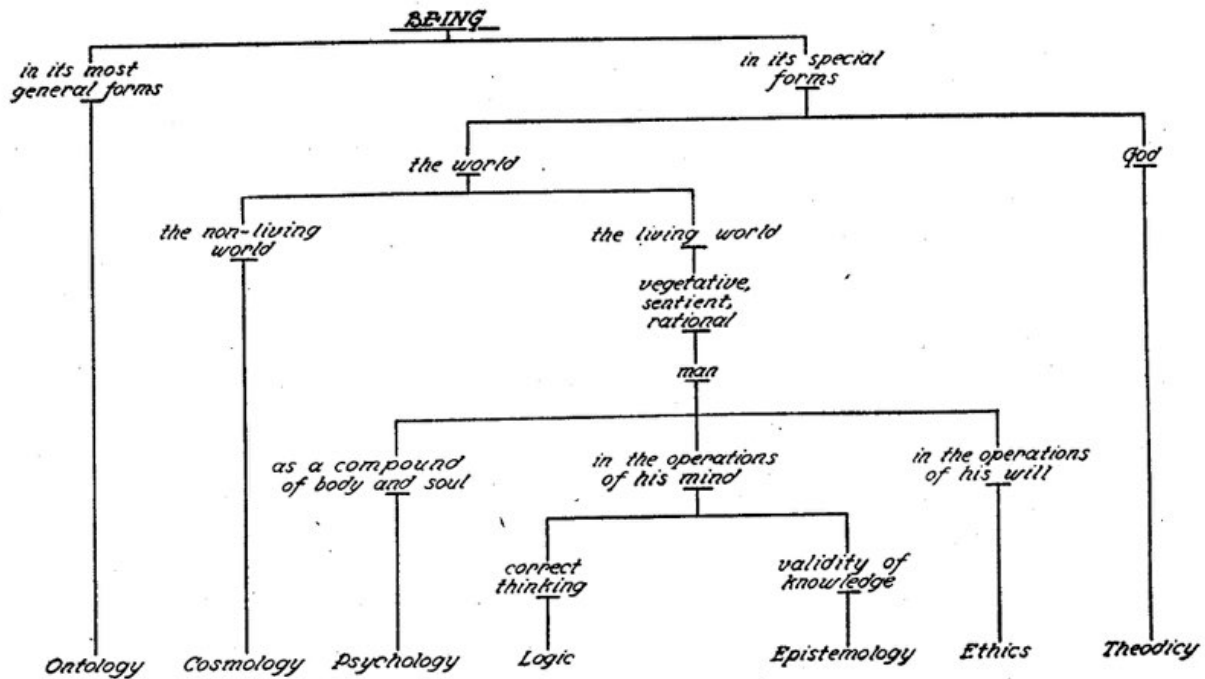
To sum up: the material object of philosophy is all being in the widest sense of the term; its formal object is all being in its ultimate reasons, causes, and principles, studied in the light of human reason.

What are the benefits to be derived from a knowledge of philosophy?

From the standpoint of personal advantage, the searcher after truth will find in philosophy a treasure-trove of priceless information, ranging all the way from the atom and the cell to man and the stars and the universe and God. No province of truth is foreign to philosophy. While the various sciences are as so many facets that reflect a brilliant ray of light, philosophy is the jewel that unites all the facets into a harmonious burst of glorious truth. As the sciences in their unceasing research discover the single facts of nature and express them in unchanging laws, thereby simplifying their understanding, so philosophy in turn investigates the findings of the single sciences, discovers the principles and laws common to them all, and unites the various sciences and their conclusions into the highest synthesis possible to the human mind on the basis of reason alone. Philosophy is the unification and systematization of all important knowledge within the domain of reason. If the knowledge of the single sciences is an acquisition worth more than all material comfort and gain, then the knowledge of philosophy, the super-science summarizing and unifying them, is proportionately richer and higher in value: it is the supreme achievement of the human intellect in a purely natural way. So far as the arrangement and sequence of these various departments of philosophy are concerned, each has its advantages and disadvantages. Some philosophers contend that philosophy should follow the natural course of human thought and investigation. We should begin with the world around us

(cosmology); then consider man himself (psychology); then study the inner workings of the mind (logic, epistemology) and will (ethics); then investigate being in itself (ontology); and finally contemplate God (theodicy). Others object to this arrangement on the score that the philosophy of being in general (ontology) must precede the philosophy of particular beings, and a person must first learn to think correctly (logic) and be assured of the validity of his knowledge (epistemology) before he begins to philosophize. The fact is simply that the entire division of philosophy into departments, though based on good grounds, is inadequate, because no department is altogether exclusive of the other; this makes a certain amount of repetition of ideas and principles inevitable, the field of investigation being so extensive that it cannot possibly be covered without passing and re-passing the same lines. This will always remain a practical difficulty which can only be solved by the method of treatment.

One of the best arrangements is to begin with logic, the science of correct thinking, because correct thinking is necessary for every department of philosophy. The next step would be epistemology, the science of the validity of human knowledge, because only if we are sure that we can attain truth will philosophy rest upon a solid basis.



And since everything that philosophy investigates is being in some form or other, ontology, the science of being in general, should be of great help in understanding the special kinds of being. Now the mind is ready to study the problems of the world in inorganic nature, and that leads to cosmology. The study of living beings will be next in order; and since man has vegetation (plant life), sensation (animal life), and reasoning (rational life), psychology, the science of life, follows as a matter of course. From the study of inorganic and organic nature to the investigation of the existence and nature of God is but a natural step; hence theodicy, the science of God. Ethics should actually follow psychology, since man's will is a part of his rational nature, but morality and responsibility are meaningless without a knowledge of God, the Supreme Lawgiver, and therefore ethics takes the last, but not the least, position in

philosophy. This arrangement is not perfect, because the rather abstract departments of logic, epistemology, and ontology are in the lead; but here, as in many other instances, it may be best to acquire a thorough understanding of the technique and the fundamentals of the science before attempting to put them into play. The first step, then, in the study of philosophy will be an investigation into the *laws of correct thinking* and into the foundations of knowledge. That is the beginning of wisdom and of truth.

PHILOSOPHY AND LOGIC

Truth is the object of our thinking; it also marks the extent and the limitation of our thinking powers. We attain truth when our thinking (judgment) corresponds with the reality of things; and, since every being contains something that can be known as true, truth is as wide as being, and that comprises everything that is actual or possible.

Many truths are quite apparent. I gaze out of my window and see the sun in the sky; I know that it is day. I see a collie frisking over the neighboring lawn; I know that he is alive. I notice a patch of snow on the embankment; I know that winter is near. Experience makes these truths obvious, and I need no complicated reasoning process to establish them. But the attainment of truth is not always so simple. Does the sun move around the earth, or the earth around the sun? Is a monarchy or republic the better form of government? Has man a soul distinct from his body and, if so, is it immortal? Is there a Supreme Being above and

beyond the physical world? Is crime the result of a disease or of a perverted free will? Is evolution a fact or a fancy? Merely to state such questions is enough to illustrate the fact that the attainment of some truths presents many difficulties which can only be resolved by a long, careful, and painstaking research.

Now, to be reasonably sure of success in such an undertaking, we must be sure of every step in the process of thinking from beginning to end; a mistake, or even a serious doubt, anywhere along the line would vitiate the end result and make the assurance of truth impossible. Correct thinking is a necessity in any problem that confronts our mind. It makes no difference whether we discuss a problem of politics or economics or science or law or art or history or philosophy or religion; nor does it matter whether we argue the respective merits of automobiles or sports or persons or buildings or card games or hats or shoes or other commonplaces of everyday life: reasoning enters into every such argumentation; thinking is the basis of reasoning, and to know the laws of correct thinking will, therefore, be a great help in avoiding errors and in finding the truth. The widespread differences of opinion among men concerning the most vital problems prove the importance of clear thinking. Most arguments and discussions would not be so fruitless if the principles of correct thinking were better understood and applied. It is the function of logic to supply this knowledge and its application. The science of logic is not intended as a sort of parade ground for mental gymnastics, where the mind can disport itself in quibbles and subtle distinctions in order to

squirm out of some disagreeable conclusion of fact or theory; its purpose is to assist the mind honestly in discovering and attaining truth wherever it can be found. For *logic is the science of those principles, laws, and methods which the mind of man in its thinking must follow for the accurate and secure attainment of truth.*

Every normal person possesses native logical powers; this is no more than to say that all of us can think and reason and distinguish truth from error without special training in logic. The child's eternal question "Why?" shows this; it demands an explanation and a reason. The ordinary man of the street and the unlettered savage will often enter into lengthy discussions and argumentations, and they frequently display a remarkable sharpness of wit. But they are restricted to problems of an easier and simpler nature; deeper and more complicated problems are beyond their reach. It is a pitiful spectacle indeed to see even cultured men, high in science and business and statecraft, flounder through a discussion in a most deplorable fashion, once they leave their own specialized field, simply because they are practically ignorant of the principles, laws, and methods of correct thinking and lack a training in logic.

In order to proceed safely and efficiently in the solution of an intricate problem, we must have a thorough knowledge of the mind in its various operations, the elements that enter into the making of correct judgments and arguments, the rules that govern our reasoning, and the force of the different methods used in proving truth. Furthermore, our mind must be trained in the proper use of its own powers. The difference between a person with

merely native logical talents and a person with trained logical talents, is the difference between an amateur and a professional; in some cases the amateur may by sheer brilliance of mind achieve great results, but as a rule it is the trained professional who forges his way to the top. Occasionally, the ordinary driver of an automobile may acquire a wide knowledge of his car and its functionings, but usually only the trained mechanic knows all the details of construction and operation necessary to detect and repair the damaged parts and to keep the car in smooth running order. The same is true in every line of human endeavor, and this is also the case with the mind in its search for truth. The scientist and the philosopher must know how to use the tools of his craft and train himself in their proper manipulation. Genius, perhaps, is born. Scientific training, however, often makes the mediocre mind great. Dullards, of course, are failures everywhere.

From the above it will be plain that there are two kinds of logic, *natural* and *scientific*. Natural logic is what is called, in popular parlance, common sense. Scientific logic, on the other hand, is natural logic trained and developed to expertness by means of a well-grounded knowledge of the principles, laws, and methods which underlie the various operations of the mind in the attainment of truth. The study of logic is neither as easy nor as entertaining as the reading of a novel; it demands earnest attention, deep concentration, and persistent practice: but its value is inestimable in searching for the true solution of the manifold problems that confront the human mind. As such,

therefore, it deserves our serious consideration. Difficulties, of course, there are; but practice, here also, makes perfect.

The question has been asked: "Is logic a science or an art?" It is both. In as much as it consists of a comprehensive body of established principles and laws with their legitimate conclusions, woven together into a unified system, it is a *science*; in as much as the mastery of its technique enables the mind to pursue truth in an easy, orderly, and safe manner its purpose is practical and it is, in a wider sense, an art. After all, logic is not intended to be merely informative, to instruct; it is directive, aiming to assist the mind in the proper use of its powers.

Since the ultimate purpose of logic is to assist the mind in the attainment of truth, all the operations and factors which concur to bring about this result must be studied. These are threefold: the *idea*, the *judgment*, the *inference*. Truth consists in the judgment. If I state 'The day is warm,' and it is actually warm, then I state a truth; if it were cold, the statement would be an untruth. Therefore judgments must be analyzed in logic. But judgments consist of ideas, since the ideas form the elements of a judgment. Hence ideas must also be studied in logic. Most problems, however, cannot be solved by merely making a simple statement; to solve them a number of judgments must be compared and linked together in some system of argumentation or inference; in such cases we have a chain of ideas and judgments leading to a final and conclusive judgment containing the truth desired. Here is a skeletonized example: 'Man's body is a living compound; a

living compound can be dissolved into its parts; a living compound, dissolved into its parts, dies; therefore man's body dies.' Hence, the various kinds of argumentations and inferences also belong to the subject matter of logic. Furthermore, since there are two scientific methods which can be employed in the search and attainment of truth, 'deduction' and 'induction,' logic will also have to treat of these, because these methods are of particular value in building up the various sciences. Here we have, then, the natural division of the subject matter of logic: *idea, judgment, deductive and inductive inference*. They will be treated in this order.

SUMMARY OF INTRODUCTION

1. The apathy of scientists against philosophy is due to their ignorance of its nature and function. Science and philosophy have the same origin and scope — a deeper knowledge of the world within and around us, viewed in its underlying causes and principles. Philosophy is the extension of science.

The very *foundations of science* may be questioned. The Principle of Causality, the laws of nature, truth in general, the validity of human knowledge — these are philosophic problems affecting the foundations of science.

Philosophy is the science of beings in their ultimate reasons, causes, and principles, required by the aid of human reason alone.

The *benefits* from a knowledge of philosophy are great. It is the super-science which strives for the unification and

systematization of all important knowledge within the domain of reason: It enables the student to distinguish truth and error in all the conflicting and confusing opinions.

There are *seven departments* in philosophy: Logic, epistemology, ontology, cosmology, psychology, theodicy, and ethics. Logic is the most fundamental for acquiring knowledge and truth.

2. Truth is the object of thinking. Some truths are obvious; others are difficult of attainment. Correct thinking is a prime necessity in the solution of complicated problems, and logic enables us to think correctly. *Logic is the science of those principles, laws, and methods which the mind of man in its thinking, must follow for the accurate and secure attainment of truth.*

Ordinary man has natural logic or common sense. *Scientific* logic is natural logic trained and developed to expertness. Logic as a *science* consists of a comprehensive body of established principles and laws with their legitimate conclusions; logic as an art is the mastery of the technique embodied in these principles and laws.

Ideas, judgments, and inferences are the elements which enter into the operations of the mind in its attainment of truth. Scientific *methods* are also of importance for this purpose. Hence, logic will treat of ideas, judgments, deductive and inductive inferences.

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PART I

IDEA AND TERM

Chapter 1

NATURE OF THE IDEA

IDEAS ARE THE BUILDING STONES OF KNOWLEDGE. THEY ARE THE elements that constitute judgments; and judgments express truth and error. This being the case, ideas in all their forms must be thoroughly understood by the philosopher, because no building can be solid unless its foundation is solid.

FORMATION OF IDEAS

The *process of forming ideas* will assist us in understanding their nature. All knowledge starts with the senses. Thus, sugar is presented as an object of perception to various senses. I see it — it is white; I feel it — it is hard and granular; I taste it — it is sweet. The combination of something 'white,' 'hard and granular,' and 'sweet' forms an image in the inner sense, the imagination and memory; and this image is retained even after the object itself, the actual sugar, is removed, because I can recall this image of sugar when I hear the word 'sugar.' In a similar way, when words like 'man,' 'automobile,' 'dog,' 'shovel,' 'mountain,' 'paper,' 'desk,' 'rain,' 'school,' 'hat,' 'New York,' 'Century of Progress Exposition,' 'George Washington,' 'Franklin D.

Roosevelt,' and so forth, are mentioned, I can recall their image as long as I have perceived them in fact or have heard or have read of them. Say "Rat!" to a terrier, and watch him start, prick up his ears, bark, and dash madly about in excitement; by means of his memory and imagination he revives the image of a rat that he has seen. This *image or phantasm* of the imagination is the first step in the formation of the idea.

Man, unlike the brute animal, does not stop at the mere reproduction of an image in his fancy. In the presence of this image man's mind begins to *think*. The intellect now gives its attention to this sense-image in order to make its own representation of the thing. It does this by a process of *abstraction*. An example will make this clearer. Through experience we come in contact with many beings which we designate by the common name 'man,' and we soon find that there are great differences between them. Some are small, some are large, some are of medium height; some are thin, some are stout; some are male, others are female; some are blond, others brunette, others black; in some the skin is white, in others yellow or brown or copper-colored or black; some are bearded, others not; some are virtuous, others vicious; some are phlegmatic, others lively; some are melancholy, others gay; some are normal in limb, others crippled; some are healthy, others diseased; and in age they range all the way from infancy to a century. The intellect, noticing and comparing these differences, soon discovers that many of these characteristics change or disappear, while others take their place. The intellect also perceives that certain characteristics remain intact through all

changes. Thus, all men have a body, which exists for itself, independent of all others; man, therefore, is a *bodily substance*. Like the plants, men take in food, assimilate it, grow, develop; man is a *living bodily substance*. Like the brutes, men see, hear, taste, smell, feel, imagine, remember; man is a sentient, living, bodily substance. Unlike them, men think, reason; man is a *rational, sentient, living, bodily substance*. And while the intellect perceives these characteristics, it also perceives that they are found in all men at all times and in all places, and without them 'man' would cease to be a 'man.' True, some men lose their sense of sight or hearing or taste or smell; but some form of sense-life is always retained, so that they are always *sentient* beings. Other characteristics may be more or less permanent, like arms, legs, bones, sex, etc.; but the intellect sees clearly that a 'man' would still be a 'man' without them; but 'man' must be a rational, sentient, living, bodily substance in order to be a 'man,' and the absence of *any one* of these would make him cease to be a 'man.' They are, therefore, the essential elements which constitute his human *nature*; they belong to man *as man*.

The intellect now strips (in thought, of course, not in reality) the individuals of all the nonessential qualities, retains the essential attributes only, and forms them into one *intellectual image* - man is a 'rational, sentient, living, bodily substance' — and since a 'sentient, living, bodily substance' is called an 'animal,' ***man is a rational animal***. This intellectual image of 'man' is the idea of 'man.'

Another example: We perceive an innumerable variety of plants which we call 'trees.' Disregarding all the differences

among them in size, age, color, texture, shape, seasonal change, sex, etc., the intellect retains merely the essential elements of the type, those found in *all* trees, and combines them into a single intellectual image or *idea*: namely, a 'tree' is a 'woody perennial plant with a single main stem, usually about at least ten feet high.' Again, we observe a multitude of 'circles' in rings, wheels, clock dials, coins, disks, drawings, etc., consisting of a variety of materials, sizes, and colors. Leaving all the differentiating peculiarities aside, the intellect seizes upon those elements which are common to them all and are necessary to them all as 'circles,' and forms these elements into the idea of the mathematical figure of a 'circle'; namely, 'a plane figure bounded by a single curved line called its circumference, every part of which is equally distant from a point within it, called the center.' Just as the idea of 'man' will fit each and every man. so the idea of 'tree' will fit each and every tree and the idea of 'circle' will apply to any and all circles, irrespective of their individual differences among themselves.

The intellect, of course, will make its own image or representation even of a *single* object, without comparing it with similar objects of its class. Thus, by merely putting my attention to the tree across the street and thinking about it, my intellect makes an idea of it, even if I never see another tree. This idea would be a real, though not the most complete, idea of a 'tree.' To become complete, I would have to compare this tree with others and make an intellectual image of the essence of all trees. Ideas or concepts are therefore twofold. In a wider sense an *idea is*

the simple intellectual apprehension of a thing, and it is made as soon as the intellect turns its attention to an object and makes its own image of the thing from the phantasm. In a narrower and stricter sense *an idea is the intellectual image of a thing*, representing its essential elements, and this is the product of an extensive and exhaustive comparison of a large number of objects belonging to the same class. Since, however, there is only a difference of degree between the idea in a wider and the idea in a stricter sense, our definition must include both. Hence we define the *idea (concept)* as the intellectual image or representation of a thing. This covers everything.

IDEA AND PHANTASM

There is always great danger of confusing the *phantasm* (sense-image) of the imagination with the idea (concept) of the intellect. There is a marked difference between the two, and from the very outset it is necessary to grasp and understand this difference very clearly. A close comparison of the two will remove any existing confusion.

For one thing, the phantasm is always something *concrete* and *individual*, fitting at the most only a few objects at one and the same time. We have indeed general images of a dog, a horse, a fish, a tree, a house, a polar bear, a man, etc.; but this is only because we retain in such an image the more striking and similar features of a class and ignore the distinguishing characteristics of the individuals. But we cannot form a phantasm or sense-image of all the members of a class, much less of a number of

classes taken together. For instance: Our imagination can make a general picture or phantasm of a 'roses' but it cannot make a phantasm that will fit a red rose and a white rose at the same time, because the image will fit either the red rose or the white rose but not both. Similarly, with the general phantasm of a 'tree,' what image can cover at the same time the wine-glass shape of an elm, the pyramidal shape of a fir, the spherical shape of a maple, and the fan-spread shape of a palm? So, too, with the general phantasm of a 'dog'; it cannot cover at the same time the peculiarities of a pekingese, a bulldog, a dachshund, and a mastiff. The same is true of the general phantasm of 'man'; no single image will adequately fit at the same time a baby, a ten-year-old boy, a twenty-year-old girl, Henry VIII, Napoleon, George Washington, and the more than fourscore-and-ten John D. Rockefeller. One can multiply such instances indefinitely. The phantasm becomes utterly inadequate and impossible, when applied to several classes at once. No single phantasm of a 'plant' can include at the same time the hollyhock, the pumpkin, the lily, the apple tree, the cedar, the hawthorn, the grapevine, the wistaria, etc. Much less can the single phantasm of a 'living being' cover the characteristics of an amoeba, a whale, a rose, an orange, a spider, an elephant, a chrysanthemum, a horse, an Indian, a Negro, Abraham Lincoln, etc. The reason is plain: the senses picture single concrete objects, and the imagination makes its images or phantasms from these sense pictures; therefore, the phantasm is also concrete and individual by nature.

The reverse is true of the idea or concept of the intellect: it is *universal* and for this reason applies with equal facility to an individual and to a class and to a number of classes. Take the idea of 'man' as a rational animal. By 'rational' we mean a being that has the power to think, and by 'animal' we mean a sentient being; by 'man' we therefore designate 'a sentient being that has the power to think.' This idea applies at the same time to every single human being taken individually and to all men taken as a class. It fits the infant, the child, the youth, the middle-aged and the old-aged person; it fits male and female; the Negro, the Caucasian, the Indian, the Chinese, the Polynesian; the large and the small, the slim and the stout, the healthy and the sick, the blond and the brunette. Now extend the class to include another. Take the idea of 'animal' as 'a sentient being.' This idea embraces all brutes and all men without any difficulty — the reptiles, the insects, the fishes, the birds, the mammals, and all men. The idea 'living being' will apply not only to all brutes and men, but will also include all plants of whatever nature and kind. Going a step farther in the scale of beings, we have the idea of 'substance,' by which we designate 'a being that exists in and by and for itself and does not need another as a subject in which to inhere.' This applies to all inorganic beings, metallic and nonmetallic, ranging from electrons and atoms up to the stars and the universe, and applies also to the entire field of the kingdom of plants, animals, and men. Not only does this idea fit the various classes as a whole but also each and every individual belonging to these classes. Here you have one of the main differences between an idea and a phantasm.

Another difference: A phantasm, being a sensible image, becomes very *vague and indistinct with complexity and minuteness of details*. We can readily form a phantasm of five trees in a row. But to imagine fifty (not forty-nine or fifty-one) trees in a row will be for most people an impossible task. To imagine five thousand (not more or less) trees in a row is an utter impossibility. But my idea of five thousand or five million trees is just as clear to my intellect as five or ten; I have no more difficulty in *understanding* the number 5,000,000 trees than I have in understanding the number 4,999,999 or 5,000,001. Similarly, in geometry a 'line' is conceived as having length but -no width; in other words, a line has dimension in one direction only. While this idea of a line is perfectly clear to my intellect, the phantasm or sense-image of a line will always be cast in two dimensions — length and width. Again, a geometrical 'point' is 'a limit terminating a line' or 'that which has position but no magnitude'; a 'point,' therefore, as considered in geometry, has position, but it has neither length nor width nor depth. However, just as little as any draftsman can make a point without giving it magnitude (for he will always make it something like a 'period' at the end of a printed sentence), just as little can the phantasm picture it without magnitude. But the intellect finds no difficulty in formulating the idea of a mathematical 'point,' as we see by the very fact of its definition.

Finally, there are many things of which we have a very clear *idea*, but of which *no reasonable phantasm can be formed*. Everybody speaks of such things as economics, law, virtue, soul, life, God, will, knowledge, ignorance, error,

inference, conclusion, logic, hypothesis, assumption, certainty, and a thousand similar things. Since we think and talk and argue about them, we surely have ideas of these things, but what imaginable phantasms can we make of such unimaginable realities? Or, can we invest the 'consistency' of an argument with anything like shape, weight, sound, size, color, or similar things that make up a phantasm? We do not even attempt to form a concrete sense-image of them; the words simply stand for the definite intellectual idea of these supra-sensible things, and so we content ourselves with thinking and speaking of them without forming a phantasm.

There is, therefore, a marked difference between the phantasm of the imagination and the idea of the intellect. The phantasm is always the concrete and sensible image of a concrete and sensible object, while the idea is the immaterial and supra-sensible representation of a thing, even when the thing itself is by nature concrete and sensible. Of course, since the intellect forms its ideas after a contemplation of the phantasm, it stands to reason that phantasm and idea, imagination and intellect, act in close harmony. Usually, therefore, a phantasm accompanies the idea; thus, the idea of 'man' will, as a rule, carry along with it the general image of a man. When it is impossible to form a real image of the thing represented in an idea (for instance, 'rationality, law, thought, mind, will, certainty,' etc.), the idea is accompanied by some word that designates it, as when we express the idea of the 'life principle' by the letters 's-o-u-l.' This is due to the fact that the intellect is dependent on the imagination to furnish it materials for

ideas; and this is also the reason why many people and even philosophers confuse the ideas of the intellect with the phantasms of the imagination. However, as has been shown, ideas are totally distinct from phantasms and should never be confused with them.

Logic, naturally, treats of ideas, not phantasms. Having established the fact that the idea is the intellectual representation of a thing in the mind, we must now study the elements -which constitute an idea.

COMPREHENSION AND EXTENSION

This brings us to a consideration of the *comprehension* and *extension* of the idea; they are its logical qualities. These qualities are of paramount importance in gauging the exact value of judgments and inferences and must, therefore, be thoroughly understood, if the mind would proceed accurately and safely in the attainment of truth.

By the *comprehension* of an idea we understand its meaning, signification, thought-content; and we define the comprehension of an idea as the *sum total of all the attributes or thought-elements which constitute the idea in its representation of a thing*. Take, for example, the idea of 'man.' What attributes or elements does it contain? Man is a 'being which is substantial, bodily, living, sentient, rational,' and these various attributes or elements form the comprehension of the idea of 'man.' If we desire to designate a particular individual called 'Franklin Roosevelt,' we will have to add to the comprehension of 'man in general' all those individual characteristics which

distinguish him from every other person. To give another example: The comprehension of the idea of an 'equilateral triangle' is 'a plane, rectilinear figure with three equal sides.'

While the comprehension gives the content of an idea, the *extension* expresses the *application* of this content to the individuals and groups in which it is found. The *extension* of an idea is therefore defined as the *sum total of all the individuals and groups to which an idea can be applied*. In the case of the idea of 'man,' its extension will include each and every individual in whom this idea of 'man' is realized, and that means every human being from the dawn of creation through the centuries until the crack of doom, whether he be a cave-dwelling Neanderthaler, an Australian native, or a highly cultured Parisian, or the future superman who will sail to Mars. Thus, too, the extension of the idea of 'plant' will embrace everything that is a vegetant non-sentient being, whether on land or in the sea or in the air, ranging all the way from the bacteria to the giant sequoias of California. The same, of course, is true of any other idea, like 'dog, cow, rose, orange, star, stone, hand, being, mind, house, blacksmith, boy, paper, book, rifle,' and so forth.

It will be well to bear in mind that the beings represented by an idea need have no actual existence, but only an existence in thought or fancy. Fairies, dragons, witches, ghosts are such; since, however, we have ideas of them, all the different fairies, dragons, witches, and ghosts ever thought of or described form the extension of these ideas. Again, certain ideas may have an extension which

does not include a number of individuals, but only a single one; 'the largest building,' 'the present heavyweight champion,' 'the tallest mountain,' 'the oldest man,' 'the last dinosaur,' 'the first bird,' 'the lowest valley,' 'the rarest coin,' and similar ideas, can have no more than a single member in their extension. Language and custom must also be considered. People frequently use expressions which ought to signify an entire class, but in reality they mean to include only a *limited portion* of the extension in their statement. Thus, when somebody says 'The Jew is a great business man,' he evidently does not intend to convey the idea that each and every Jew is a great business man, but merely a large portion of the Jewish race possesses this accomplishment. The use of language in this fashion is legitimate enough, provided the limitation of this extension is strictly adhered to in the course of an argumentation; to vary the meaning would give rise to confusion of thought and error in judgment. This conventional limitation of the natural extension of an idea is called the *universe of discourse*. It is obvious that this 'universe of discourse' has no value for logic, since the limitation of the extension is arbitrary and as such not subject to any definite law.

The terms *comprehension* and *extension* have received different names by numerous modern philosophers. For *comprehension* we find such terms as *implication*, *connotation*, *intent*, *intension*, while *extension* is expressed by such terms as *denotation*, *application*. The meaning, of course, is the same.

What is the *relation between the comprehension and the extension of an idea?*

It is usually stated that the comprehension can be neither increased nor diminished without changing the idea itself. This is perfectly true when we speak of *class-ideas* whose comprehension is definitely clear and fixed. In such cases the comprehension contains the essential elements of the class, and to take away an essential element would certainly change the whole idea of the thing. 'Man' (to quote again a favorite example) is a 'being that is substantial, bodily, living, sentient, and rational'; each of these elements is essential to the nature of man and cannot be omitted from his comprehension without changing the idea of 'man.' We also know that an 'animal' is a 'being that is substantial, bodily, living, and sentient'; here, too, we cannot change any of these essential elements without destroying the idea of 'animal.' For the longest time the comprehension of 'whale' was considered to contain the attribute 'fish' as an essential element, but science has proved that the whale is a true mammal, and thus the comprehension of 'whale' has been changed without destroying the idea of 'whale.' The reason for this is the fact that the farther we go from the broad classes in nature and the closer we come to the individuals, the more difficulty we find in discovering the really essential attributes which distinguish one from the other; in most cases of this kind we must be satisfied with a description of the nonessential elements of a thing in order to formulate its comprehension, even though it may not be entirely exact. In a general sense, though, the rule holds good that the comprehension can neither be diminished nor increased.

Logicians have a similar rule for the *extension* of an idea: It *can be diminished or increased* without destroying the idea. By this we mean that the comprehension of an idea can be applied to more or fewer individuals without any change in the idea as such. Thus, the idea of 'man' will remain the same, whether it is applied to one or to a billion individuals. Men are born and men die, but the idea of 'man,' considered in the comprehension as a 'rational animal,' remains ever the same. Trees may grow and multiply indefinitely, but the comprehension of 'tree' does not change on that account. Flowers bloom in the spring and summer and autumn in innumerable quantities and then die in the winter, but that fact does not alter the comprehension of the idea of a 'flower' in the least.

Hence the general truth of the rule: *The comprehension of an idea always remains the same, while the extension of the idea may change continually.*

There is another relation between the comprehension and extension of an idea which contains a general truth: As the *comprehension increases, the extension decreases*; and as the extension increases, the comprehension decreases. In order to illustrate the rule, let us take a progressive series of class-ideas. We shall start with the idea of 'living, bodily substance.' The comprehension of this idea has three elements, 'substance,' 'bodily,' and 'living'; its extension comprises all plants, brutes, and men. By adding the element 'sentient' to 'living, bodily substance,' so that we now have a 'sentient, living, bodily substance,' we have increased the comprehension, but we have also narrowed the extension, because we must now exclude the plants

from this extension, since they are not 'sentient'; the extension now comprises only the brutes and men. By adding the element 'rational' to 'living, sentient, bodily substance,' we have again increased the comprehension, but we have narrowed still more the extension, because we must exclude both the plants and brutes from this extension, leaving only man. By adding, for instance, the element 'Englishman' to the above-mentioned elements, we have again increased the comprehension, but we have also narrowed the extension down to the citizens of a single country. And if we add the element 'Londoner' to the element 'Englishman,' we have increased the comprehension to a still greater degree and have narrowed the extension down to the six millions of people who live in the city of London. The original three elements forming the comprehension of a 'living, bodily substance' has grown to be 'a man (i.e., a bodily, living, sentient, rational substance) who is a citizen of England and an inhabitant of London'; on the other hand, the original extension, which included the billions times billions of plants, brutes, and men, has decreased until at last it can be applied only to a comparatively small number of human beings. By reversing this process we shall notice that the comprehension will decrease in elements as the extension increases in numbers.

We must remember, however, that there is *no strict arithmetical proportion* in this inverse ratio between comprehension and extension. That would be a wrong application of the rule. Not every increase of attributes in the comprehension will always diminish the extension. True,

when I add 'English' to the comprehension of 'man,' I limit the extension of 'man' to the citizens of England; but when I add the attribute 'red-blooded' to 'man' (a 'red-blooded man'), the extension remains the same, since all men are red-blooded. Even in cases where the inverse ratio does apply, the result is very unequal and not always in a strictly arithmetical proportion; for instance, if we say 'white men,' the extension will include a far greater number of individuals than if I say 'crippled men.' Though not a hard-and-fast rule, therefore, in a general way the rule is fundamentally true and stands as stated.

Having considered the nature of the idea, the difference between phantasm and idea, and the logical qualities of comprehension and extension, we must now turn our attention to the various kinds of ideas.

SUMMARY OF CHAPTER I

1. The process of forming ideas reveals the *nature of the idea*. First in order is the phantasm. By means of abstraction the intellect extracts an intellectual image (idea) from out of the phantasm by leaving aside all the differentiating characteristics of the individuals and retaining the attributes common to them all. The idea, therefore, is the *intellectual image or representation of a thing*.

2. There is an essential *difference between phantasm and idea*. The phantasm is fundamentally concrete and individual and cannot be applied to a large number of individuals or to classes, while the idea is universal and applies with equal facility to any number of individuals taken singly or collectively. The phantasm becomes vague and indistinct with complexity and minuteness of details, while the idea is not interfered with by these things in its clearness and distinctness. No adequate 'phantasm can be made of a large number of things, though the idea of them is very definite and exact.

3. The *comprehension* of an idea is the *sum total of all the attributes or thought-elements which constitute the idea*. The *extension* is the *sum total of all the individuals and groups to which an idea can be applied*. The comprehension can be neither increased nor diminished without changing the idea itself, but the extension can be increased or diminished without changing the idea. Comprehension and extension have an inverse ratio or

proportion: as the comprehension increases, the extension decreases; and as the extension increases, the comprehension decreases.

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Chapter 2

KINDS OF IDEAS

IDEAS CAN BE APPROACHED FROM DIFFERENT ANGLES AND DIVIDED in different ways. The philosopher will naturally attempt to procure a comprehensive division of the idea into its various kinds, because a complete knowledge of the idea in its manifold forms will tend to avoid confusion in discussions by fixing the meaning of the terms employed in all the departments of philosophy. Just as a thorough knowledge of the organs composing the human body enables the physiologist to understand the functioning of the human organism, so a fuller appreciation of the types of ideas will assist the philosopher in understanding the workings of the intellect in the pursuit of truth.

IDEAS ACCORDING TO ORIGIN

Ideas from the standpoint of their *origin*: intuitive and abstractive. Intuitive (or immediate) ideas are those which are formed as the result of the *direct perception of things*. As I stroll along the street, I see the blue sky, the sun, homes, stores, automobiles, people; I hear the purr of motors, the shrill laughter of children, the earnest

conversation of men and women, the weird shriek of a police siren; I feel the moist and frosty air of late autumn beating against my face; I smell the acrid odor of burned gasoline and the delicious fragrance of Antonio's fruit shop; I taste the sharp tang of the mentholated lozenge I am munching. All these and a thousand other things make their impression upon my senses; my senses convey their message to my mind; and my intellect forms the ideas of these things as I perceive them. At the same time I turn my attention to the mind itself and watch it form ideas of these things as they pass in review before it; in this way my intellect also forms ideas of my mind and its workings, because it perceives directly its own functioning. Two great worlds are therefore perceived by the intellect — the physical world around us and the world of thought within us. All ideas thus formed of *immediately present* objects, perceived as present, are intuitive.

Ideas are *abstractive* (or mediate), when formed *of objects by some means other than their immediate perception*. All my ideas of persons, things, and events which I acquire not by personal experience but through books, newspapers, or conversation with others, are of this type. Thus, too, from my knowledge of the regular succession of the seasons I have an idea of the coming summer, although summer is still many months away. From the effects of heat, light, and power I conclude to the existence of electricity as their cause, and I, therefore, have an idea of electricity, even though I cannot perceive electricity itself. From the universe at large I arrive at an idea of a Supreme Being, without being able to see this

Being directly by either the senses or the mind. Anything, therefore, of which I obtain an idea through deduction, through a process of reasoning, through the knowledge of some other thing, belongs to this class; such ideas are abstractive. It should be noted carefully that we are speaking of abstractive, not abstract, ideas; the two are very different, as will be seen.

IDEAS ACCORDING TO REPRESENTATION

Ideas from the standpoint of their *perfection in representing an object*.

Ideas may be clear or obscure. An idea is clear when it represents an object in such a way that it can be distinguished from any other object; otherwise it is obscure. Our ideas of the ordinary things of life in our everyday environment are clear. There is no obscurity in our ideas of a dog, an automobile, a clock, a book, a hand, a teacher, and a million other things; we can distinguish the idea of these things clearly among themselves. Many persons, though, will not be able to distinguish clearly between an African and an Indian elephant, between a mastiff and a St. Bernard dog, between a hesperornis and an archacopteryx, between a parallax and a parallelogram, between a thymus and a thyroid, and many other things: their ideas are obscure.

Clear ideas, again, will be either distinct or confused. They are distinct when they enable the intellect not only to distinguish the represented object from other objects, but also to enumerate the various attributes which make up the

comprehension of the object. Everybody, for instance, knows the difference between man and brute, but not everybody is capable of enumerating the thought-elements (attributed) which constitute the idea of 'man' and 'brute.' When I know that 'man is a bodily, living, sentient, rational substance' and 'brute is a bodily, living, sentient, non-rational substance,' I am enumerating the various elements (attributes) that constitute the comprehension of their idea, and my idea is therefore distinct; if I cannot make this enumeration, my idea is *confused*.

Clear and distinct ideas are either adequate or inadequate. They are *adequate* (complete) when the intellect can enumerate *all* the attributes belonging to the comprehension of a thing, even to the last and least. My enumeration of the attributes of 'man,' given in the foregoing paragraph, is adequate; were I to omit one, for instance the attribute 'sentient,' but retain the differentiating mark 'rational,' then my idea of 'man' would be clear and distinct, but *inadequate* (incomplete). Thus, too, I may have a clear and distinct idea of gold, silver, iron, and other metals, considered from the viewpoint of their physical qualities; unless, however, I can also enumerate their chemical qualities, my idea of them would be inadequate (incomplete).

It will be readily seen that the different types of ideas mentioned above are subjective in character, depending on the individual persons and their knowledge or ignorance of things: the ideas will change from obscure to clear, from confused to distinct, and from inadequate to adequate, as their knowledge of things becomes more and more perfect.

IDEAS ACCORDING TO THEIR RELATIONS

Ideas from the standpoint of their *mutual relations*.

Ideas are either connex or disparate. They are *connex*, when one idea necessarily either includes or excludes the other. Ideas like 'father — child,' 'husband — wife,' 'teacher — pupil,' 'man — rational,' 'superior — inferior,' include each other; while ideas like 'light — darkness,' 'day — night,' 'vice — virtue,' 'rich — poor,' exclude each other. Ideas are *disparate*, when they neither necessarily include nor necessarily exclude each other. Such ideas are 'man — black,' 'wise — good,' 'gold — warm,' 'iron — wheel.' A wheel may consist of iron, but it need not. A man may be black, but some men are not.

Again, ideas are either identical or diverse. They are *identical* when their comprehension is the same, as 'man — rational animal,' 'water — H₂O,' 'chloride of sodium — salt,' 'plant — non-sentient organic substance.' They are *diverse*, when their comprehension is different, as 'man — brute,' 'silver — diamond,' 'tree — dog,' 'house — automobile.'

Diverse ideas will be either compatible or incompatible. They are compatible, when the attributes of the comprehension of both can be united into another (third) idea; thus the ideas of 'man' and 'white' ('white man'), 'vegetant' and 'sentient' ('brute'), 'wise' and 'good' (a 'good, wise' man) are compatible. But if the comprehension of the one idea excludes the attributes of the other, these ideas are incompatible; such are 'wisdom — folly,' 'vice — virtue,' 'red — blue,' 'light — darkness,' 'iron — wood.'

The *repugnance of ideas*, which forms the basis for their in-compatibility, may be of different kinds. This gives rise to contradictory, privative, contrary, and relative ideas.

Contradictory ideas are those, of which the one simply denies the comprehension of the other, as 'organic — inorganic,' 'thing — nothing,' 'metallic — nonmetallic,' 'equal — unequal,' 'good — not good.' Contradictories are so mutually exclusive that the one cannot apply if the other does, and the one must apply if the other does not; there is no middle ground left, if both are excluded. Thus, any object must be either organic or inorganic; and if both ideas are removed, there is nothing left.

Privative ideas are those, one of which signifies a perfection and the other denies a perfection in a subject which naturally ought to possess it. 'Sight — blindness,' 'living — dead,' 'sanity — insanity,' 'sound — lame,' 'healthy — diseased,' are such. If the subject has no natural aptitude to possess the perfection, then the absence of this perfection will not constitute a 'privation,' and neither of the two privatives will apply. A stone, for instance, is not supposed to have life, and therefore a stone, not having life, cannot be said to be dead, but merely 'lifeless'; while a plant is supposed to live, and therefore a plant, if it has ceased to live, is 'dead.' Similarly, men are 'blind,' if they cannot see, because they have the natural aptitude to see; but plants are not 'blind,' but merely 'sightless,' because they are not supposed to see. In other words, in things which possess the same natural aptitude for a perfection, privative ideas are mutually repugnant and exclusive, but not when applied to things devoid of such a natural

aptitude; there is a middle ground here, 'sight — *sightless* — blind,' 'life — *lifeless* — dead.'

Contrary ideas represent the two extremes among objects of a series belonging to the same class. Such are 'white — black' in the line of color; 'kind — cruel,' 'wise — foolish,' 'prodigal — avaricious' in the line of conduct; 'pleasant — painful,' 'happy — miserable' in the line of emotion; 'king — slave' in the line of social standing; 'hot — cold' in the line of warmth. Contraries are mutually exclusive; they cannot be true at the same time in the same subject. But between contraries there is always a middle ground, and therefore both contraries may be false at the same time. No object, for example, can be 'white' and 'black' at the same time (contraries are mutually exclusive); it might be, though, neither white nor black, but blue or red or green (contraries may be false together). So, too, if a man is avaricious, he cannot be 'prodigal,' and vice versa; but a man may be 'thrifty' or a 'normal spender,' and in that case he is neither prodigal nor avaricious. Contraries always presuppose a series, consisting of extremes and intermediate stages leading from the one extreme to the other.

Relative ideas are two incompatible ideas united in such a way that the one cannot be understood without the other. Such are 'father — child,' 'master — servant,' 'cause — effect,' 'east — west,' 'left — right,' and so on. We must bear in mind here, that the identity of relationship must be retained throughout. In the relatives 'father — child' we consider merely the relationship existing between these two, and the two ideas are mutually incompatible and

exclusive: if one is the 'father,' he is not the 'child,' and vice versa. Of course, a man who is a 'father' to his own child, will be a 'child' to his own father; but then we have a second relationship, different from the first.

A little consideration of contradictory, privative, contrary, and relative ideas, as explained above, will show that they are valuable: if I am certain of the truth of a statement containing one incompatible idea, I am equally certain of the falsity of the opposite statement. Consider this statement: 'The mimosa is a plant.' Since a plant is a 'non-sentient organism,' I can immediately conclude that the mimosa has no nerves, even though the collapse of its leaves at a mere touch would suggest that it has feeling; a mimosa is therefore no animal.

IDEAS ACCORDING TO COMPREHENSION

Ideas from the standpoint of their *comprehension* or thought-contents.

They are *simple* ideas, when their comprehension consists of one single attribute or element; if the comprehension consists of more than one, they are *composite*. 'Being,' 'thing,' 'one,' are therefore simple ideas, because their comprehension comprises but a single attribute or element. Practically all other ideas are composite, like 'man,' 'plant,' 'animal,' 'metal,' 'child,' 'butcher,' 'baker,' 'millionaire,' 'house,' etc., because their comprehension is composed of a number of attributes or elements; thus, the idea of 'man' consists of 'substance, body, living, sentient, and rational'

Then, too, we distinguish between concrete and abstract ideas. Ideas are concrete, when they express a nature or determining attribute as inherent in a subject; but when ideas express a nature or determining attribute considered (by the mind) as separated from the subject in which it inheres, they are abstract. A concrete idea always represents a thing (nature or attribute) as it is found in reality. Such is the idea of 'man,' 'rose,' 'house,' 'horse,' 'cow,' 'animal,' 'substance,' etc., representing the natures of things; or the idea of 'white,' 'small,' 'wide,' 'ebullient,' 'high,' 'blue,' 'dull,' 'sharp,' etc., representing the attributes of things. These same realities become abstract, when I consider them independently and alone for themselves. For instance, a 'man' is always an individual thing, and therefore concrete; but 'humanity' is an abstraction, considering man's nature for itself alone and independent of any individual, and therefore abstract. 'Substance' is also concrete, but 'substantiality' is abstract; 'animal' is concrete, but 'animality' is abstract. So, also, 'white,' 'small,' 'wide,' etc., are concrete; but 'whiteness,' 'smallness,' 'width,' 'ebullition,' 'height,' 'blueness,' 'dullness,' 'sharpness,' etc., take the same attribute, leave aside the subject in which they inhere, and consider them (in the mind) as if they had no subject, and thereby they become abstract ideas. The difference between the two kinds of ideas will be readily observed in the following statements: 'Some roses are red,' and 'Redness is a quality of color in some roses.'

IDEAS ACCORDING TO EXTENSION

Ideas from the standpoint of their *extension*. Viewed from this standpoint, ideas may be singular, universal, particular, or collective.

Ideas are *singular*, when they represent a *single object* only. Such ideas will be expressed either by proper names like 'George Washington,' 'Cicero,' 'Napoleon,' 'Bobby Jones,' 'Jack Dempsey,' 'Knute Rockne,' etc., or by means of class names restricted in such a manner that they can apply to only one thing, as 'this pen,' 'that man,' 'the present king of Italy,' 'the man over there with the derby and black overcoat,' and the like. The following Latin distich gives the *individuating notes*, or characteristics distinguishing one individual from another.

Farina, figura, locus, tempus, stirps, patria, nomen.
Haec ea sunt septem quae non habet unus et alter.

'Forma' — any *quality* of a thing, like 'black,' 'virtuous,' 'vivacious,' 'slow.' 'Figura' — *disposition* of parts or members, like 'tall,' 'stooping,' 'well-proportioned,' 'hunch-backed,' 'abnormal.' 'Locus' — place, like habitation, birthplace, localities visited in travel. 'Tempus' — *time*, like age, date of birth, dates of events in life. 'Stirps' — *ancestry*, like parents and relatives. 'Patria' — *country*, like citizenship. 'Nomen' — name, like 'Franklin D. Roosevelt,' 'Charles the Great,' 'Pope Pius XI.' While it is true that some individuals may have a number of such characteristics in common, it is obvious that no two individuals can have them

all alike. Ideas are *universal*, when they represent some common nature or attribute which can be applied to a *class as a whole* and to *each individual* of that class. 'Man,' 'plant,' 'dog,' 'soldier,' 'city,' 'hat,' and the great majority of ordinary ideas are of this kind. The comprehension of such an idea fits each and all. The idea of 'man,' for instance, in the sentence 'Man is a rational animal,' applies as well to each individual man as it does to all men taken together as a class. The statement 'The cat is an animal' is as true of the puss in my house as it is of all the cats that have ever lived or will ever live. Strictly speaking, it is not necessary that the idea apply to a number of actual individuals in order to be a universal; it will be sufficient if the idea is such that it is capable of being applied to a number of individuals (actual or possible) as a class, even if at the moment there be only a single individual in existence. Thus, even when the first human being alone existed, the idea of 'man as a rational animal' had the same universal application as now when there are two billions of humans on the globe, because these individuals were possible at the time and as such could be united into a class by the mind. All that is necessary is that the idea represent some common element present in one individual which will also have to be present in every other individual of that class, provided other individuals have at least the possibility of existence.

Particular ideas are *universals taken partly and indeterminately*. While the singular idea applies to only one individual and the universal idea applies to each and all of a class, the particular idea applies neither to one nor to all, but to some of the class in an indeterminate manner. If we

can place the word 'all' or 'every' before an idea ('man — all men'), it is universal; but if we place the word 'some' or its equivalent before an idea, it is particular. 'Man is mortal' is the same as 'All men are mortal,' and here 'man' is a universal; but if we say 'Some men are white,' we restrict the universal idea 'man' to an indeterminate portion of the whole class and we then have a particular idea. In judging whether an idea is taken in a universal or in a particular sense, we must often consider the usage of language. In a statement like 'Englishmen have no sense of humor,' no one intends to assert that 'All Englishmen have no sense of humor,' but merely that a 'large portion of Englishmen' lack this quality. The context of the book or conversation will usually indicate whether the idea is to be taken as a universal or as a particular idea.

The *collective* idea is one that applies to all the *individuals as a class, but not to the single members of the class*. 'Army,' society,' 'library,' 'Church' (the organization, not the building), 'herd,' 'flock,' 'galaxy,' 'squad,' 'company,' etc., are such. 'Army,' for instance, can be applied to all the soldiers taken together as a class, but it cannot be applied to the soldiers taken singly and individually, for no one can call the single soldier an 'army.' A number of cows form a 'herd,' but the individual cow is not a herd.' Of course, when we take a number of armies and consider them as a class or group, then the idea 'army' will be a universal. Thus, when we state that 'An army is an offensive and defensive weapon of the State,' we apply the idea 'army'. to all armies, and then the idea of 'army' is a true universal, because it applies to each and every army (German,

French, English, American, etc.). But when we speak of a single 'army,' it is a collective idea, even though a number of individual soldiers comprise it, because the idea 'army' cannot be applied to the individuals who constitute the group. Again, consider the statement that 'A library is a collection of books.' The idea 'book' is a universal, because the idea applies to each and every book in the library; but the idea 'library' is collective, because it can only be used of all the books taken together and does not apply to the single volumes as such.

Singular, universal, particular, and collective ideas play an important part in argumentations, and their significance should be clearly grasped. And among them the universals are of prime importance; they will therefore receive special consideration in the following chapter.

SUMMARY OF CHAPTER II

There are *different kinds* of ideas:

1. From the standpoint of their *origin*: intuitive and abstractive.

2. From the standpoint of their *perfection in representing an object*: clear or obscure; distinct or confused; adequate or inadequate.

3. From the standpoint of their mutual relations: connex, or disparate; identical or diverse; compatible or incompatible; contradictory, privative, contrary, relative.

4. From the standpoint of their *comprehension*: simple or composite; concrete or abstract.

5. From the standpoint of their *extension*: singular, universal, particular, collective.

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Chapter 3

UNIVERSALS

THE PROBLEM OF THE UNIVERSAL IDEA IS OF THE GREATEST importance for philosophy and science. The universals lie at the very foundation of scientific knowledge.

It is the purpose of all science to sift the data of phenomena, analyze the manifold occurrences of the world, and extract from their ever-changing realities that which is permanent and necessary, formulating classifications and laws whose constancy is recognized as valid for all times and all places. These laws must apply to each and every occurrence, and the single occurrences are nothing but the individual manifestations of the general law in operation. Thus, the law of gravitation states that 'Every portion of matter in the universe attracts every other portion, and the stress between them is directly proportional to the product of their masses and inversely proportional to the square of the distance between their centers of mass? Another law, the law of biologic origin, states that 'Every living being derives its origin from another living being, every cell from another cell, every nucleus from another nucleus, and every chromosome from another chromosome.' Laws such as these apply not only to this or that body, here and there,

now and then; *they are valid for all bodies, everywhere and always*. If this were not so, our entire knowledge of the universe would be individualistic and relative, and all science would then collapse. But the very fact of the validity of these classifications and laws presupposes that the nature of the bodies in a class are the same, *with the sameness of a perfect likeness*, so that their actions will also be the same in all places and at all times. The constancy and sameness of these natures amid all individual differences is therefore the reason for the validity of these classifications and laws; and it is also the reason why these natures can be expressed by a universal idea applicable to all and to each single one of a class, because the universal idea represents the *class-nature*. Science, therefore, in the formulation of its classifications and laws, uses universal ideas throughout, and the validity of science (and of philosophy, the super-science) stands and falls with the validity of the universals. This shows us the vital importance of the doctrine of the universals.

NATURE OF THE UNIVERSALS

We must, of course, uphold the validity of science and, in consequence of this, also the validity of the universals; otherwise all our knowledge will end in skepticism. This seems obvious. But the matter is not quite so simple. The universals present a real problem to the scientific philosopher and the philosophic scientist. Since all ideas 'are representations of things as they are in themselves, *universal* ideas must also represent things as they are in

themselves. And right here we have the main difficulty and the crux of the problem.

A universal idea is one whose thought-content (comprehension) applies to a class as a whole and to each and every member of that class. Take the idea 'man' as a 'bodily, living, sentient, rational substance? This idea applies in the same way to each 'man' taken singly and to 'all men' taken together as a class. Now, if the universal idea 'man' is a true representation of man as he is in reality, then this would seem to imply that 'man; as found in reality, has a nature which is single in each individual and one in the whole class. The nature of man would be *one*, because it applies to the class as a whole; and it would be *multiple*, because it applies to each individual of the class. How can it be *one and multiple* at the same time? This seems a patent contradiction, and a contradiction would invalidate the universal idea as a true representation of things. But if this is the case, what value is there in science and in philosophy, since they are based entirely on universals?

The difficulty, however, is more apparent than real. A closer examination of the universals will explain and remove the seeming contradiction. At the same time it will place the universals, and with them science and philosophy, upon a more solid foundation.

The world about us consists of single things, of *individual natures*. There are, for instance, two billion men, each of whom possesses his own individual nature; and each nature possesses a great number of characteristics, consisting of differences in color, weight, size, bodily formation, mental and emotional peculiarities, etc., distinguishing one person

from another. In other words, no two human beings are alike in every respect. It is in this way that our senses perceive individual men; and the phantasm derived from these sense-perceptions represents these individuals with all their concrete characteristics and differences. The intellect, however, in viewing and examining this phantasm, soon realizes that there is something *permanent and common* to all these individuals, notwithstanding the many differences. It perceives that some of these characteristics are always present in each and every one of these individuals and make it to be what it is; these characteristics constitute the *nature or essence* of the individual, without which it cannot exist and without which it *cannot remain what it is*. The other characteristics are such that they may be missing in some individuals, or at least they are clearly recognized to be such that the *nature or essence would remain the same without them*. In the example of 'man,' the intellect perceives that the elements of 'a bodily, living, sentient, rational substance' are found in each individual at all times, and these elements are such that a man would cease to be a 'man,' if any one of them were missing; they therefore constitute the nature or essence of 'man as such, and this nature or essence is common to each and all. The intellect also perceives that all other characteristics, like weight, color, size, bodily formation, mental and emotional peculiarities, etc., are such that they either are or may be absent in some or all individuals, without a man ceasing to be a 'man, i.e., without changing his nature or essence.

Here, then, we have the basis for the origin and validity of universal ideas. From the phantasm, representing the individuals in all their concrete characteristics and differences, the intellect *abstracts* or draws forth the *nature or essence common to all the individuals of a class*, leaving aside the nonessential characteristics which distinguish one from another. This nature or essence is, of course, a *reality*, and is *actually present* in the individuals, independent of our intellect. The intellect now includes this nature or essence in a single idea, and this idea is therefore a true representation of this nature or essence. And since this nature or essence (for instance, 'man' as a 'bodily, living, sentient, rational substance') is recognized by the intellect as being the same with the *sameness of a perfect likeness* in each individual taken singly and in all individuals taken as a class, the comprehension of the idea of 'man' will apply to the class as a whole and to each individual as a member of the class. And that is what we mean by a universal idea. The *universal* is therefore a *true representation* of things as they are in themselves, even though it leaves out of consideration all the differentiating characteristics which accompany this nature or essence in reality. The Chinaman and the Zulu, the Mohawk and the Inca, the Egyptian and the Greek, the Hawaiian and the Eskimo, the Jew and the Slav, the European and the American — all, individually and collectively, possess the same (not identical, but like) common nature or essence. The idea of this common nature or essence then also applies to all, individually and collectively, and is therefore a true universal.

As will be noted from the above, there is *no actually universal nature or essence in the things themselves*, in the sense as if there were one universal nature, for instance of 'man,' and the single individuals would all together share in this one nature; each one possesses his own nature, distinct from that of his fellow men. The universality of the universal idea is thus a *product of the mind*, in virtue of its power to recognize the common nature in the various individuals of a class. The universal *as a universal*, therefore, exists only in the intellect, but its foundation lies in the common nature existing in the things themselves. This has been pithily expressed in the famous principle, *Universalia sunt formaliter in mente, fundamentaliter in rebus ipsis*, that is, 'universals are formally (actually, strictly speaking) in the mind, fundamentally in the things themselves.' Viewed this way, there is no contradiction in the doctrine of the universal. The universal is a true representation of reality and it safeguards the validity of scientific knowledge. Later on, in another department of philosophy, this problem of the universals will receive a fuller treatment, in connection with other cognate systems of thought and philosophy.

If we now summarize the various stages in the development of the universal idea, we find that the following process takes place in our acts. First, we perceive the single *individuals*; then, the *common nature* of these individuals is drawn forth by mental abstraction, leaving aside all the differentiating and individualizing characteristics, and this common nature is expressed by the intellect as a *universal* idea (direct universal); finally, this common nature is compared with all the individuals of the

class and examined as to how it is *present in all as individuals and as a class* (logical universal). This leads us to a consideration of the direct universal with its categories and of the logical universal with its predicables.

DIRECT UNIVERSALS: CATEGORIES

The direct universal is one which expresses the *nature or essence of a thing as the thing is in itself*, without relation to other things or ideas. It considers and manifests only the thought-content, the *comprehension*; the intellect, of course, perceives that it can be applied to one and many at the same time, but as yet it abstains from considering whether and *in what manner* it applies to the individuals and the class. Bearing this in mind, it will not be difficult to understand the various terms used by philosophers to designate this type of universal; it is variously styled as 'direct,' 'real,' 'immediate,' 'metaphysical universal,' a 'universal of the first intention.'

A few words will explain the reason for these various designations. It is called a 'direct' universal, because it expresses the nature of the object as it is found *directly and immediately* in the *real* order of things existing in the world around us. This also explains why it is called an 'immediate' and 'real' universal. It is termed 'metaphysical' universal, because the intellect penetrates '*beyond the physical*' properties of the object and abstracts the nature or essence without its differentiating characteristics. And since it is always the first act or 'intention' of the mind to represent *things as they are in themselves*, before comparing them

with others, the direct universal is also termed a universal of 'first intention.'

An example will show this more clearly. When I form the universal idea 'man' as a 'bodily, living, sentient, rational substance,' or simply as a 'rational animal,' I merely state the nature or essence of 'man' as it exists in the real order of things, independent of all comparison with other things or ideas. I do not consider here, for instance, whether 'rational animal' constitutes the whole or only a part of man's nature, nor whether 'rational animal' is the 'genus' or 'species' of man nor whether and how it can be applied to men as individuals and as a class; to do that would make the universal a *logical* universal, because then I am considering it as it exists or *an idea* in the conceptual order, rather than as the representation of 'man' in the real order of things.

Having explained and defined the direct universal, our next task will be to examine the different *types* of direct universals. Many sorts of divisions have been attempted and made by philosophers, but the most serviceable is still that of Aristotle who classified the direct universals into ten so-called categories or *predicaments*. As the word indicates (*κατηγορία*, predicate, from *κατηγορεῖν*, to predicate, affirm or deny), Aristotle intended the categories to be the supreme and ultimate classes of 'predicates' as found in our judgments and sentences; in as much, however, as these predicates are direct universals, the categories or predicaments are the supreme and ultimate classes of direct universals. *Categories or predicaments* are therefore *the supreme and ultimate classes of direct universals*.

Primarily, then, the categories are classifications of direct universal ideas, but since direct universals are representations of real beings, the categories are also the supreme and ultimate classes of *being* in which things are realized. In logic, of course, we are only concerned with the categories as classes of ideas, so as to establish order in our *knowledge*; but it is impossible to avoid reference to the *reality* of things represented by these universal ideas, because that is the only way in which we can test the value of the categories.

The Aristotelian categories, as has been stated, are ten in number. They are: *substance, quantity, quality, relation, action, passion, when, where, posture, habitus*. Each will be explained in turn.

Substance is a being existing in and for itself, needing no other as a subject in which to exist. Examples: man, lion, dog, tree, bush, house, stone, gold, iron. It is the answer to the question: 'Who or what is this thing?' 'The oak is a *plant*; iron is a *metal*.'

Quantity is a modification of the material (determinable) element in a being; extension, number. Examples: weight, size. It is an answer to the question: 'How much or how big?' 'The pole is *ten feet long*; it weighs *one hundred pounds*.'

Quality is a modification of the formal (determining) element in a being. Examples: intelligence, strength, health, warmth, color, faculties of body and mind, etc. It is an answer to the question: 'What sort of thing is it?' 'The rose is *red*'; 'the stove is *hot*'; 'man is *intelligent*.'

Relation is the reference or bearing of one being to another. Examples: paternity, equality, superiority, likeness. It is an answer to the question: 'To what or whom does it refer?' 'He is a father,' 'a teacher,' 'a president'; 'he is *older*,' 'younger,' 'heavier than—'; 'it is *similar*,' 'equal to—.'

Action is the production of an effect in another; it is expressed by the active, transitive verb. Examples: painting a picture, baking bread, shooting a deer, sawing a board, peeling a potato, driving a car. It is an answer to the question: 'What does it do?' 'The dog is *gnawing* a bone'; 'the boy is *throwing* a stone'; 'the man *broke* his arm.'

Passion (reaction) is the reception of an effect from another. The term is used in the sense of 'bearing, enduring, suffering, receiving, being acted on'; it is expressed by the passive voice of the transitive verb. Examples: being heated, being killed, being shoved, being lifted. It is the answer to the question: 'What is happening to it?' 'The anchor is *dropped*'; 'his hands are *burned*'; 'the flag is furled'; 'the man is shot.'

When is situation in time. Examples: today, tomorrow, yesterday, soon, ten years ago, in the beginning, sometime, in the future. It is the answer to the question: 'When,' 'at what point of time?' 'He was there *last year*'; 'the mail will arrive at 8 a.m.'; 'the ship is docking *now*.'

Where is position in space. Examples: upstairs, in the country, on the mountainside, below deck, in bed, on the table, in the bottle, at home. It is the answer to the question: 'Where is it?' 'He is *downtown*'; 'the book is *on the shelf*'; 'the car is *in the garage*.'

Posture is immanent or intransitive action expressed by an intransitive verb; disposition of parts among themselves, in the sense of 'attitude.' Examples: sitting, upright, standing, lying down, sideways. It is the answer to the question: 'In what attitude?' 'The tower is *leaning*'; 'the dog is *running*'; 'the boy is *lying down*.'

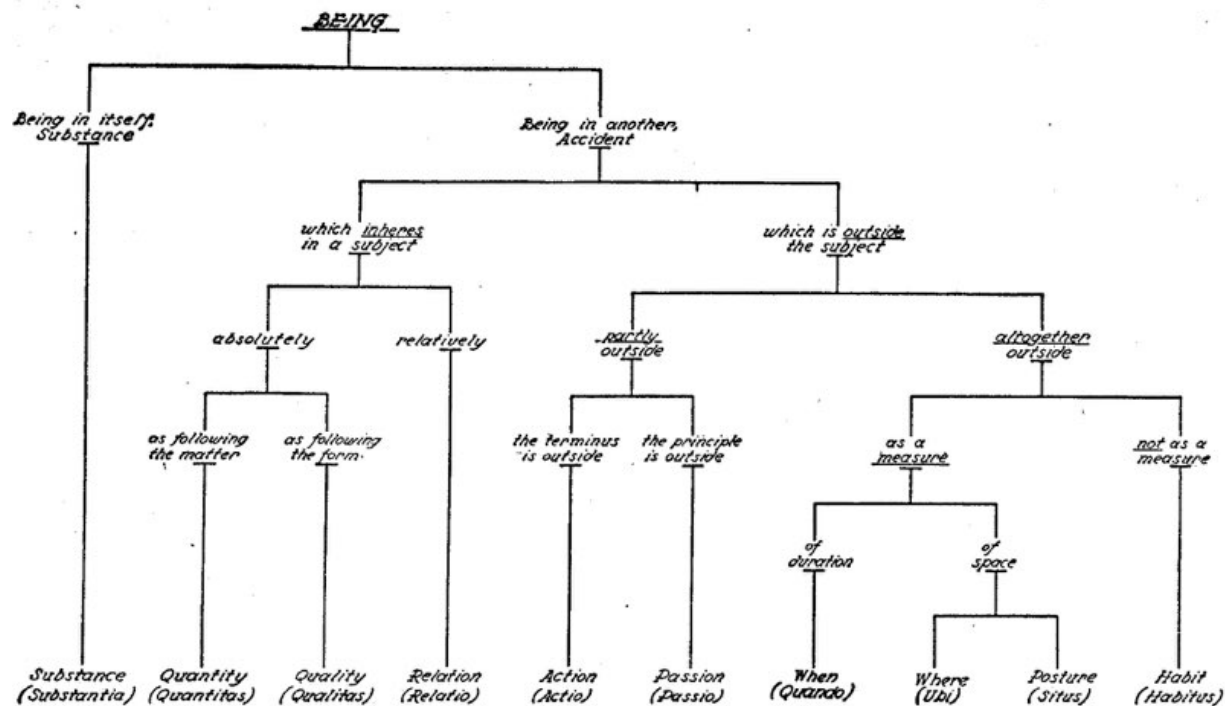
Habitus is clothing, equipment, physical adjuncts; or state, as expressed by the reflexive verb. Examples: clothed, shod, armed, hatted; praising one's self, hurting one's self, loving one's self. It is the answer to the question: 'How surrounded, equipped; how conditioned?' 'He *wears gloves*'; 'she has a red tam *on her head*'; 'he is *disgusted with himself*.'

THE QUESTION NATURALLY ARISES. WHY ARE THERE JUST TEN categories? Is there any special reason in the things themselves for this division? There is. This classification is not arbitrary, but fully grounded on the various kinds of being found in the real order. Thus, *everything either exists in itself or in another*. Now, something that exists in itself is called a substance; if it needs another, a subject, in which it must exist, it is called an accident.

We discover the nine kinds of accidents in the following manner. An accident determines and modifies the subject either *directly in its being or in reference to something outside of it*. In the first case, it modifies the subject either in its material element, and then we have *quantity* (size, weight); or in its formal element, and then we have *quality* (color, goodness, etc.). In the second case, the accident

modifies the subject by giving it a *reference* to something else, and then we have *relation* (similarity, professorship, fatherhood, etc.). The accidents enumerated so far have their source in the subject; other accidents, however, modify their subject in virtue of some reason *outside their subject*. Thus, some accidents modify their subject in virtue of some effect which the subject produces in another, and then we have *action* (heating something, cutting something, etc.); or in virtue of some effect which the *subject receives from another*, and then we have *passion* (being heated, being cut, etc.). Other accidents may modify their subject in virtue of the measurement of its *location*, and then we have *place* (upstairs, in the city, etc.); or in virtue of the measurement of its duration, and then we have *time* (last year, now, tomorrow, etc.); or in virtue of the determination of its attitude and the disposition of its parts, and then we have *posture* (top-heavy, singing, walking, etc.). Finally, some accidents may contribute a purely external modification to their subject by belonging to its *environment*, its *habiliments*, its *conditions*, and then we have *habitus* (clothes, weapons, being well pleased with one's self, etc.). Hence the ten categories.

The reason for the division of categories can also be exemplified by means of the following schematic illustration:



Some thinkers are convinced that they have a legitimate reason to quarrel with Aristotle regarding his list of categories. They claim that the categories are not mutually exclusive and irreducible. 'Action' and 'passion,' for example, are really only two phases or aspects of causality in as much as the change effected by the cause is produced by the one and received by the other. Still, there is a difference; because the subject producing, and the object receiving, the change, may be two different entities. These philosophers have more claim to truth when they assert that 'time' and 'place' and 'posture' are reducible to the more general category of 'quantity.' This is true enough, if we consider the categories as *modes of being*; but the categories are primarily intended as classifications of *ideas* rather than as modes of being, and people as a rule consider ideas of 'time' and 'place' and 'posture' sufficiently

distinct among themselves and in relation to 'quantity' in general to warrant their place in the list as separate categories of universals. As a matter of fact, all the categories, with the exception of 'substance,' are reducible to the general category of 'accident'; this, however, is of no practical use, since we would then be compelled to subdivide 'accident' into further divisions of 'quality,' 'quantity,' 'relation,' etc., giving us the same end- result which Aristotle attained by leaving the supreme class of 'accident' entirely aside. After all, then, Aristotle's division of the direct universals into ten ultimate categories must be considered the most serviceable in establishing order in our knowledge. The number is neither too large nor too small; and the compactness and complexity, the unity and flexibility of the list is such that it is eminently suitable for all practical purposes. No other list devised by philosophers the world over has ever been found to be better. Kant, the German philosopher, set up a list of twelve categories, based upon the classification of judgments according to their quantity, quality, relation, and modality. Since these 'categories' are a classification of *judgments* rather than of ideas, they do not deserve the name of 'categories' in the accepted sense and they will not receive any consideration in this connection. Their purpose in Kant's system is very different from those mentioned here.

Having discussed the direct universal and the categories or predicaments, we must now turn our attention to the logical universal and the predicables.

LOGICAL UNIVERSALS: PREDICABLES

The direct universal expresses the nature of an object in the real order, without considering how it applies to the individuals and the class; it considers merely the comprehension of the idea, in as much as it is a representation of the thing's nature. When, however, the intellect considers also the *extension* of the universal and reflects on the contents of an idea to see *how* it applies to its subjects *precisely as a universal*, namely whether as their complete essence or only as a part of their essence or otherwise, then the universal is taken as a logical universal. It is also styled a 'reflex' universal or a universal of 'second intention,' because the intellect, after forming the direct universal first ('first intention'), turns its attention to ('reflects on') the universal itself as a universal, in order to observe how it applies to one and many. A logical & reflex universal, therefore, is defined as a universal which expresses a nature common to many, *precisely insofar as it is applicable to many*.

An example will show the difference between a direct and a logical universal. When I say 'Peter is a rational animal,' the idea of 'rational animal' is a direct universal, because I am merely stating his nature as it is found in the real order. But when I take the same sentence and say that the predicate 'rational animal' expresses the *complete* essence of Peter's nature, I am comparing the direct universal 'rational animal' with the subject 'Peter' and state *how* this predicate applies to the subject. Thus, too, when I state 'Peter is an animal,' the idea of 'animal' is again a

direct universal. But when I consider the same sentence and state that the predicate 'animal' applies to the subject 'Peter' as only a part of his essence (because, besides being an 'animal,' he is also 'rational'), then again I state *how* the predicate is attributed to the subject. This brings us to the 'predicables.'

Predicables are the *different modes or ways in which a universal can be predicated of its subject*. Now, there are five such modes, five predicables. And there can be neither more nor less. The proof is simple enough. The universal used as the predicate will either express the essence (nature) of the subject, or it will not express the essence. If it expresses the essence, it will either express (1) the *whole* essence, or only a part of it. If only a part of the essence, then either (2) the part which it has in *common* with others or (3) the part which *differentiates* it from all others. But if it does not express the essence, then it expresses something superadded to the essence, and this *superadded* reality must be something either (4) necessarily connected with the essence or (5) merely *accidentally connected* with the essence. There are no further possibilities. The predicables are, therefore, five in number and they are called, in the order enumerated above, 'species,' 'genus,' 'differentia,' 'property,' and 'accident.' These will now be explained.

Species: it is a universal idea which *expresses the whose essence of its subject*. An example will make the meaning clear. In the sentence 'Man is a rational animal,' I am predicating the idea 'rational animal' of the subject 'man.' Upon comparison I find that 'rational animal'

expresses, not a part, but the *whole of 'man's' essence*, because we understand by 'mans precisely this that he is a 'rational animal.' Therefore, the idea 'rational animal' represents the 'species' of the idea 'man,' and this is true, whether I apply the idea 'rational animal' to all men together as a class or to the individual men (Peter, Paul, John, James, etc.) who fall under the class. In a similar way the idea 'irrational animal' is the species of all 'brutes' (insects, birds, fishes, mammals, etc.), because that expresses their complete essence. And when I state 'Plants are organized (living) bodies,' then the predicate of this sentence expresses the whole essence of 'plant' and is, therefore, its 'species.' In the same way 'inanimate body' is the 'species' for all metallic, nonmetallic, and metalloid substances like gold, silver, carbon., arsenic, etc. And 'immaterial substance' is the 'species' for the entire spirit world. In all such cases I express their complete, or *specific*, essence.

As a mere matter of precaution, it is well to note that 'species,' as used in logic here, must not be confused with 'species' as the term is used in the natural sciences; a 'species' in the sciences is a classification of animals and plants which are fertile among themselves. The meaning is totally different.

Genus: it is a universal idea which *expresses a part of the essence of its subject, that part which the subject has in common with other species in this same class*. In the sentence 'Man is an animal,' the predicate 'animal' expresses only a part of man's essence, namely that *part* which 'man' has in common with 'brutes.' 'Man' and 'brute'

are both 'animals,' i.e., 'bodily, living, sentient substances,' and as such, belong together as 'species' under the wider universal 'animal.' For the same reason 'plants' and 'animals' are species under the 'genus' of 'living bodies,' because the latter idea expresses the essence which both have in common; 'living bodies,' therefore, is the 'genus' of plants and animals. So, too, 'body' is the 'genus' for the two species of 'organic' and 'inorganic' beings beneath it; and 'substance' is the 'genus' for 'material' and 'immaterial' beings.

Differentia: it is a *universal idea which expresses a part of the essence of its subject, that part which distinguishes one species from another under the same genus.* 'Man' and 'brute,' for instance, are the two species under the same genus 'animal'; 'animality' is the part of the essence common to both. Now, what distinguishes or differentiates the 'animality' of 'man' from the 'animality' of the 'brute,' so that both belong to different species? It requires some *determining and differentiating* essential element to limit it to the 'species' of 'man' and 'brute.' This differentiating essential element is 'rationality' in man and 'irrationality' in the brute. 'Rationality,' added to 'animality,' constitutes the whole essence of 'man,' and this is his 'species' ('man is a rational animal'); 'irrationality,' added to 'animality,' constitutes the whole essence of 'brute,' and this is its 'species' (the 'brute is an irrational animal'). In a similar manner, 'organism' is the 'genus' for animals and plants; this generic essence becomes the specific essence of 'animals' and 'plants' by adding to it the 'differentia' of 'sentient' and 'non-sentient': an 'animal' is a 'sentient

organism,' while a 'plant' is a 'non-sentient organism.' By adding 'living' and 'nonliving' to the genus 'bodily substance,' this genus is made into the two species, 'organic' and 'inorganic.' The generic essence of 'substance' becomes the specific essence of 'body' and 'spirit' by the addition of the 'differentia' of 'material' and 'immaterial.' The differentia, therefore, narrows and limits a genus to a species.

Property: it is a universal idea which *expresses something which flow: necessarily from the essence, though not of the essence itself.* Since the 'property' is considered as something necessarily connected with the essence of a thing, it will have to be present in every member of the class; wherever the essence is found, there also is found this property; it can never be missing. The 'power of speech,' the 'faculty to use tools and to cook food,' the 'ability to laugh,' are properties inherent in man's essence as a 'rational animal,' because they presuppose 'rationality' (intelligence) and 'animality' (bodily structure). The peculiarity of the 'property' is well expressed in the axiom: '*Proprium convenit omni, soli, et semper*; the property applies to *all*, to them *alone*, and *always*.' If this attribute would not apply to every member of the class, or if it were found outside this class, or if it were not always present, it would not be considered a 'property.'

This is taking 'property' in its strictest sense. However, not all philosophers are willing to limit the application of 'property' to so narrow a meaning; they give a wider interpretation to the idea of a 'property.' The philosopher Porphyry, in his *Isagoge*, enumerates four different

interpretations. "Property they divide in four ways: for it is that which happens to some one species alone, though not to every (individual of that species), as to a man to heal, or to geometrize: that also which happens to a whole species, though not to that alone, as to man to be a biped: that again, which happens to a species alone, and to every (individual of it), and at a certain time, as to every man to become gray in old age: in the fourth place, it is that in which it concurs (to happen) to one species alone, and to every (individual of it), and always, as risibility to a man; for though he does not always laugh, yet he is said to be risible, not from his always laughing, but from being naturally adapted to laugh, and this is always inherent in him, in the same way as neighing in a horse." (Chapter 1)

Accident: It is a universal idea *which expresses something of its subject which is neither of its essence nor necessarily connected with its essence, but is merely contingently connected with the essence.* Contingent' is the same as 'not necessary. Anything nonessential, which is not a 'property,' belongs to the predicable 'accident.' If we accept the meaning of 'property' in its strictest sense as something which is found in all members of a species, in them alone and always, then even things like the hands, feet, sex, ears, eyes, nerves, heart, etc., of man would be considered as accidents here. However, no matter what interpretation we place upon the predicable 'property,' certain superadded realities will always have to be classed as 'accidents'; such realities are 'the act of thinking, writing, walking, being well, pleasure, white, virtuous, married, phlegmatic, tall,' etc. Some accidents are

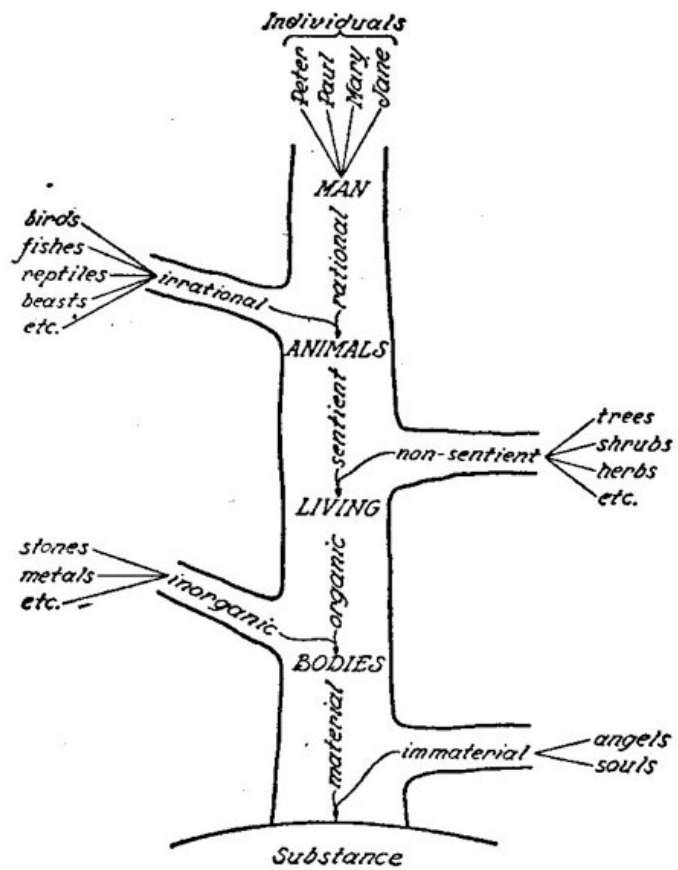
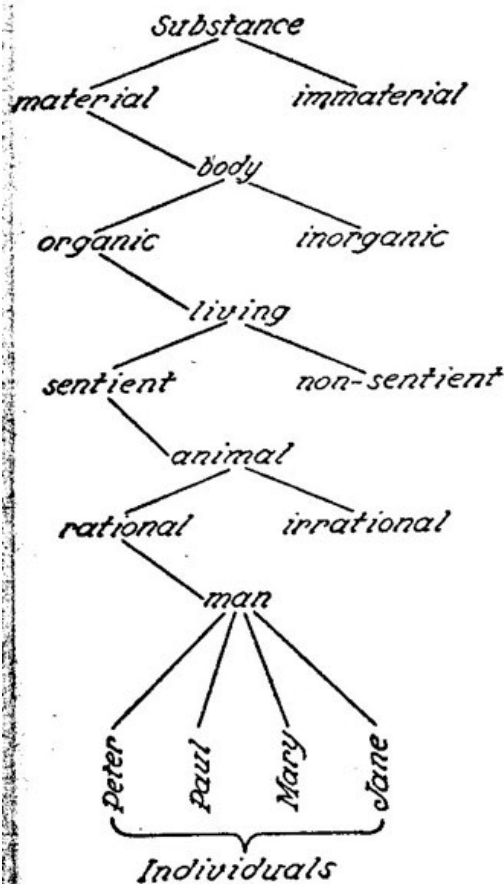
obviously *separable*, as 'the act of walking, sleeping, reading, virtue, sobriety, health,' etc. Others are inseparable accidents, as 'male and female sex, black color in an Ethiopian'; and if we accept 'property' in its strictest sense, then things like 'heart, head, nerves, bones,' etc., would be inseparable accidents.

It should be noted that there is a great difference between 'accident' as a *category* and '*accident*' as a *predicable*. The categorical 'accident' is never a substance, but needs a substance as a subject in which to exist; 'accident' as a predicable is something nonessential, superadded to the essence in such a way that it has *no necessary connection with the essence*. 'Power of speech,' for instance, is not an 'accident' as a predicable, because it is a 'property' of man, necessarily connected with his essence; but 'power of speech' belongs to the category of 'quality,' and 'quality' is one of the nine categories under 'accident.' Even things like beards and tumors, though 'substances' from the standpoint of categories, are only 'accidents' considered as a predicable, because they are only contingently and adventitiously connected with the essence of man. It is unfortunate that the idea of 'accident' is taken in such widely different senses, but the fact is there and the custom of philosophic language will no longer admit of a change.

From this discussion of the various predicables it will be plain that there exists a *hierarchy of genera* and species. A class may be a genus from the standpoint of certain species below it and itself a species with reference to a class above it. 'Body,' for instance, is a species under the genus

‘substance’ and a genus with regard to the species ‘living’ and ‘nonliving’ bodies below it. We, therefore, arrive at the following classification in this hierarchy. The *highest* genus is the one which has no other genus above it. An *intermediate* (subaltern) genus is one which has at least one genus above and below it. The *lowest* genus is one which has species below it, but no genus. The highest species is the species immediately under the highest genus. The intermediate species has at least one species above and below it. The *lowest* species (or the species in the strict sense) is one which has no other species, but only *individuals* below it. A remote genus is one which has species below it, with at least one other genus in between; for instance, ‘a living body’ with regard to ‘man,’ because the genus ‘animal’ lies between the two. A proximate genus is one which is immediately above a certain species; thus, ‘animal’ is the proximate genus of ‘man,’ since no other genus lies between them.

The scale of substantial beings, descending from the highest genus ‘substance’ to the individuals under the lowest species ‘man’ is exemplified in the following arrangement:



The illustration at the right represents the *Tree of Porphyry*. It is named after the philosopher Porphyry, who lived in the third century and who compared the series of genera and species leading from substance to man to the branching of a tree. The relations between the various genera and species can here be seen at a glance. The Porphyrian Tree, of course, exemplifies the scale of beings in the line of *substances*, because these are the broader classifications that interest the philosopher. Each special science, however, has its own classification according to genus, species, differentia, property, and accident. Botany, for instance, which treats exclusively of 'plants,' has its own

genera, species, etc. So also, mathematics, zoology, biology, bacteriology, and all the others.

From the above discussion of the direct universal with its categories and of the logical universal with its predicables, the differences between these two classes of ideas will be more readily understood. The *categories* classify our ideas according to the *things* which they represent, as these things are in their own proper nature. The mere mention of an idea (thing) will be sufficient to place it in its proper category. 'Animal,' for example, belongs to the category of 'substance'; 'height,' to 'quantity'; 'blue,' to 'quality'; 'whipping,' to 'action'; 'cut,' to 'passion'; 'president,' to 'relation'; and so forth. But when I ask, "To what predicable does 'animal' belong?" I cannot answer this question directly, but must ask another question: "To what other idea are you comparing 'animal'?" In other words, a *predicable* is a classification of ideas in their *relation to each other*. To take the example of 'animal,' I would have to formulate a question something like the following: "Under what predicable does 'animal' fall, when compared to 'man' and 'living body'?" The answer would be: "The idea 'animal,' when compared to the idea 'man,' is the 'genus' of 'man'; and when compared to the idea 'living body,' it is a 'species' of 'living body.'" Alone, by itself, no idea can be placed under a predicable; it must first be compared with another idea, and the relation of the two toward each other be established, before we can designate it a 'genus,' or a 'species,' or a 'differentia,' or a 'property,' or an 'accident.'

Having considered the idea under its various aspects and divisions, we must now turn our attention to the term,

the expression of language used to designate the idea.

THE CATEGORIES

This chart represents the *10 categories* (direct universals, or predicaments): Substance, quantity, quality, relation, action, passion, when, where, posture, and habitus. The chart shows the relation between “substance” and the “accidents.” The “accidents,” as will be noticed, are simply *modifications of each individual substance*. This relation between them is real, since it is based on reality as it exists in nature.

The “Porphyrian Tree” restricts itself to the main divisions of the category “substance”; these main divisions are indicated by the *trunk and main branches*.

Each subdivision of a main division can, of course, be worked out in greater detail than is done here; the divisions are merely indicated. But one line of two main divisions has been worked out to its 9 accidents; the others can be worked out in similar fashion.

Everything on the above chart refers to direct universals or categories (not to logical universals or predicables).

CATEGORIES AND PREDICABLES

This chart exemplifies the *relation* between the *categories* and the *predicables*. It will be noticed that predicables can be applied to *any single* item of the categories, whether this item be a “substance” or an “accident.” One item of three of the main divisions of “substance” has been chosen as an

example; and one categorical accident of man, namely “thinking,” has also been selected and the five predicables applied to it.

It will also be noticed that every categorical substance or accident, in order that the predicables may be applied, must *have something said of it*. In other words, a sentence must be made, in which this categorical substance or accident is the “subject;” and the “something said of it” is the “predicate” of this subject. It is then the purpose of the predicables to ascertain in what *relation* this predicate stands to the subject, whether as a *genus*, or a *species*, or a specific *difference*, or a *property*, or an *accident*.

The predicables, therefore, show how (in what manner, whether as genus, species, specific difference, property, or accident) *one idea* (predicate) *can be applied to another* (to the subject); hence, the term “predicable.” These predicables thus express a relation of the mind between *one* idea and *another* idea; such a relation being “logical,” the result of a “reflex” operation of the mind on its own mental act, the predicables are also called *logical* or *reflex* universals.

SUMMARY OF CHAPTER III

Since the classifications and laws of science are expressed in universal ideas, the validity of science depends on the universals as a true representation of reality. Universals represent reality in a true fashion, because the *nature or essence* of things is the same with the sameness of a perfect likeness in all individuals of a class. Therefore the intellect is justified in representing this common nature as a universal. There are two kinds of universals, the direct and the logical universal.

1. The *direct universal* expresses the nature or essence of a thing as it is in itself. The direct universal is divided into ten ultimate classes, called categories: *substance, quantity, quality, relation, action, passion, when, where, posture, habitus*.

2. The *logical universal* expresses the *nature common to many, precisely as it is applicable to many*. It presupposes a comparison between one idea and another and expresses the relationship between them. There are five such relationships, called predicables: genus, species, differentia, property, and accident.

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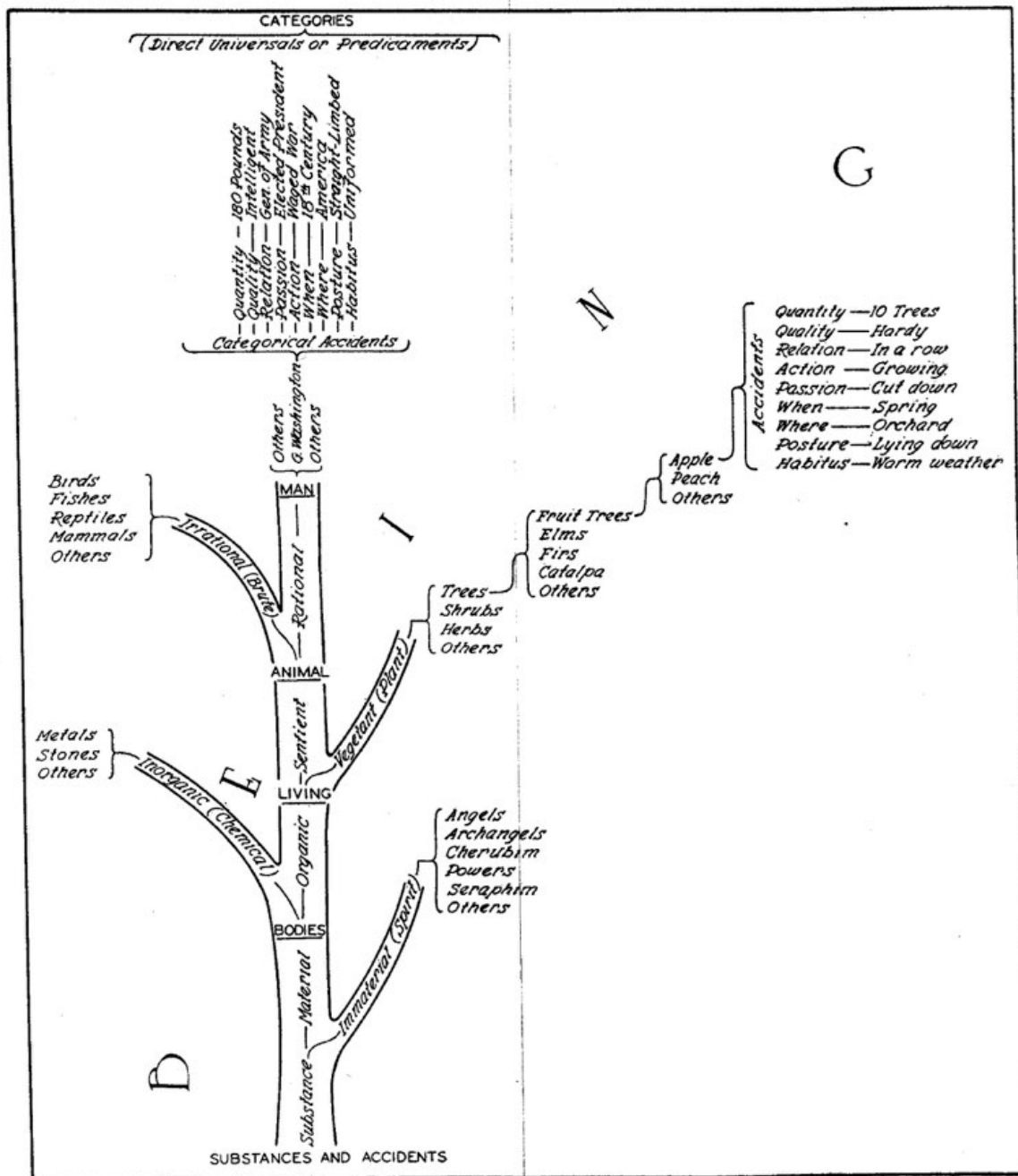


Chart I. Categories.

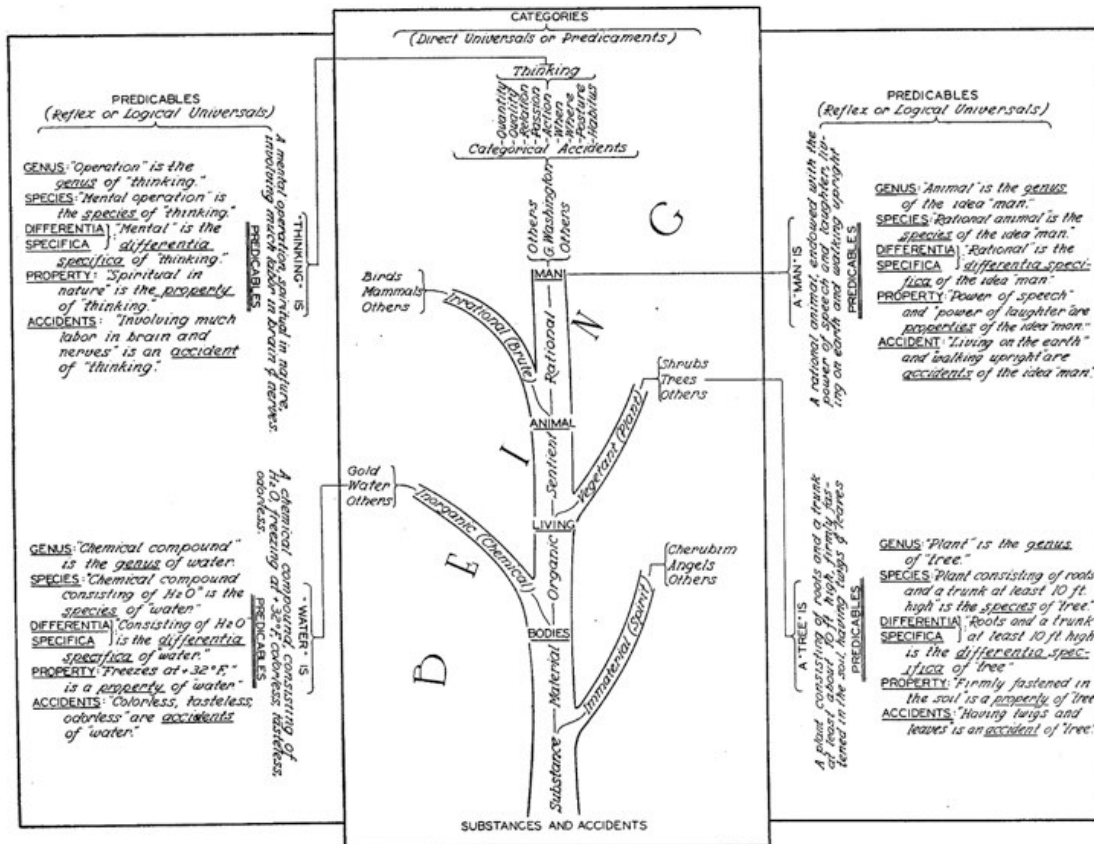


Chart II. Categories and Predicables.

Chapter 4

TERMS

IN OUR MIND AND IN OUR DISCUSSIONS, IDEAS ARE ALWAYS couched in definite words, in written or spoken or mentally pronounced language, in *terms*. It is important to understand these terms and their relation to the ideas for which they stand. The investigation into the nature, use, and classification of terms will furnish some interesting sidelights on the function of language relative to ideas.

NATURE OF TERMS

A *term* is a *sensible conventional sign, expressive of an idea*. This needs an explanation.

A *sign* is something which conveys to the mind a knowledge of something else. Three elements are necessary for a 'sign': the signified thing; the signifying thing; the connection between the two. The signified thing becomes known; the signifying thing makes it known; the connection between the two is the power of the signifying thing to convey knowledge of the signified thing to the mind. There are signs and signs. Some are *formal* signs, based upon a similitude or picturization of the thing signified. Such are

paintings, photographs, drawings, silhouettes, light-images (as in motion pictures), statue portraits. Others are *instrumental* signs, based upon *something else than a similitude*. Since words are not pictures, they are instrumental signs. Some instrumental signs are *natural*, since by their very nature they signify something. Smoke signifies fire; pain signifies a disease or a wound or some systemic irregularity; laughter signifies joy; a distorted face and clenched fists signify anger, etc. Other instrumental signs are *conventional*; their power to signify something is entirely due to convention, usage, agreement, not because of any natural connection between them. There is no earthly natural reason why a pole with red, white, and blue stripes should signify a barber shop, or why red and green lights should signify danger and safety, or why a flag should signify a particular country. Such signs are arbitrary, conventional.

Terms are *conventional* signs. Although it is natural for a man to express his ideas in words, there is no natural connection between the particular combination of vowels and consonants and the thing signified. If there were such a natural connection, then there could be only one language among men, because all men have the same nature; the fact of a diversity of languages proves that the selection of a particular word to signify a particular idea is purely conventional. The animal we call 'horse' could be designated by any other combination of vowels and consonants. In fact, this is the case: the Germans call it 'Pferd,' the French 'cheval,' the Romans 'equus,' the Greeks 'hippos.'

Terms are *sensible* conventional signs. They must be able to be perceived by the sense faculty of man, in order to be styled 'words' or 'terms,' because 'terms' or 'words' are always a combination of vowels and consonants. Written words, of course, always stand for spoken words.

Terms are sensible conventional signs, *expressive of ideas*. It is the very purpose of words or terms to express ideas, and this is the characteristic which distinguishes this kind of sign from all others. Weeping is a sign of grief, laughter is a sign of hilarity; but only words can express the ideas which are the cause of grief and hilarity. Primarily, words are used to convey the *ideas* of one mind to another mind; since, however, ideas stand for things, words have the secondary purpose of conveying information about things to another mind. Viewed from a practical standpoint, of course, we seldom realize that words or terms stand for ideas at all; as a rule, we immediately turn our attention to the things which are (indirectly and secondarily) expressed by the words or terms.

CLASSIFICATION OF TERMS

Having considered the nature of the term, we must next investigate the various kinds of terms. From the standpoint of *perfect* and *imperfect signification*, terms are divided into different classes.

We have univocal, equivocal, and analogous terms. A *univocal* term is one that is constantly used in an *identical sense*. The terms 'man, dog, automobile, sun, gold, mercury, carbon, sulphur,' etc., are such. An *equivocal* term is one

that is used in *entirely different meanings*. For instance, 'pens as an instrument for writing and as an inclosure for animals; 'coach' as a vehicle and as an athletic director; 'page' as a leaf in a book and as an attendant at court. Such terms are equivocal when spoken and written. Others are equivocal when written, but not when spoken; for instance, 'bow' as a knot in a ribbon and 'bow' as a part of a ship. Others are equivocal when spoken, but not when written; as, 'flair' and 'flare.' An *analogous* term is one that is applied to *unlike, but related, things*, so that it is used in a meaning that is partly the same and partly different. There is always some relation between such things, entitling the mind to designate them by the same term; hence, such a term is not equivocal. Due to their partial unlikeness, however, the term is not used in a strictly univocal sense; hence the term is not univocal. An analogous term, therefore, designates related things in such a manner that it applies primarily to one thing and then secondarily to other things.

An analogous term may be based either on an analogy of *proportion* or on an analogy of *attribution*. In the first case the term is applied to unlike things because of some proportion or resemblance existing between them. Metaphors belong to this class. The base of a mountain is called the 'foot' of the mountain because of its resemblance to the position of the foot in a human body; the intellect is called the 'eye' of the soul because of the resemblance of its function to that of the eye in the body. In the case of an analogy of attribution the term is applied in an absolute sense to one thing and is then attributed to other things

because of an intrinsic relation which they have toward the first. 'Health,' for instance, is a condition affecting a living body; here the term is applied in an absolute sense. 'Medicine' is termed 'healthy,' because it restores health; 'complexion' is termed 'healthy,' because it indicates health; 'food' is termed 'healthy,' because it sustains health; 'exercise' is termed 'healthy,' because it promotes health. The term 'healthy,' therefore, is an analogous term, because its meaning in these instances is neither strictly equivocal nor strictly Univocal, but partly the same and partly different.

Furthermore, we distinguish between *fixed* and vague terms. Fixed terms are those whose signification remains the *same*. Terms like 'triangle,' 'man,' 'house,' 'plant,' etc., do not change in meaning. But terms like 'natural,' 'abnormal,' 'good,' 'love,' 'sickness,' 'bright,' etc., are subject to many shades and degrees of meaning; they are vague terms, because their meaning *shifts* according to the *viewpoint* and use of the *individual* speaker.

From the standpoint of the *comprehension of the idea* expressed by the term, we have various divisions of terms.

One such is the division into positive and negative terms. A positive term is one which signifies a real, *actual* thing, for instance, 'God,' 'earth,' 'rose,' 'germ,' 'pencil,' 'star,' 'light.' A negative term signifies the *absence of a thing*; as 'darkness,' 'death,' 'blindness,' 'ignorance,' 'sterility.' Some terms are negative in form, but really positive in meaning, as 'immaterial,' 'infinite,' 'uncreated,' 'immortal.' Others are positive in form, but negative in meaning, as 'sin,' 'death,'

'sterile,' 'dark'; the words show no negation although they mean the absence of something.

Another distinction divides terms into *concrete* and *abstract*, in as much as they stand for concrete or abstract ideas. 'Man' and 'white' are, therefore, concrete terms, while 'humanity' and 'whiteness' are abstract.

Then we have simple and compound terms. A *simple* (in-complex) term consists of a single word, as 'being,' 'philosopher,' 'lawyer,' 'house,' 'humanity,' 'mind.' A *compound* (complex) term consists of more than one word, like 'court house,' 'mortal man,' 'the President of the United States,' 'the playing child,' 'the cold snow,' etc.

Again, we distinguish between *connex* and *disparate* terms, in as much as they express connex or disparate ideas. 'Mother — child,' and 'teacher — pupil' are connex; 'man — healthy' and 'dog — sleeping' are disparate.

Similarly, we have *real* terms (terms of 'first intention') and *logical* terms (terms of 'second intention'), expressing real or logical ideas. 'Dog,' 'house,' 'car,' are real terms; 'genus,' 'predicate,' 'category' are logical terms.

Considered from the standpoint of the *extension of the ideas* expressed by the term, we divide terms into singular, universal, particular, and collective. The understanding of these terms should cause no difficulty. A singular term applies to one individual only. This can be done by using a proper name, like 'Napoleon, Louis Pasteur, Franklin Roosevelt,' or by prefixing a demonstrative pronoun, as 'that automobile, this house'; or by using some restrictive qualification, as 'the discoverer of X-rays,' 'of radium'; or by

an enumeration of the 'individuating characteristics' of form, figure, place, time, ancestry, country, and name.

A universal term, of course, is one which expresses a universal idea and can be applied to each individual of a class and to the class itself; such are the terms 'man,' 'tree,' 'street,' 'star,' 'desk,' 'book,' etc.

A particular term is a universal term taken partly and indeterminately. Words like 'some,' 'many,' 'a portion of,' 'certain,' when added to a universal term, make it particular; as when we say 'Certain automobiles are costly,' 'some men are redheads,' 'many children are good,' 'a portion of the money was lost.'

A collective term stands for a collective idea, one that represents a class, but does not apply to the individuals of the class taken singularly. 'Family,' 'army,' 'government,' 'flock,' 'heap,' etc., are such.

SUPPOSITION OF TERMS

All terms have a definite meaning. Nevertheless, this meaning can be taken in different ways, depending upon the *use* to which we put the terms; and this use is not always the same. Logicians call this the 'supposition' of a term. The *supposition is the use of a term for the thing which it signifies*. We cannot always produce the actual thing we wish to discuss, and so we make use of words or terms to stand for (*sub-ponere, suppositio*) the thing itself. This necessitates a clear understanding of the *use* of terms, for after all, everything depends upon the meaning we give to terms.

The supposition of a term may be either *material or formal*. It is material when we consider it merely as a word, without any regard to its inherent meaning. When I say 'man is a 'monosyllable' or a 'noun,' I am obviously not considering its inherent meaning. When, however, I consider it according to its signification, then I take the term in its *formal* supposition *as a term*; for instance, 'Man is a rational animal.'

This formal supposition will be either *real or logical*. It is real, when the term is used for a thing in its natural being or existence; as, 'Man is a living substance.' But if I use the term according to its logical existence in the operations of the mind, it is logical; as when I say 'Man is the "species" of all the individuals in its class.'

The real supposition may be either *absolute or personal*. It will be absolute, when the term designates merely the nature as such, without any reference to the individuals who are the bearers of this nature. It is in this sense that we use the term 'man,' when we state: 'Man is mortal.' But when the term signifies both the *nature and the bearers* of this common nature, then the supposition is personal. For instance, 'All men are mortal,' '*every horse* is an animal'; 'all' and 'every' make it personal.

The personal supposition of a term is again subdivided into a *distributive* and *collective* supposition. It is distributive, when the term is used for all the individuals taken *singly* and *together*, as in the sentence 'All men are mortal,' because we mean to assert that each and every man and all taken together are mortal. It is collective, when the term applies to all *taken together*, but not to them taken

singly; thus, the statement 'All parts equal the total' is true when I take the term 'all parts' together, but one cannot say that 'each single part' will 'equal the total,' because that is not the meaning and it is obviously false. Even in the distributive supposition of a term, however, one must be careful. At times this supposition will apply in a *completely* distributive sense, including all *individuals, species and genera* of the class, as when we assert that 'Every living thing is a substance.' At other times it will apply only to the *species and genera* of a class, but *not* to the individuals; for example, 'Every land animal was present in the ark of Noah,' meaning only the species and genera, but not the individuals.

At first blush it may seem as if the enumeration and explanation of these various types and suppositions of terms can be of no particular practical value. To judge in this fashion would be a serious error. We must bear in mind that terms stand for ideas, just as ideas stand for things. They therefore form the warp and woof of the fabric of our knowledge. If logic is to be of assistance to us in the science of correct thinking, we must first acquire a thorough understanding of the *materials* which we must use in forming judgments and argumentations, because only through judgments and argumentations can we discover hidden truths of more than obvious value. Much confusion and many errors in argumentations would be avoided, if ideas and terms were always clear and if the exact meaning of ideas and terms were constantly retained in the course of a discussion. The subject matter of philosophy is so deep

and difficult in itself, that it should not be complicated by the vagueness of ideas and the unsettled use of terms.

SUMMARY OF CHAPTER IV

A term is a sensible conventional sign, expressive of an idea. Terms are of many kinds.

1. From the standpoint of *perfect* and *imperfect* signification, terms are univocal, equivocal, or analogous. A univocal term is one that is constantly used in an identical sense. An equivocal term is one that is used in entirely different meanings. An analogous term is one that is applied to unlike, but related, things, so that it is used in a meaning that is partly the same and partly different. Then, too, we have fixed and vague terms.

From the standpoint of the *comprehension* of the idea expressed, we distinguish between positive and negative terms, concrete and abstract terms, simple and compound terms, connex and disparate terms.

From the standpoint of the *extension* of the idea expressed, we have singular, universal, particular, and collective terms.

2. The *supposition* of a term is its use for the thing which it signifies. This use varies.

The supposition of a term will be material, or formal; the formal supposition is either logical or real; the real supposition is either absolute or personal; the personal supposition is either distributive or collective; and the distributive supposition may be either completely or incompletely distributive.

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Chapter 5

DEFINITION AND DIVISION

CLEARNESS OF IDEAS IS ESSENTIAL TO CORRECT THINKING. THE greatest obstacle to the pursuit of truth lies in the vagueness and confusedness of ideas. Ideas will be clear when the mind has an accurate knowledge of their comprehension and extension. The comprehension tells us what the idea implies, what essential attributes it contains in itself, what information it has concerning the thing it represents; the extension gives us the application of the idea to the individuals, shows us how and in how many objects the idea is realized, delimits the extent of the field in which this idea can be found. Two important processes for gauging the comprehension and extension of ideas are definition and division.

DEFINITION

By *definition* we understand a *statement which explains what a thing is*. It answers the question: "What is this thing?" We can give the answer when we know the *comprehension* of the idea which represents this thing. Since, however, the reality of the thing exists before we

form an idea of it, and since the idea is an intellectual image of the thing, it stands to reason that we must first obtain an accurate knowledge of the *thing itself*, before we can give an accurate definition of it. The ideal definition would be one which would reveal to us the complete nature of things and classes in their essentials and nonessentials; the limited character of our knowledge, however, makes this a practical impossibility, and as a result we must often be satisfied with incomplete and relatively inadequate definitions. In consequence of this there are different kinds of definitions.

We distinguish, first of all, between nominal and real definitions. A *nominal* definition explains *what a word means*, while a *real* definition explains *what a thing is*. At times a word or term may be unclear or ambiguous, or it may be used in some special technical sense in a particular science, or the speaker may wish it understood in a definite meaning in his discussion in order to avoid verbal disputes. A nominal definition is a legitimate definition in these cases, because words or terms are 'signs,' and it may be necessary to explain their signification, since that is precisely what 'signs' mean.

On freight cars, during the World War in France, soldiers saw the painted words 'Huit Chevaux, Quarante Hommes,' and asked, 'What does that mean?' The answer 'Eight Horses, Forty Men' was a nominal definition. Similarly, if I define a 'bi-linguist' as 'one who speaks two languages.' So, too, when the philosopher says: 'By "accident" I understand "a being which needs a subject to exist in,"' he explains the sense of a technical term. And when a speaker states that

he wishes the term 'soul' to mean 'the vital principle in an organized body,' he merely desires to specify the meaning of the term 'soul' so as to avoid confusion in his discussion. Of course, in the last two instances mentioned, the definition of the term also involves an explanation of the thing represented by the term, but the primary purpose is merely to indicate the meaning of the term as such.

A *real* definition is a *statement explaining what a thing is in itself*. The perfect real definition would be one which briefly but fully explains the essential nature of a thing. This, however, in most cases, is a goal far beyond the reach of man, since the different kinds of beings in the world are so vast in number and so complex in structure and operation, that man's mind can seldom distinguish between their essentials and nonessentials.

An *essential* (*quidditative*) definition is a statement which explains *the essence or nature of a thing*. It will be essential when we can define a thing by its *proximate genus* and *specific differentia*. This is the perfect definition. The proximate genus includes within its comprehension all the essential elements of the genera above it and therefore includes all the beings that are cognate or similar in nature to the thing which is to be defined; the specific differentia, on the other hand, brings in the distinctive element which separates this thing from all others of a similar nature, by showing in what manner it is different from all others, with which it might be erroneously identified. Take as example 'man.' 'Man' is defined as a 'rational animal'; 'animal' is his proximate genus, 'rational' is his specific differentia. The proximate genus 'animal' includes within its comprehension

all the essential elements of the genera above it, because an 'animal' is a 'sentient, living, material substance'; and this shows all the beings which are in some way similar to man — brutes, plants, inanimate bodies, substances. The specific differentia 'rational' is the one distinctive essential element which distinguishes man from every other 'animal'; it thereby makes him a species of his own and separates him from every other 'animal' and every other genus above 'animal,' including plants, inanimate bodies, and substances. Furthermore, since the specific differentia is the distinctive element in the essence of man, it includes all the characteristic 'properties' which lie in the nature of man *as man*, namely, power of speech, free will, morality, social life, government, religion, immortality, etc. — realities which are absent in all other beings in this physical world.

We can make such essential definitions also of the genera above man up to substance. But when we attempt an essential definition of the various kinds of brutes, plants, and bodies, we fail, because we are unable to recognize the particular essential element which distinguishes, for instance, the horse from the dog, the rose from the lily, oxygen from hydrogen. In these cases, unfortunately, the limitation of our intellectual powers forces us to be content with a descriptive definition.

A ***descriptive*** definition is a statement which explains what a thing is in itself by enumerating the *positive, but nonessential, elements of its nature*. As a rule, the physical sciences and natural history cannot go beyond a descriptive definition. Even in this type not all are of the same value.

We distinguish between distinctive, genetic, causal, and accidental definitions.

A **distinctive** definition is one which explains a thing *by its properties*. 'Property' here is taken in its strict sense as something necessarily connected with the essence, without being of the essence itself. This definition approaches closest to the essential definition and is, therefore, next in importance to it. When I say that man is an 'animal capable of articulated speech,' an 'animal using tools,' an 'animal that can cook its food,' an 'animal capable of morality,' then I am defining 'man' by means of a genus and a property. In a like manner, physicists define, for example, 'oxygen' as 'a colorless, odorless, tasteless gas, 1.105 times as heavy as air, liquefiable at and below -118° C'; this defines oxygen by its 'properties.'

A **genetic** definition explains a thing by its *process of origin or production*. Thus, I can define 'water' as a 'body resulting from the combination of two atoms of hydrogen with one atom of oxygen'; a 'circle' as 'a geometrical figure constructed by the revolution of a straight line in a plane round one of its extremities'; a 'lunar eclipse' as 'a shutting off of the light of the moon produced by the interposition of the earth between moon and sun.' These are scientific definitions, accurate and expressive enough, but they tell us nothing of the intrinsic essence of the things defined.

A **causal** definition is the explanation of a thing by means of *its efficient or final causes*. 'Efficient' causes are causes which produce a thing; 'final' cause are the end, the purpose, on account of which a thing is produced. Thus, the 'human soul' can be defined as 'an immaterial substance

created by God'; a 'painting' is 'a picture in colors produced by an artist.' These definitions are based on efficient causes. Here are examples of definitions based on final causes or purposes: 'A watch is a mechanical device to indicate the hours of the day,' 'the ear is a bodily organ constructed to perceive sound waves.'

An ***accidental*** definition is an explanation of a thing based on characteristics which are *neither essential nor necessarily connected with the essence*. This is rather a description than a definition properly so called. The subclasses of the natural sciences and all individuals are defined this way. We have numerous examples of this kind in police circulars describing wanted criminals. For instance: 'John Walter, alias Joseph Brown; age, 42 years; height, 5 ft. 10 in.; weight, 158 pounds; hair, black; complexion, sallow; eyes, brown; two gold teeth, upper front left; first joint right index finger missing; scar, crescent-shaped, on left cheek; race, white.'

When speaking of definitions, one must always bear in mind that certain terms and ideas and things are *incapable of definition*. They can be known, but not defined. Some qualities are so *simple* in character that they cannot be analyzed, but only experienced; such are the elemental qualities of heat, color, pleasure, pain, tone, taste, etc. One can give another a piece of sugar to taste and say: 'That is sweet'; a pickle, and say: 'That is sour'; show him sealing wax and say: 'That is red'; pinch him and say: 'That is pain'; burn him and say: 'That is heat.' But no amount of words will enable a man born blind to understand the 'red' of a rose or the 'blue' of the sky or the 'light' of the moon. Some

ideas are so *general* that they cannot be defined by a strict definition. The supreme genera 'substance' and 'accident' are such. The genus above them would be 'being.' However, 'being' cannot be a 'genus.' For a strict definition a specific differentia would have to be found which lies *outside* the comprehension of 'being'; but the only thing outside the comprehension of 'being' would be 'non-being' or 'nothing;' and 'nothing' is, of course, no differentia for anything. Supreme and fundamental ideas like 'substance,' 'accident,' 'being,' 'one,' 'thing,' etc., admit of no strict definition and are therefore called *transcendental*. More will be said of these in metaphysics.

RULES OF DEFINITION

In order that a definition be correct, certain *rules* will have to be observed. They are indicated by the very nature of the definition.

The definition must be *clearer than the thing defined*; otherwise it loses its 'Value, since it is the purpose of the definition to lead the mind from the known to the unknown and to remove the obscurity of ideas by explaining them. Hence, *metaphorical* expressions must be avoided; for instance, 'Man is the king of creation,' 'the lion is the lord of beasts.' Words should not be used which are more unusual than the idea to be explained; it would thus be wrong to define a 'lie' as an 'intentional terminological inexactitude,' and a 'liar' as a 'person whose sinuosity of speech is due to a superficial succedaneum for veracious reality.' A 'blush,' of course is a 'reddening of the cheeks due to modesty,

shame, or embarrassment,' but some wag preferred to define it as 'a temporary erythema and calorific effulgence of the physiognomy, aetiolized by the perceptiveness of the sensorium, in a predicament of inequilibrium, from a sense of shame, anger, or other cause, eventuating in a paresis of the vaso-motorial, muscular filaments of the facial capillaries, whereby, being divested of their elasticity, they become suffused with a radiance emanating from an intimidated praecordia.' Such a definition is, of course, absurd; nevertheless, science is entitled to define its ideas in technical terms which, though unintelligible to the lay mind, are clear and exact for the professional scientist for whose benefit the explanation is intended. Witness Herbert Spencer's famous definition of evolution: 'Evolution is an integration of matter and a concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity; and during which the retained motion undergoes a parallel transformation.' Though the ordinary reader may stare at such a definition, it is a perfectly legitimate explanation when addressed to the instructed scientific student.

Another rule is, that the definition must *not contain the idea to be defined*, because in that case an attempt is made to explain something by itself, while the thing itself needs explaining. The definition of 'man' as 'homo sapiens' is faulty from this standpoint, because 'homo' is the Latin equivalent for the English term 'man.' It is a violation of this rule to make a '*circular definition*,' i.e., when a first idea is defined by a second, and then the second is defined by the

first. Thus, if we define a 'dollar' as 'one hundred cents' and then define a 'cent' as 'the hundredth part of a dollar,' we are guilty of a circular definition. Were we to attempt to define the transcendental idea 'being' as a 'thing' or 'something that is not nothing,' we would include the idea to be defined in its definition; such words and phrases, together with examples, will assist in making the idea clear, but they must not be considered real definitions.

Again, the definition must be *convertible with the idea defined*; by this is meant, that the definition must neither be wider nor narrower in comprehension than the comprehension of the idea defined. This should be obvious. If the definition is an explanation of the idea or thing defined, then both must be identical in meaning, and it should make no difference if we interchange them as subject and predicate in a sentence. Since 'Man is a rational animal,' it must be equally true that 'A rational animal is a man'; if 'An animal is a sentient, living, bodily substance,' then 'a sentient, living, bodily substance' must also be an animal.' The definition of 'logic' as 'the science of reasoning' is too narrow, because other mental processes (the formation of ideas and judgments) also belong to logic; the definition of 'logic' as 'the science which guides the mind to truth' is too wide, since all sciences do that.

Lastly, the definition must be *positive*, not *negative*, whenever possible. The definition should explain what the thing is; to give a negative definition would merely explain what the thing *is not*, without any real explanation of its nature in itself. It would thus be faulty to define 'health' as the 'absence of sickness,' or 'truth' as the 'opposite of

error,' because I cannot know what 'sickness' or 'errors means without a prior knowledge of 'health' and 'truth.' Of course, if the idea to be defined is a *negative or privative idea*, it can be defined in no other way than by stating that it is the negation or privation of some reality. It will, therefore, be perfectly legitimate to define 'sickness' as the 'privation of health,' and 'error' as the 'opposite of truth,' and 'darkness' as the 'absence of light.'

In connection with this last rule, it must be borne in mind that some terms are negative in form but positive in meaning; and as such they demand a positive definition. 'Immortality' is negative, as far as the form of the term is concerned, since the word means literally 'non-mortality'; but its meaning denotes a positive perfection, which should be defined in a positive fashion as 'everlasting duration of existence.' Words like infinite,' 'immense,' etc., presuppose positive reality and should be defined in positive terms; but the mind of man is too imperfect to be able to grasp the fullness of the reality implied by these ideas, and so it can define them only imperfectly. In such instances we define the idea best by stating the positive perfection and denying all limitation of this perfection; as, 'infinite' means 'possessing perfection beyond all degrees without limit,' and 'immense' means 'possessing magnitude without limit.'

DIVISION

Besides definition we have a second method of making ideas clear and arriving at a better understanding of their meaning, the method of division. By *division* we mean the

resolving of a whole into its parts. Something is a 'whole' when it consists of parts which are bound together into some sort of unity; and since the 'whole' consists of parts, it can be resolved or broken up into these component parts. Naturally, then, there will be as many kinds of divisions as there are kinds of parts united into a whole or totality. Logic, of course, is concerned with ideas as intellectual images of things, but mainly with ideas as ideas. We, therefore, distinguish between real division and logical division.

A *real* (actual) division is the *resolution of a thing into the natural part which it has independent of the mind.* These parts are twofold, physical and metaphysical, and this makes us distinguish between a physical and metaphysical division.

The *physical* parts of a thing are *mutually distinct and separable* and belong to the *very nature of the thing.* Of these some are essential parts; that is to say, they are so necessary to the being, that, if any one be missing, the thing will cease to be that particular being, because these parts conjointly make it to be what it is. The essential parts, for instance, of 'man' are his 'body' and 'soul'; these parts are mutually distinct, are separable (by death), and belong to the very essence of man. 'Water' consists of 'oxygen' and 'hydrogen'; without either of these two elements 'water' would cease to be 'water.' Table salt is a combination of 'sodium' and 'chloride,' and without both 'salt' cannot subsist and retain its being as 'salt.' Other parts are *integral* parts; they belong to the nature of the thing, but the absence of one or the other or of some of them would

not destroy the essence of the being and make it cease to be what it is. Such integral parts in 'man' are his hands, arms, feet, legs, eyes, ears, ribs, muscles, nerves, bones, etc.; in a 'tree' they are the roots, stem, branches, leaves, blossoms, fruit, bark, fibers, etc. If these integral parts are of the same kind throughout, they are called *homogeneous* parts; 'water' consists of many drops, each drop being 'water,' and 'sulphur' in a lump can be divided into many portions, each of which is 'sulphur,' and a block of 'hickory wood' can be cut into many pieces, each piece being 'hickory.' But if these parts are *not* of the same kind, they are called *heterogeneous* parts; the various parts of man's body (arms, eyes, hair, bones, nerves, etc.) are such, and so, too, are the parts of a plant (roots, stem, leaves, flowers). A mere glance at these integral parts will show that some of them may be missing without destroying the essence of the being as such; a man would still be a 'man,' even if his arms or legs or eyes or ears were removed, and a 'tree' would still be a 'tree,' even if the blossoms or fruit or leaves or branches were cut off. The (mental) division of things *into their component physical parts* (whether they be essential or integral) is called a *physical* division.

Besides physical parts a thing also has *metaphysical* parts. These parts actually constitute the *essence* of a thing, but they are *not separable* from each other, because in an individual they constitute one single *identical nature*. This may seem a paradox, if not a contradiction. If they are parts, why are they not separable? A close attention to the following will explain the situation.

The metaphysical parts of a being are the various *grades of being* contained in the comprehension of the idea of the thing. 'Man,' as we know, is a 'rational, sentient, living, bodily substance'; these five 'grades of being' form the metaphysical parts of man's essence or nature. We have, therefore, divided the *idea* of 'man' into five distinct and different *ideas* which compose the comprehension; we have also thereby divided 'man' *himself* into his five metaphysical *parts*, because 'man' himself consists of these various 'grades of being,' independent of the mind. However, are these 'grades of being' or metaphysical parts so distinct from each other as *entities* in man as found in the physical order of the world, that they are actually *separable* from each other? They are *not*. Body and soul, of course, are separable in man, and death actually makes such a separation. In like manner, the legs, arms, eyes, ears, bones, etc., are distinct as entities from each other, and can be separated one from the other, and from the body itself. 'Rationality,' 'sentientcy,' 'life,' 'body,' and 'substance' are not distinct entities, separable from each other, in the nature of man, like coins in a purse, or segments of pulp in an orange, or peas in a pod; they are *not* actually five *entities* forming the essence of 'man,' but *one single nature* consisting of five 'grades of being' inseparable from each other.

Here is the reason. In man the 'body' *is* his 'substance'; they are one and the same *thing* in man; they cannot be separated in man, so that after the division there would be two distinct entities, 'body' and 'substance'; man is simply a 'bodily substance.' Similarly, 'life' in man and his 'bodily substance' cannot be divided, so that after the division

there would be two separate entities; man's 'life' is his 'bodily substance' itself which grows by taking in food and assimilating it; his 'bodily substance' is, therefore, a 'living, bodily substance,' and 'life' and 'bodily substance' are one and the same reality, one and the same essence or nature. So, too, the 'animal' in man and his 'living, bodily substance' cannot be actually removed from each other, so that after the division there would be the 'animal' on the one side and the 'living, bodily substance' on the other the 'animal' in man is nothing else but the 'living, bodily substance' which feels and sees and hears and smells and tastes and walks; his 'animality' is identical with his 'living, bodily substance,' inseparable and indivisible. In like manner, man's 'sentient, living, bodily substance' is the selfsame entity which also thinks and reasons, and which is, therefore, 'rational.' Man does not consist of five distinct and separable entities, but has *one nature* manifesting itself in *five different ways*. In other words, considering 'man' as an actual being, his 'substance' is at one and the same time 'bodily, living, sentient, and rational'; man's nature, therefore, *is one single substance*; and the five 'grades of being' are one single entity consisting of five inseparable metaphysical parts. The reason is obvious; parts, which at bottom are *identical*, cannot be separated from each other in *fact*.

Now then, this being the case, how does it happen that the mind *in its thought* divides the metaphysical whole of the essence into such distinct and *apparently separable* parts? The mind does this because, although these 'grades of being' are inseparable in this individual nature, they can be, and often actually are, found *separated* (separately

realized) in *different* kinds of beings. Let us take the example of man's essence again. The mind divides this essence into five 'grades of being,' namely 'substance, body, life, sentiency, rationality.' In 'man' these five are inseparably fused together to make one nature.

But they need not always be found together as they are found together in 'man.' The idea of 'substance' is realized in God, but God is not a 'bodily' substance. We also find 'bodily substances' which are not 'living'; such are the minerals of the earth. Some 'living, bodily substances' are not 'sentient,' as plants.' Many 'sentient, living, bodily substances' are not 'rational'; we see this in the brutes. Only in 'man' do we find the five grades of 'rationality, sentiency, life, body, and substance' united into a single identical essence. These five 'grades of being' are, therefore, real enough in man's essence to be considered as parts. Since, however, they cannot be separated from each other in *fact*, but only in *thought*, they form a higher unity among themselves than the physical parts of an essence.

The parts of an essence which are the '*grades of being*' of one concrete nature (in reality identical and inseparable, but distinct and separable in thought) are called *metaphysical* parts; and the whole which consists of metaphysical parts is called a metaphysical whole. The *division*, then, which divides an essence into its metaphysical parts, is styled a *metaphysical division*.

In real division (physical and metaphysical) the mind divides the whole into its component parts, in as far as the thing itself has parts, independent of the mind. In a logical division the mind divides a 'logical whole' into its

component parts; and the 'logical whole' is a universal idea as universal.

We define *logical division* as the *resolving of a universal idea into the members which constitute its extension*. It will be readily understood that a logical division is neither more nor less than the resolution of a *class* into the component *subclasses or individuals* which fall under this particular class-name. The class is conceived by the mind as a unit, a whole, a totality; the subclasses and individuals are the parts which, united together in the universal idea, form the unity of a 'whole.' We divide, for instance, the universal idea of 'substance' into 'material substance (body)' and 'immaterial substance' and all their subclasses; the universal idea of 'bodily substance' into 'living, bodily substance' and 'inanimate, bodily substance' and all their subclasses; the universal idea of 'living, bodily substance' into 'sentient, living, bodily substance' and 'non-sentient, living, bodily substance' and all their subclasses; the universal idea of 'sentient, living, bodily substance' into 'rational' and 'irrational'; and these latter we divide into their individual members.

It will have been noted that in dividing and subdividing a universal into its members, we always *add* an element to the comprehension of the foregoing class; thus, in dividing the class 'substance' into its next members or subclasses, we add the elements 'material' and 'immaterial'; and so with the others. A logical division is therefore made by the *addition* of some element, by a *composition*; such a composition is styled synthesis. Reversely, in a real division

we break up the comprehension and *take it apart*; this process is called *analysis*.

RULES OF DIVISION

As in the case of the definition, logicians prescribe certain *rules* which must be observed in the division, in order that it fulfill its purpose of making ideas clear and accurate for science and general knowledge.

First of all, a division should be *adequate*; this means that all the *parts taken together must equal the whole*. This general rule involves a number of particular rules.

No part may be omitted; otherwise the division would be incomplete and therefore faulty. The division of American politicians into Republicans and Democrats would be inadequate, because it omits Socialists, Communists, Progressives, Prohibitionists, and possibly others. The division of the senses of man into 'taste, sight, smell, hearing, and feeling' would omit the imagination, sense-memory, inner central sense, and instinct.

No member of the division may equal or exceed the whole; because a part can never equal, much less exceed, the whole. It would be a violation of this rule to divide 'animals' into 'sentient' and 'rational,' because 'sentient' is the same as 'animal'; and it would be worse to divide 'animals' into 'sentient' and 'living,' because 'living' has a wider extension than 'animal.'

No member may include the other; because the parts must be distinct and exclusive among themselves, otherwise such a division would enumerate more parts than the whole

really contains. One cannot, for instance, correctly divide the 'Immigrants of the United States' into such classes as 'Europeans, Asiatics, Englishmen, Germans, Italians, Frenchmen, Africans, Russians, and Chinese.' Some of these members of the division are already included in wider members; thus, 'Englishmen, Germans, Italians, Frenchmen, and Russians' are included in 'Europeans,' while 'Chinese' and some 'Russians' belong to the 'Asiatics.' In order to avoid such erroneous divisions one should establish a *fixed principle* or standpoint of division and adhere to it throughout.

The other general rule is: the *division should be clear*.

Hence, a division should be *orderly*. This means that we must not leap from a higher to a lower class and omit a middle class; the division should be a gradual process, going from one class to its immediate subclasses, and from one subclass to the next, and so on. It would be faulty to divide 'substance' into 'living' and 'nonliving,' because that would skip the intermediate classes 'material' and 'immaterial.' So, too, it would not be a good division to divide 'animals' into 'men, birds, reptiles, insects, fish, and mammals,' because the next members of 'animals' are 'men' and 'brutes.'

A division should also be *reasonably limited in members*. To enumerate a veritable catalog of members is both unnecessary and confusing. Were one to divide the class 'fish' by producing a list of a few hundred names, the division would be useless. All that would be necessary would be to enumerate the main classes and then subdivide each supreme class into its main subclasses. It is here that

the *classification* of science enters the field and brings order into chaos.

With definition and division we close our examination into the nature and the various kinds of ideas, and we now pass on to the judgment.

SUMMARY OF CHAPTER V

1. A *definition* is a *statement which explains what a thing is*. The *nominal* definition explains what a word means; *real* definition explains what a thing is in itself.

The real definition is *essential*, when it explains the essence of a thing by proximate genus and specific differentia. It will be *descriptive*, when it explains a thing by the positive, but nonessential, elements of its nature; and this descriptive definition will be either distinctive or genetic or causal or accidental.

Rules for definition: it must be clearer than the thing defined; must not contain the idea to be defined; must be convertible with the idea defined; must be positive.

2. *Division* is the *resolving of a whole into its parts*. There are two main kinds: real and logical.

A *real* division is the resolution of a thing into its natural parts. If these are physical, we have a physical (essential or integral) 'division. If the parts are metaphysical ('grades of being'), they have a metaphysical division.

A *logical* division resolves a universal idea into its members. A logical division is always a 'synthesis,' while a real division is always an 'analysis.'

Rules for division: it must be adequate and clear. A division is *adequate*, when the parts taken together coincide with the whole. Hence: no part may be omitted; no member may equal or exceed the whole; no member may include the other. It will be *clear*, when it is orderly and reasonably limited in members.

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PART II

JUDGMENT AND PROPOSITION

Chapter 6

NATURE OF JUDGMENT AND PROPOSITION

IDEAS ARE THE RAW MATERIALS OF KNOWLEDGE, THE BUILDING stones of truth. But just as the raw materials are not the finished product and building stones are not the completed edifice, so ideas as such are not an expression of truth. Ideas in themselves are neither true nor false; they are indifferent to truth and error. A thousand ideas may flash upon my mind, like pictures upon a screen, but truth will be absent until I halt two of them, compare them, and express an agreement or disagreement between them: then I have truth or error.

Thus, I may walk along the avenue and a number of ideas will jostle each other in my mind: street, lawn, flowers, houses, stores, cars, men, women, children, churches, museum, theater, policeman, magazines, newspapers, drugs, clothing, shoes, and ten thousand other ideas of things I perceive. Are they 'true' or 'false'? There is nothing in them so far that could possibly be called 'true' or 'false.' My mind, however, does not stop at letting these ideas parade before itself. It goes farther. It does something. It says something (mentally) of these things. 'That car is going at least thirty-five miles an hour.' 'The

policeman is changing traffic.' 'That man is blind.' 'These children are happy.' 'The library is open.' 'Prices are low.' 'The flowers are withered.' 'There is no large crowd out today.' 'My feet hurt.' 'The wind is blowing.' 'It is getting colder.' 'The sky is not dark.' 'The sun is shining.'

NATURE OF JUDGMENT

Are these things really as my mind judges them to be? If they are, then my mind has expressed a truth; if they are not, then it has expressed a falsity. If these judgments of my mind agree with the facts, they are true; otherwise they are false. *Truth and falsity*, then, *lie in the judgment* and not in the ideas taken alone for themselves. One can speak of truth or falsity only then, when two ideas are placed side by side in the mind and some judgment is made about them. And a *judgment* is an *act of the mind pronouncing the agreement or disagreement of ideas among themselves*; or, in other words, it is an *act of the intellect affirming or denying one idea of another*.

The judgment will always appear in one of these two ways: it will either affirm or deny one idea of another. When I make the judgment that 'My feet hurt,' I *affirm the agreement* between the ideas 'my feet' and 'hurt' in my thought. And when I assert that 'The sky is not dark,' I *deny the agreement* (affirm the disagreement) between the ideas 'sky' and 'dark' in my thought. Both judgments will be true, if they are really *as stated*; contrariwise, they are false.

Three things will therefore be necessary for the *making of a judgment*. *First*, the mind must have an understanding

of the two ideas about which it intends to make a judgment. Unless it know them, it can say nothing about them. Is 'Anacin' a drug? Even if I know that Anacin is a 'compound of pure acetphenetidin, acetylsalicylic acid, caffen alkaloid, and quinine sulphate,' I will not be able to judge that 'Anacin is (or is not) a drug' so long as these brain-twisting words given in explanation are as cryptic and mysterious to me as the hieroglyphics on the sarcophagus of some ancient Egyptian Pharaoh. But when I take the two ideas 'man' and 'animal,' both ideas are familiar to me and I have an understanding of their meaning, so that I am able to think intelligently of them and unite them into a judgment. *Second*, the mind must compare the two ideas in question, study the comprehension of each, recognize their identity or nonidentity, and thus be ready to pronounce an agreement or disagreement between them. Comparing the idea of 'animal' as a 'sentient, living, bodily substance' with the idea of 'man' as a 'rational, sentient, living, bodily substance,' I recognize the fact that the whole comprehension of 'animal' is contained in the comprehension of 'man' and I am ready to pronounce their agreement. *Third*, the mind must express in a mental act the agreement or disagreement between the two ideas compared together. It is precisely this mental *pronouncement* of agreement or disagreement between two ideas which constitutes the *essence of the judgment*. Everything up to this point was mere preparation. The mind now makes the definite judgment: 'All men are animals.' Here, then, we have an expression of truth and the possibility of an advancement of knowledge.

Of course, if I make such obvious judgments as 'The sky is blue' and 'The weather is cold today,' I am not expressing any world-startling truth nor am I advancing knowledge to any appreciable degree. But when science, after decades of ingenious experiments and intricate astronomical calculations, had arrived at the definite judgment that 'The earth revolves around the sun' and that 'Our planetary system is heliocentric,' it made a definite advancement of knowledge. No astounding truth is expressed in the judgment that 'Sunlight is bright'; but the scientific statement that 'Sunlight travels at the rate of over 186,000 miles per second' proved to be of great value to knowledge, because it gave an exact yardstick to astronomy with which to measure the distance of stars and interstellar space. To state that 'Cows cannot smile' may seem like a humorous quip, but to go a step farther and express the philosophic judgment that 'No animal but man is rational' is a truth of great importance to mankind; and so on, indefinitely. Some judgments, therefore, are the result of a simple comparison of two ideas; others, like the laws of science, are the product of centuries of mental toil and the achievement of a million experiments in the field of research. In all these cases, however, truth is contained in the judgment.

Three elements, then, enter into the composition of a judgment: two ideas, and the mental act pronouncing their agreement or disagreement. One idea, the subject-idea, has something *said about it*; and the other, the predicate-idea, contains the 'something' which *is said about* the other. In the judgment 'The weather is cold,' it is the subject-idea 'weather' about which something is stated and the

predicate- idea 'cold' is the 'something' which is stated about the weather. These two compared ideas are the *matter* of the judgment, because they are the materials or objects which enter into composition in the judgment. The mental pronouncement of the agreement or disagreement between the two compared ideas is the *form* of the judgment, because this pronouncement constitutes the very essence of the judgment as a judgment, distinguishing it from every other operation of the mind, such as the idea or the argumentation. Looked at from the standpoint of its matter, the judgment is a composition of two distinct elements, the ideas; but from the standpoint of its form, the pronouncement, it is a simple intellectual act fusing the two ideas into one. Such is the nature of the judgment.

Truth and error, as has been stated, lie in the judgment; no other act of the mind has this peculiarity that it claims to be true, although the fact is also realized that at times *it may be false*. How can we know when a judgment is true or false? What is the test of truth? Some philosophers have contended that the mind simply judges as it does, because it is compelled by some internal law of its own nature which *forces* it to make this or that kind of judgment. That there is some sort of compulsion, is clear enough. We are conscious that we are *not* at liberty to judge *as we please*. Thus, we are compelled to judge that '2 and 2 are 4' and not '5 or 3,' 'man is a sentient being,' 'Napoleon lived,' 'the sun is round,' 'it is winter now,' 'yesterday was Thursday,' 'cows are not fleas,' 'dogs are not mice,' and a million other statements. Absolutely speaking, we can, of course, deny these pronouncements and state their opposites; but in

doing so we immediately become aware of the fact that our judgments are then *false*, and we are doing violence to our better knowledge. Hence, we cannot say that '2 and 2 are not 4,' 'man is not a sentient being,' 'Napoleon never lived,' and so on, with the rest. And even if we found some people who were convinced that '2 and 2 are 5,' while others were equally convinced that '2 and 2 are 4,' we would be constrained to say that both cannot be true, but one judgment is true and the other false. Now, if the truth of a judgment were due to some internal compulsory law of our own mental nature, then both contradictory judgments would have to be true at the same time. But that is obviously ridiculous. If '2 and 2 are 4,' then '2 and 2 are not 5'; and if '2 and 2 are 5,' then '2 and 2 are not 4'; because it is also a law of the mind that *contradictories cannot be true at the same time*. No, the 'truth' of the judgment does not flow from some internal compulsory law of the mind, so that the mind *makes* the judgment true; the mind accepts the truth, because it *recognizes* it as the truth.

What, then, compels the mind to judge as it does? The reason is not at all mysterious. It is this: just as the idea is at bottom a representation of things as they are in themselves, independent of the mind, so the *judgment* is also a *representation of things* as they are in themselves, independent of the mind. When, therefore, the mind compares two ideas with each other and pronounces an agreement or disagreement between them, it *actually* compares two things with each other and judges about their agreement or disagreement among themselves *as they are in reality*. Hence, if a judgment *coincides with*

reality, it is true; if not, it is false. This explains why we are not at liberty to judge as we please. Because in reality things are (or are not) so and so, and the mind has no choice but to represent reality as it actually is.

The world around us, as perceived by our senses, is a reality of experience; we must therefore judge that the 'Sun is round,' 'it is winter now' (if it is' winter), 'yesterday was Thursday' (if yesterday *was* Thursday), 'cows are not fleas,' 'dogs are not mice,' 'men are sentient.' Mathematics is a *reality* of thought, and it tells us that '2 (1+1) and 2 (1+1) are 4 (1+1+1+1)'; we cannot judge any other way. Past events are a reality of *history*, and history assures us that 'Napoleon lived'; the only true judgment we can make, then, is .that 'Napoleon lived.' Even the realm of fancy is a *reality in fancy*; and, in order to make a true judgment from this standpoint, we must judge that 'Witches are evil beings,' because that is the manner in which witches are represented in folklore and poetry.

Agreement of the judgment with reality is therefore the *test of truth*. We verify a judgment by comparing it with the reality it is supposed to represent. Every judgment made by the mind, therefore, implies and presupposes the existence of reality, and this implication of existence is known as the *existential import* of the judgment; this gives it objective value and truth.

PROPOSITIONS

Having examined the nature of the judgment as an act of the mind, we must now study its expression in words. Just

as the ideas are expressed in words which are called 'terms,' so judgments are expressed in sentences which are called 'propositions.'

All propositions are sentences, but not all sentences are propositions. Propositions must contain a *judgment*, and that is not always the case with sentences. Grammar shows this. Consider the following sentences: 'Buddy, can you spare a dime?' 'Please step off my corn!' 'Keep off the grass!' 'Oh, would that the night were over!' These sentences contain a question, a plea, a command, a wish; but they express no straightforward judgment. Consequently they have no place in logic. A *proposition* is defined as a *judgment expressed in a sentence*; or a sentence pronouncing the agreement or disagreement between two ideas.

Three elements enter into the construction of a proposition; *subject*, predicate, and copula. The subject is the term designating the idea (thing) *about* which the pronouncement is made. The predicate is the term designating the idea (thing or attribute) *which* is affirmed or denied of the subject. The copula ('is,' 'is not') is the term expressing the mental act which pronounces the agreement or disagreement between subject and predicate. 'Subject' and 'predicate' are the *matter*, while the 'copula' is the *form* of proposition.

It should be carefully noted, that the 'copula' always expresses the *present* act of the mind in as far as it affirms or denies something at the *very moment of judgment*. Hence, it will always be represented by the present tense of the indicative mood of the verb 'to be,' and it therefore

manifests itself in the words *is* or '*is not*.' Every proposition can be reduced to the verb 'to be,' even if the verb of the sentence refers to some past or future event. 'Man-O'-War won the derby' means 'Man-O'-War *is* the horse that won the derby'; 'President F. D. Roosevelt will lead the country out of the depression' signifies 'President F. D. Roosevelt *is* the man who will lead the country out of the depression'; 'the Communist party did not succeed' is the same as 'The Communist party *is not* the party which succeeded'; 'Sovietism will not prevail' is identical in meaning with 'Sovietism *is not* a government which will prevail.' The meaning of these propositions has in no way been changed by the change of wording and the alteration illustrates the copula hidden in the ordinary sentence. In a similar manner the copula may be hidden in the verb of the present tense; like 'The dog runs,' 'I have a headache,' 'we live,' 'they rave,' 'you err,' 'thou lovest.' Such sentences are easily reduced to logical propositions, as 'The dog *is* running,' 'I *am* having a headache,' 'we *are* living,' 'they *are* raving,' 'you *are* in error,' 'thou *art* in love.'

Language, as we see, has its own way of expressing judgments, different from the direct manner of logic. The logician has the right to change the wording to suit his purposes, provided he retains the *original meaning of the judgment*. The wording, as the logician frames the sentences, may seem unusual and queer, but he is interested in the substance of the thought and not in the niceties of language and in the beauty of poetry. Stripping a sentence of its excess verbiage and arriving at the simple judgment, is not always an easy task; but no matter how

involved a sentence may appear, it is reducible to the simple proposition of a subject, predicate, and copula. Take this sentence: 'Any national emergency, with its concomitant industrial, financial, and social maladjustments, attended by prolonged unemployment and crippling misery for individuals, families, and the government, will eventually give way before the combined initiative and efforts of a sagacious President, a willing Congress, and a confident and cooperating people.' When reduced to its essentials, this lengthy sentence simmers down to the judgment: 'Any emergency will give way,' or, 'Any emergency is something that will not last'; the rest is explanatory. It is precisely because the simple judgment is built up into propositions of such great variety and complexity that the logician must analyze the proposition in all its different types, so as to discover the laws of thought underlying them and then draw up the rules which govern truth and error in each.

SUMMARY OF CHAPTER VI

Truth is not contained in ideas as such, but in the judgment.

1. The *judgment* is an *act of the mind pronouncing the agreement or disagreement of two ideas among themselves*. Three things are required for the making of a judgment: two known ideas, their comparison, and the act of intellect pronouncing their identity or non-identity. Truth and the possibility of an advancement of knowledge lie in this union of two ideas performed by the judgment. The subject-idea and the predicate-idea. are the matter of the judgment; the pronouncement of their agreement or disagreement is the form of the judgment. The mind does *not* make the judgment to be *true*; truth is independent of the mind and lies in the conformity of the judgment to *reality*.

2. The *proposition* is the *judgment expressed in a sentence*. Every proposition consists of a *subject, a predicate, and the copula*; subject and predicate are the *matter*, and the copula is the *form* of the proposition. Since the copula expresses the present act of the mind in its judgment, it is always expressed in the present tense of the indicative mood of the verb 'to be,' even if the sentence refers to past or future events.

Even the most involved sentences can be reduced to a subject, a predicate, and a copula.

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Chapter 7

GENERAL TYPES OF PROPOSITIONS

IT IS THE PURPOSE OF ALL THINKING TO DISCOVER AND RECOGNIZE truth, and truth lies ultimately in the judgment. Many truths are unimportant, like 'It snowed last night'; but scientific truths are of great value, because they influence the material and spiritual welfare of mankind in all its phases. Now, all the truths of science are formulated into laws, and this formulation is done by expressing these laws in judgments and propositions. Since, however, these laws are discovered only after lengthy and arduous investigations, it is obvious that a host of ordinary judgments and propositions will have to precede the final judgment and proposition which contains the law. Not only must this final proposition be true, but every preceding proposition leading up to it must also be true. The scientist and philosopher must, therefore, understand the import and value of every *type* of proposition which can possibly be used by the mind in investigating the truth and in formulating the laws. Otherwise error may creep in surreptitiously and vitiate his final conclusions.

There are different types of propositions; some are general and some are *special types*. We must first consider

the *general* types, because they affect all propositions and are based on *characteristics* which may be found in all special types. These general characteristics of propositions are 'quality,' 'quantity,' and 'relation.'

QUALITY OF PROPOSITIONS

The *quality* of a proposition affects the *copula* and makes the proposition either *affirmative* or *negative*. The predicate is either affirmed or denied of the subject. 'Ants *are* insects,' 'a whale *is* a mammal,' 'soldiers *are* fighters': here the copula affirms the predicate of the subject. 'Ants *are not* vertebrates,' 'a whale *is not* a fish,' 'soldiers *are not* sailors': here the copula denies the predicate of the subject. Sometimes a sentence will have two copulas, one in the main proposition, the other in a qualifying clause. Here are two examples: 'A man who *is* sick *is not* healthy' and 'A man who *is not* sick *is* healthy.' In both cases the clause affects the subject 'a man.' Are these propositions affirmative or negative? If the copula of the *main* proposition is negative, it is a negative sentence; if it is affirmative, it is an affirmative sentence: hence, the first sentence is negative, the second is affirmative. The *meaning* shows this clearly: 'A sick man is not healthy' and 'a not-sick man is healthy.' In all doubtful cases we must look to the meaning of the sentence before we decide, and the meaning can usually be discovered by some slight change of the words.

Since the predicate is affirmed or denied of the subject, how does this affect the *comprehension* and *extension* of the *predicate*? Do comprehension and extension remain the

same or are they changed in any way? This is a very important question, with a vital bearing on the validity of argumentations (as will be seen later); the relation of predicate to subject from this standpoint, therefore, should be well understood. Here are the rules:

In an *affirmative* proposition the *predicate* is always affirmed of its subject according to the *whole of its comprehension* and according to a *part of its extension*.

In a *negative* proposition the predicate is always denied of its subject according to only a *part of its comprehension* and according to the *whole of its extension*.

The nature of the judgment proves these rules. If I affirm, for instance, that 'Man is an animal,' just what do I mean to assert by applying the predicate 'animal' to the subject 'man'? I assert an *identity* between the two ideas. Consequently, the comprehension of the idea 'animal' must be found in the idea 'man.' And that is really the case. 'Man' is a 'rational, sentient, living, bodily substance,' while 'animal' is a 'sentient, living, bodily substance'; plainly, then, I am applying the *whole* of the *comprehension* of 'animal' to the subject 'man,' because the definition of 'animal' is found to be *contained* in the definition of man.' On the other hand, I do not mean to assert by this proposition that the whole of the extension of 'animal' applies to 'man,' because that would mean that 'man' would fill out the whole extension of 'animal' and there would then be no other beings besides 'man' in this extension. But that is obviously false. Other beings besides 'man' belong to the extension of 'animal,' namely 'brutes.' In an affirmative proposition, therefore, I merely intend to assert that the subject forms a *part*

(together with others) of the *extension* of the predicate. In other words, in an affirmative sentence the predicate is taken only as a particular term, i.e., it is a universal term taken *partly* and *indeterminately* with regard to its extension. This is the reason why we can truthfully say that 'Every man is an animal,' but we cannot turn the sentence around and say that 'Every animal is a man.' This would only be the case when the predicate is the *definition* of the subject, as 'Man is a rational animal,' because 'man' and 'rational animal' are the same thing in different words.

A brief consideration will also prove the truth of the second rule. If I state 'Snails are not vertebrates,' I deny the identity between the predicate 'vertebrates' and the subject 'snails.' This means that the *comprehension* of 'vertebrates' contains something which is not found in the comprehension of 'snails.' And rightly so. Both are 'animals'; but 'vertebrates' are 'animals *with a backbone*,' while 'snails' are 'animals *with no backbone*.' But by denying that the *whole* of the comprehension of 'vertebrates' is found in 'snails,' I realize that *part* of the comprehension may be found in the subject; as a matter of fact, the element 'animal,' found in the comprehension of 'vertebrates,' is also found in the comprehension of 'snails.' Hence, in a negative sentence the *whole* of the comprehension of the predicate *never* applies to the subject, but a *part* of the comprehension does. The second part of this rule is also true: the predicate is always taken according to the *whole* of its extension and *denied* of the subject. Thus, when I state that 'Snails are not vertebrates,' I intend to assert that 'snails' do not belong at all to the

class of 'vertebrates'; they stand entirely outside this class, because every one belonging to the class of 'vertebrates' has a 'backbone,' which is something which *no* 'snail' has. In a negative sentence, therefore, the predicate is always taken according to its whole extension as a *universal* and then *denied* of the subject. Since both, subject and predicate, belong to totally different classes, neither belongs to the class of the other; in consequence of this I can take the sentence 'Snails are not vertebrates' and turn it around with equal truth and say that 'Vertebrates are not snails.'

And thus the two rules of affirmative and negative propositions are verified. So much for the quality of propositions.

QUANTITY OF PROPOSITIONS

The *quantity* of a proposition affects the *whole judgment as a judgment*; it expresses the number of *individuals* to whom the judgment or proposition applies. Since the predicate is referred to the subject, the proposition will be true of all the individuals contained in the extension of the *subject*. From the standpoint of quantity, then, propositions will be *universal, particular, singular, or collective*, whichever way the subject is taken.

A proposition will be *universal*, if the subject is a universal term applied *distributively* to each and all of the class. 'All' and 'every,' prefixed to the subject, indicate the universality of the proposition: 'All male mosquitoes bite,' 'every cat purrs.' There can never be any doubt about the

term 'every'; but the term 'all' may be ambiguous, because it may mean 'all taken collectively' and then it would not apply to each and every member of the class. If I say 'All members of the society were present at the meeting,' I use the term 'all' distributively, because I mean '*Every* member was present'; but if I say 'All the prisoners filled the cellblock,' I use the term 'all' collectively, since I cannot say that '*Every* prisoner filled the cellblock.' Here again we must look to the meaning. The universal negative proposition is expressed by prefixing 'no' to the subject, as 'No airplanes can travel as far as dirigibles,' 'no swans are red,' 'no man is an angel,' 'no square is round.'

One must remember, however, that there are different *grades* of universality as applied to propositions. A proposition will be *metaphysically* universal, when it applies to each and every member of the class with an absolute necessity, so that there can be *no exception* under any circumstances. Here are some instances of propositions which have metaphysical universality: 'Man is a rational animal,' 'all circles are round,' 'two and two are four,' 'no squares have five sides,' etc. An exception here would involve a contradiction in the very idea. A proposition will be *physically* universal, when it applies to each and all according to some *natural law*; an exception could be made by divine power only. Examples: 'Every animal must die,' 'no dead man can be brought back to life,' 'matter cannot penetrate matter' 'all water at sea level freezes at +32° F.,' 'all bodies are attracted by the force of gravitation.' A proposition will be *morally* universal, when it applies to all individuals of a class according to *general custom*; there

may be exceptions in individual cases. Such are the propositions 'All parents love their children,' 'gamblers are free spenders,' 'all children love sweets,' 'all Scotsmen are thrifty,' 'no criminals are trustworthy.'

A proposition is *particular*, when the subject is a *universal* term used *partly* and *indeterminately*. It is indicated by the term 'some' or 'not all,' attached to the subject. As 'Some dogs are very affectionate,' 'not all men are learned,' 'some houses are old,' 'some soldiers are cowards.' Words are often deceiving. The statement 'All men are not drunkards' seems on the face of it to be universal. If it were universal, it would mean 'No men are drunkards,' but this is certainly not the sense intended; the meaning is evidently 'Not all men are drunkards,' and that is the same as saying 'Some men are not drunkards,' which makes it a particular proposition.

A proposition is *singular*, when the subject applies to a *single individual only*. Such are the statements 'St. Paul was an Apostle,' 'this dog is lame,' 'that man is not tall,' 'the present Pope is an Italian.' Singular propositions have the same value as universal propositions and are treated the same way, because the subject is taken according to the *whole* of its extension, which in this case is one.

A proposition is *collective*, when the subject is a collective term, applying to all taken *together as a class*, but not to the individuals composing the class. We have collective propositions when we say 'The Germans were defeated in the World War,' 'the herd scattered,' 'all his books filled half a shelf'; we mean 'the Germans' as a nation, the 'herd' as a group, 'all his books' as a set. Since a

collective term represents many considered as one, it is taken according to the whole of its extension and it, too, is treated as a universal.

There is one more proposition, considered from the viewpoint of quantity, which we must take into account: it is the *indefinite* proposition, which has no definite sign of quantity attached to the subject. 'Children are petulant,' 'woman is fickle,' 'youth is flippant,' 'a car is expensive,' 'cats are a nuisance,' 'man is an animal,' 'athletes are strong-bodied'; such and similar propositions indicate no definite quantity. They evidently mean some or 'all' and are either particular or universal propositions. The sense of the statement or the context in which they are used must give us the exact quantity.

Since singular and collective propositions are equivalent to universal propositions, all judgments have the value of either *universal* or *particular* propositions. And as all propositions will be either *affirmative* or *negative*, we arrive at the following results, as far as quality and quantity of propositions are concerned: the universal affirmative, the universal negative; the particular affirmative, the particular negative. Logicians express them in a sort of logical shorthand with the letters A,E,I,O. They take the Latin words 'AffIrmo' and 'nEgO.' The vowel 'A' stands for the universal affirmative proposition; the vowel 'I' stands for the particular affirmative; the vowel 'E' stands for the universal negative proposition; the vowel 'O' stands for the particular negative. In a similar manner 'S' represents 'subject' and 'P' represents 'predicate.' The symbol for a universal affirmative proposition is therefore SaP; for a

particular affirmative, SiP; for a universal negative, SeP; for a particular negative, SoP. This gives us the following scheme:

Universal affirmative – (A)... SaP...Every man is mortal.

Universal negative --- (E)... SeP... No man is an angel.

Particular affirmative – (I)... SiP... Some men are kind.

Particular negative --- (O) . . SoP... Some men are not learned.

If the logician wishes to discuss a universal affirmative proposition, he may either quote a sentence like 'Every man is mortal' or use the symbol 'SaP'; a universal negative proposition will be either something like 'No man is an angel' or simply 'SeP'; a particular affirmative proposition can be illustrated either by a sentence like 'Some men are kind' or by 'SiP'; while a particular negative proposition may appear in either of two ways, as a statement like 'Some men are not learned' or as the symbol 'SoP.' Sentences, of course, are clearer, because they have a direct meaning; but the symbols are briefer and have this advantage that they represent any kind of sentence. For instance, 'Every man is mortal' is merely an *example* of a universal affirmative proposition, having but *one* meaning; but 'SaP' would stand for *every conceivable* universal affirmative proposition, and therefore represents them *all*. We will use both, sentences and symbols, whichever is most convenient

for the purpose; a clear understanding of the symbols is therefore a practical requirement.

RELATION OF PROPOSITIONS

The third general division of propositions is based on the *relation* between subject and predicate. Of course, the subject and predicate of every proposition have the relation of agreement or disagreement among themselves; but this relation between the two may be either *necessary or contingent*. By this we mean that the connection between both terms is either *absolutely necessary and unchangeable* or it is *contingent and changeable*. A few examples will show the difference. Consider these statements: 'Man is rational,' 'man is an animal,' 'two and two are four,' 'a square is a quadrangle,' 'the angles of a triangle are equal to two right angles,' 'the whole is greater than its part,' 'the square of the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides,' 'living beings are substances,' 'man is capable of speech.' And now consider these statements: 'Cows are cloven-hoofed,' 'the Germans were defeated in the World War,' 'some dogs are vicious,' 'some men are learned,' 'iron is heavy,' 'water boils at +212° F.,' 'the Hawaiian Islands belong to the United States,' 'France is a republic,' 'gold is precious.' It takes but a glance to perceive the great difference between these two sets of statements. We can know the truth of this last set *only by experience*; we perceive that the predicate actually belongs to the subject, but *not necessarily*. In the former set we know that the predicate actually belongs to the

subject, and we also perceive that it must belong to it, *independent of experience*; the relation between the two terms is *necessary* and *unchangeable* under all circumstances. Why this difference?

The difference lies in the fact that the first set of propositions involves something *essential*, while the second set contains only *accidental* attributes. By 'essential' we here mean the whole or part of the essence (species, genus, differentia) or something *necessarily resulting* from the essence (property). In other words, in the necessary (essential) propositions the relation between subject and predicate is such that the one is the species or genus or differentia or property of the other; the one is contained in the *comprehension* of the other. Hence, an *analysis* of the one will always reveal the other as contained in it, without the need of appealing to experience to prove its truth. Take the first example: 'Man is rational.' What is 'man'? 'Man' is a substance which is bodily, living, sentient, *rational*.' Here we see how the analysis of the subject 'man' reveals the predicate 'rational'; the predicate is contained in the very *comprehension* of the subject, because 'rational' is the differentia of 'man.' Take the example: 'A square is a quadrangle.' A 'quadrangle' is a 'plane figure with *four sides*,' and a 'square' is a 'plane figure having *four equal sides* with four right angles.' A 'quadrangle,' therefore, is the genus of the 'square' and is contained in its comprehension; the analysis of the 'square' reveals the predicate 'quadrangle' as part of the comprehension and essence of the subject 'square.' Now take the example: 'Man is capable of speech.' Here the case is different;

analyzing 'man,' the predicate 'capable of speech' is not contained in the comprehension of the subject 'man,' who is defined as a 'rational, sentient, living, bodily substance.' But let us *analyze the predicate*. By 'speech' we understand 'vocal sounds which express ideas.' Now, only an 'animal' is capable of 'vocal sounds,' and only a 'rational being' can 'express ideas.' But a 'rational animal' is 'man.' Here, then, by analyzing the predicate I find the subject *contained* in the *comprehension of the predicate*.

In the second set, neither the subject is contained in the comprehension of the predicate nor the predicate in the comprehension of the subject. The relation between the two is one of *fact only*, and this fact is a *contingent* fact, i.e., it is *actually* so, but it *could be otherwise*. That the predicate actually belongs to the subject is true; the truth of the statement, however, cannot be known and shown from an analysis of subject and predicate, but by an appeal to fact and experience. Take, for example, the statement 'The Germans were defeated in the 'World War.' This is true; but it is *not necessarily true*; it simply happened to be that way, and it could have been different. The idea of a 'defeat in the World War' is not contained in any way in the comprehension of 'Germans' as 'Germans,' and therefore an analysis of the idea 'Germans' will never reveal the idea 'were defeated in the World War.' Only an appeal to experience and fact can prove the truth of the statement. So, too, in the statement 'Some men are learned' the attribute 'learned' does not belong to the comprehension of 'man,' otherwise *all* 'men' would have to be 'learned,' since all men have the same comprehension. That 'Some men are

learned' is a *contingent fact*, and 'learnedness' is a mere *accident* which may or may not be found in 'man.' In all such instances, therefore, we have a synthesis of a subject and an *accidental* (contingent) *attribute*; and an accident, of course, is never necessary. This is the reason why these propositions are called *synthetic* while the others are styled analytic.

Where the relation of subject and predicate is necessary and unchangeable, we have an *analytic* proposition; where this relation is contingent and changeable, we have a *synthetic* proposition. Analytic propositions are also called 'necessary,' 'essential,' '*a priori*'; and the synthetic propositions go also by the name 'contingent,' 'accidental,' '*a posteriori*.'

The terms '*a priori*' and '*a posteriori*' need explanation. As the words indicate, '*a priori*' refers to something that 'comes first,' and '*a posteriori*' to something that 'comes after.' Knowledge is said to be '*a priori*' when it is obtained by reasoning from the whole to the parts, from the cause to the effect, because the 'whole' is 'prior' to the 'parts' and the 'cause' is prior to the 'effect.' When this knowledge is obtained by reasoning from the parts to the whole, from the effect to the cause, it is '*a posteriori*,' because 'parts' and 'effects' are posterior to (later than) the 'whole' and the 'cause.' Now, in an *analytic* proposition the mere analysis (unfolding) of the subject or predicate as a 'whole' or 'cause' will reveal the other term as a 'part' or 'effect,' and such a proposition will therefore be '*a priori*.' In the *synthetic* proposition the essence of the subject or predicate does not contain the other, and an analysis

(unfolding) of the one will not disclose the presence of the other; in this case, knowledge is obtained by observation and experience, but not from an examination of the essence of subject and predicate, and such knowledge is therefore '*a posteriori*.' Hence, every analytic judgment (and proposition) is '*a priori*,' while every synthetic judgment (and proposition) is '*a posteriori*.' Therefore:

An *analytic* (or necessary, essential, *a priori*) proposition is one in which either the *predicate is contained in the comprehension of the subject, or the subject is contained in the comprehension of the predicate*.

A *synthetic* (or contingent, accidental, *a posteriori*) proposition is one in which *neither the subject nor the predicate is contained in the comprehension of the other*.

The phrase 'or the subject is contained in the comprehension of the predicate,' stated in the definition of the *analytic* proposition, should be carefully noted. It is important. When should a judgment or proposition be called *analytic*? Evidently, when the relation between subject and predicate is necessary and when this relation can be discovered by a mere *analysis* of subject and predicate. It should, therefore, make no difference whether the predicate is contained in the comprehension of the subject, or the subject is contained in the comprehension of the predicate, as long as an *analysis* of the one reveals the presence of the other. This is plain reasoning, and it is based on the very idea of 'analysis.' But now, in cases where the predicate represents a '*property*' of the subject, the predicate will not be found in the comprehension of the

subject, but the *subject* will be found in the *comprehension of the predicate*.

We had an example of this relation in the proposition 'Man is capable of speech.' Since 'speech' means 'vocal sounds which express ideas,' a being 'capable of speech' must have an '*animal*' nature, since only an 'animal' can emit 'vocal sounds'; and since only a '*rational*' being can 'express ideas,' a being that is 'capable of speech' must be a 'rational animal,' which is precisely the definition of 'man.' Here, then, we have a *necessary* relation between subject and predicate; but in this case the predicate is not contained in the comprehension of the subject, but the subject, as the *analysis shows*, is contained in the comprehension of the predicate. The proposition 'Man is capable of speech' must therefore also be classed as a true analytic proposition.

Another example. The simple proposition '2 and 3 are 5' contains a necessary relation between the subject '2 and 3' and the predicate '5.' No amount of analysis, though, will disclose the presence of '5' in the subject '2 and 3.' Nevertheless, this is not a synthetic, but an *analytic* judgment. Here the predicate is not contained in the comprehension of the subject, but an analysis will reveal the fact that the subject '2 and 3' is contained in the comprehension of the *predicate*. What is '5'? It is '1+1+1+1+1' What is '2'? It is '1+1' And '3'? It is '1+1+1' Therefore, the subject '2 and 3' is identical with '1+1' and '1+1+1' and this is found in the predicate '5' which as '1+1+1+1+1' The truth of the judgment is disclosed by an analysis of the predicate in its relation to the subject, and

this makes the proposition analytic. This will always be the case when the predicate is a 'property' of the subject, since a 'property' does not belong to the definition of the subject and still results necessarily from the essence.

It is well to bear this in mind, since most modern philosophers, following the noted German philosopher, Emmanuel Kant (1724—1804), define these two types of propositions differently. They define the analytic proposition as 'one in which the predicate is contained in the definition of the subject'; and the synthetic proposition as 'one in which the predicate is not contained in the definition of the subject.' This definition is entirely too limited. According to this explanation, only those propositions can be styled analytic in which the predicate is found in the subject. This is an arbitrary restriction. Surely, any proposition whose necessary truth can be shown by a mere analysis of the subject and predicate should be called analytic, whether the predicate be contained in the subject or the subject in the predicate. The latter has just as much right to be called an analytic proposition as the other. Now, as has just been shown, we can prove the necessary truth of propositions based on 'property by an *analysis* of subject and predicate, since in this case the subject is contained in the comprehension of the predicate. Hence, these propositions are genuinely *analytic*, and are not 'synthetic a priori,' even though the predicate here is not contained in the definition of the subject. The attitude here of the Kantian philosophers is therefore incorrect and unwarranted.

These, then, are the general types of proposition. 'Quality' gives us affirmative and negative propositions;

'quantity' gives us universal, particular, singular, collective, and indefinite propositions; the necessary or contingent 'relation' between subject and predicate gives us analytic and synthetic propositions. The general characteristics manifested in these types affect all the special types. These special types will also have to be studied, so that the logician may understand their full value and import and discover the truth or falsity hidden under the vesture of language.

SUMMARY OF CHAPTER VII

Truth and falsity are found in the judgment and proposition; hence, a knowledge of the various types of propositions is necessary. There are general and special types. The general types are based on the *quality, quantity, and the relation* of subject and predicate found in the proposition.

1. From the standpoint of quality a proposition is either *affirmative* or *negative*. In an affirmative proposition the predicate is always used according to the *whole* of its comprehension and a *part* of its *extension*, it is, therefore, always a *particular* term. In a *negative* proposition the *predicate* is always used according to a *part* of its *comprehension* and the *whole* of its *extension*; it is, therefore, always a *universal* term.

2. The quantity of a proposition affects the whole proposition as such and expresses the *number of individuals* to whom the judgment applies. This is shown by the *extension* of the *subject*. Depending on this, propositions will be universal, particular, singular, collective, or indefinite. These can all be reduced to the value of a universal or *particular* proposition. Symbols: A, E, I, O.

3. From the standpoint of the relation between subject and predicate, propositions will be either *necessary* or *contingent*. When the relation is in a *necessary* matter, the *subject* is always contained in the *comprehension* of the predicate, or vice versa; hence, an analysis of the one will reveal the other and thereby reveal the truth of the

proposition. But when this relation is in a *contingent* matter, *neither subject nor predicate* is contained in the *comprehension* of the other, and an analysis of the one will *not* reveal the other; since this relation is based on a *contingent fact*, we can prove the truth of the proposition only by *experience*. The necessary proposition is, therefore, analytic, while the contingent proposition is *synthetic*; the former is also called 'a priori' and the latter 'a posteriori.'

READINGS

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Chapter 8

SPECIAL TYPES OF PROPOSITIONS

LANGUAGE IS THE VESTURE OF THOUGHT AND, LIKE THE CLOTHING on a body, it both reveals and hides the truth underneath. The human mind loves to give utterance to its ideas and judgments in a variety of ways. Language, however, is at best only an imperfect medium of expression, incapable of giving adequate shape to all the subtleties and nuances of meaning involved in the process of thinking. What is a simple act of the mind must be expressed in a number of words, and the result is often far from satisfactory. It is a long road from the twaddle of a child and the prattle of a savage to the ethereal flights of a master poet and the profound depths of a world-plumbing philosopher; yet all language in whatever form strives for the self-same goal — to convey thought and truth from mind to mind. This is the function of language. It is the imperfection of language which forces the mind to weave it into intricate textures of words, so that at times the truth is almost more hidden than revealed. It makes the task of the philosopher doubly difficult. The logician, then, must resolve these complicated sentences into simpler forms, so as to uncover the hidden truth of their meaning. And since truth lies ultimately in the

judgment and proposition, it becomes the duty of logic to classify and analyze the various *types of propositions*.

There are *two main divisions* of propositions, the *single* and the *multiple*, the *categorical* and the *hypothetical*.

The *single* proposition is one that consists of one subject and one predicate: 'Man is a rational animal,' 'air is a gas,' 'the street is paved.' The *multiple* proposition is one that consists of two or more propositions united into one: 'Jack and Jill went up the hill,' 'Peter was an apostle and a martyr,' 'if it rains, you need not sprinkle the lawn,' 'the earth is white, because it snowed.' A *categorical* proposition is one in which a predicate is attributed to its subject outright, without restriction or condition: 'Air is a gas,' 'she is beautiful but dumb,' 'Peter and Paul were martyrs,' 'he is as generous as he is wealthy.' A *hypothetical* proposition is one which does not attribute a predicate to its subject directly, but asserts the dependence of one judgment on another: 'If it rains, you need not sprinkle the lawn,' 'a body is either in motion or at rest,' 'a religion cannot be true and false at the same time.'

Examining the relationship between these two main groups, one will notice at a glance that they are not exclusive of each other. The single and multiple propositions exclude each other; and the categorical and hypothetical exclude each other. But while the single propositions are always categorical and the hypothetical propositions are always multiple, the categorical propositions may be either single or multiple; a comparison of the examples shows this plainly, but it will become clearer as we investigate the different kinds of propositions contained in these groups.

For the sake of convenience we will divide all propositions into *categorical* and *hypothetical*, subdividing the categoricals into *single* and *multiple*. In this way the entire field will be covered.

SINGLE CATEGORICAL PROPOSITIONS

The *categorical proposition*, as has been stated, makes a direct assertion (hence it is also called *assertoric*) of agreement or disagreement between subject and predicate.

The *single* categorical contains but a *single sentence* in its construction — one subject, one predicate, and the copula if these elements of the sentence are *without* any qualification or composition, it is a *simple* categorical, as ‘Man is rational,’ ‘air is a gas.’ Its very simplicity precludes any difficulty, and nothing further need be said of this type. But if a *qualification* or *composition* enters into the subject or predicate or copula, we have a *composite* single categorical proposition. There are two kinds of these composite propositions, the complex and the modal propositions.

The *complex* proposition is a composite sentence in which both the subject and the predicate or either one is a *complex term*. ‘Man’ is a simple or in-complex term; but ‘learned man,’ ‘good man,’ ‘mortal man,’ ‘intelligent man’ are complex terms. Any such term used as subject or predicate, or any verb expressing past or future time used as a predicate, makes the sentence a complex proposition. For instance, ‘Man is a rational animal,’ ‘police dogs are faithful companions,’ ‘the heavy rain washed the soil down

the hill,' 'the heat of the sun will make the flowers bloom in the springtime,' 'some warm-blooded animals do not thrive in the arctic zone.' In all these instances there is but one judgment, with one subject and one predicate, but the one or the other is a qualified (complex) term. Each sentence, of course, presupposes *former* judgments. Thus, the complex term 'rational animal' implies the former judgment that 'some animals are rational'; but the proposition 'man is a rational animal' represents a *present* judgment which is single but complex. Some qualifying words are *explicative*: they qualify *every* individual belonging to the extension of the qualified term; such is the term 'rational' in the sentence 'rational man is mortal,' and the term 'speeding' in the sentence 'the speeding cars raced around the track.' Others are *restrictive*; they reduce the qualified term to a *portion* of its extension; as the term 'wingless' in the statement 'wingless birds are rare,' and the term 'better' in the statement 'the better cars are expensive.' In judging the truth of complex propositions, not only must the main judgment be true, but the former judgment involved in the complex term must also be true. Thus, in the proposition 'mortal man is intelligent,' it must be true that 'man is intelligent' and that 'man is mortal.'

The *modal* proposition is a composite single sentence in which the *copula* is so *modified* as to express the *manner* (mode) in which the predicate belongs to the subject. The qualification does not affect the subject or predicate, but the copula itself; namely, it states whether the *objective connection* between subject and predicate, expressed by the *copula*, is necessary, impossible, possible, or contingent.

There are, therefore, four such modes, each of which produces a different kind of proposition.

The *necessary* modal proposition states that the predicate belongs to the subject, and *must* belong to it; for instance, 'Man is necessarily an animal,' 'a circle must be round,' 'that 2 and 5 are 7, is necessary.' The *impossible* proposition states that the predicate does not and cannot belong to the subject; as 'It is impossible that God be unjust,' 'the animal soul cannot be spiritual.' The *possible* proposition enunciates the fact that the predicate is *not actually* found in the subject, but it *might* be; such are 'This car can attain a speed of 75 miles an hour,' 'with his defective heart a sudden death is possible.' The *contingent* proposition states that the predicate *actually belongs* to the subject, but it need not; as, 'It is not necessary that this eagle keep on flying,' 'these students need not be lazy.' Since the peculiarity of the modal proposition lies precisely in its 'mode,' the truth of the judgment depends mainly on the truth of this 'mode? Like the complex proposition, the modal proposition *presupposes* a former judgment; thus the statement 'It is necessary that God be just' implies the former judgment that 'God is just.'

MULTIPLE CATEGORICAL PROPOSITIONS

The complex and modal propositions represent the two types of *single* categoricals. *Multiple* categoricals are propositions which contain *two or more sentences in their very construction*. Of these some are overtly, while others are covertly, multiple; the latter are called 'exponibles.'

The *overtly multiple* categoricals are *plainly composed of two or more propositions*. They are five in number: copulative, adversative, relative, causal, and comparative.

The *copulative* proposition has two or more subjects, or two or more predicates; or two or more subjects and predicates, combined into a grammatical unity. Examples: 'Eagles and sparrows are birds'; 'the man slipped and fell and broke his arm'; 'Alfred E. Smith and Franklin D. Roosevelt were governors of New York State and candidates for the presidency.' Each of these sentences can be resolved into as many single propositions as there are different subjects and predicates; thus, 'Eagles are birds' and 'Sparrows are birds.' Such sentences, of course, can also be negative, as 'Neither his sisters nor his brothers spoke to him.' The truth of copulative categoricals depends upon the truth of all the single sentences which compose the multiple proposition.

The *adversative* (or *discretive*) proposition consists of two propositions united in opposition to each other by conjunctions like 'but,' 'although,' 'yet.' Examples: 'The plaintiff lost his money, but not his honor, in the lawsuit'; 'the father was lenient, although the child was stubborn'; 'the depression harmed his business, yet he was not despondent.' To be true, each sentence must be true.

The *relative* proposition expresses a relationship of time or place between two sentences. Examples: 'After going to the store, he went home'; 'before lighting a cigarette, he began to talk.' Such propositions are true, if the single statements and the relation of their sequence is true.

The *causal* proposition combines two statements together in such a way that the 'one is given as the reason or cause of the other; the words 'for' or 'because' show the type. Examples: 'The times are hard, for people have no money'; 'the soul is immortal, because it is immaterial'; 'the man is contented, because he is a millionaire.' The truth of the causal proposition depends upon the truth of each categorical proposition contained in it and upon the causal connection declared to exist between them.

The *comparative* proposition compares the relation between a subject and predicate with the same relation between another subject and predicate, and expresses the degree of this relationship as being either less or equal or greater. Examples will clarify this somewhat complicated definition: 'Napoleon was a greater general than Caesar'; 'as you live, so you die'; 'Hoover was less active than Roosevelt.' Three statements are contained in each of these propositions: the two simple statements, for instance, that 'The quality of Napoleon's generalship was great, and 'The quality of Caesar's generalship was great'; and the comparative degree of this quality, namely, 'The quality of Napoleon's generalship was the greater of the two.' The truth of a comparative proposition depends on the truth of the two separate sentences and on the truth of the degree mentioned as existing between them.

THESE OVERTLY MULTIPLE CATEGORICAL PROPOSITIONS DO NOT present any great difficulties. The *covertly multiple* categoricals, however, have the *appearance of single*

propositions, although they are really multiple. Their composition lies concealed in some word and needs an exposition to show the multiple character; hence, they are styled '*exponibles*,' and the sentences into which the general proposition can be resolved are called the 'exponents.' The *exponible* propositions, as far as their truth is concerned, will be true, if the 'exponents' and the logical connection between them are true; if any of these parts are false, the entire proposition is false. The '*exponibles*' are five in number: exclusive, exceptive, reduplicative, specificative, and inceptive-desitive propositions.

The *exclusive* proposition contains some particle of speech like 'only,' 'alone,' 'solely,' 'none but,' which indicates the exclusion of any other predicate from this subject or any other subject from this predicate. Examples: 'Only God can make a tree'; 'Cicero was only an orator'; 'not only the brute is not rational.' The affirmative exclusive *exponible* will be resolved by means of a copulative proposition, in which one sentence is affirmative and the other negative; thus, the proposition 'Only God can make a tree' will become 'God can make a tree and all others cannot make a tree.' The negative exclusive *exponible* will be resolved into two negative exponents; the sentence 'Not only the brute is not rational' will become 'The brute is not rational and some other creature is also not rational.'

The *exceptive* *exponible* proposition contains a particle of speech like 'except' or 'save,' to indicate that a portion of the extension of the predicate does not apply to the subject, or vice versa. Examples: 'All persons except one were killed

in the wreck'; 'all students save three were not indolent.' The resolution of such exponibles should be easy: 'One person was not killed in the wreck, and all others were killed.'

The *reduplicative* and *specificative* propositions are alike in this that they contain an expression which duplicates the subject or predicate, giving them special emphasis, like 'as such,' 'as a.' The difference between the two types of propositions is this: the reduplicative implies the reason or cause for the connection between subject and predicate, while the specificative merely implies the time element or condition of this connection. An example will illustrate the point. If I state that 'Man as a man, is endowed with free will,' I intend to say that 'Man, because he is man, is endowed with free will'; similarly, if I state that 'Christ, as God, is eternal, but Christ, as man, is mortal.' These are reduplicative propositions. But when I say that 'John, as a student at college, participated in athletics,' or that 'The doctor, as a physician, was a very congenial man,' my statements are specificative, because athletics has nothing to do with student because he is a student, and congeniality is not a quality of a physician because he is a physician. Were I to state, however, that 'John was a good student, as such,' meaning that he studied as a student should, or that 'The doctor, as a physician, was a good diagnostician,' my statements would be reduplicative. Such propositions are true, when both the plain statement and the reduplicative or specificative sub-statement are correct.

The *inceptive* and *desitive* propositions include a declaration of time when something begins (inceptive) or

ends (desitive). Examples: The statement that 'The last depression began with the financial crash in Wall Street in 1929' is an inceptive proposition; 'The World War ceased with the armistice on November 11, 1918,' is a desitive proposition. These kinds of sentences are resolved as follows: 'There was no depression before the financial crash in Wall Street in 1929, and there was a depression after this financial crash'; 'the World War was fought before the Armistice of November 11, 1918, and the World War was fought no longer after this armistice.' Truth depends, of course, upon both exponents.

These, then, are the various types of *categorical* propositions, whether *single* or *multiple*. The categoricals always make a clean-cut assertion. In the *hypothetical* propositions, however, the pattern, though fundamentally the same, is somewhat different in thought and structure.

HYPOTHETICAL PROPOSITIONS

The *hypothetical* proposition differs from the categorical (*assertoric*) in this, that it does not declare an unqualified affirmation or denial, but expresses the *dependence of one affirmation or denial on another affirmation or denial*. It manifests itself in three distinct types: the conditional, the disjunctive, and the conjunctive.

The *conditional* proposition expresses a relation in virtue of which one proposition necessarily flows from the other. These are the so-called 'if' propositions; the one containing the 'if' is styled the 'condition' or '*antecedent*,' while the other is the 'conditioned' or '*consequent*.' Examples: 'If

there is no God, the world cannot exist'; 'if the barometer falls, there will be a storm'; 'if animals can think, they are rational'; 'if the soul cannot die, it is immortal.' It will be noted that there is a strict relation expressed in such statements; the 'antecedent' must be true, before the 'consequent' can follow. The truth of this type does *not* depend on the truth of the two statements taken individually and separately, but on the *relation* between them. Take the first example as an illustration. I do not mean to assert that 'God does not exist' or 'The world cannot exist'; what I mean to affirm is that 'The existence of the world depends on the existence of God' as an effect on its cause, and therefore '*If* God does not exist, the world cannot exist.' Similarly, in the second example, I do not intend to assert that 'The barometer is falling' or that 'A storm is coming,' but that 'The coming of the storm is dependent on low atmospheric pressure which is indicated by the falling of the mercury in the barometer.' It is the *dependence* of the one on the other that is affirmed or denied, and on the truth of this dependence rests the truth of the whole statement. The conditional proposition is also called *connex* or (in a special sense) *hypothetical*.

The *disjunctive* proposition is an 'either-or' statement, indicating that the implied judgments cannot be true together nor false together, but one must be true and the other (or others) false. Examples: 'Either the sun or the earth moves in an orbit'; 'man is the result either of creation or of evolution'; 'a body is either in motion or at rest'; 'all energy is either kinetic or potential.' It stands to reason that a *strict or proper* disjunction must be such that

the parts can neither be true nor false together. Hence, it would be an invalid disjunction to state 'He is either walking or sitting,' because he may be 'standing' or 'lying down'; or to state that 'He is either talking or walking or eating,' because he may do all three things at the same time. Sometimes, however, the disjunctive proposition is taken in a *wider* sense, and the meaning of this *improper* disjunction is then 'at least one, but possibly some or all of the parts'; such is the statement 'Either St. Peter or St. Paul or St. John died at Rome.' In this wider sense, all are not allowed to be false, but all may be true; as a matter of fact, in the example just given, SS. Peter and Paul died at Rome, while St. John did not. Corresponding to this double use of the disjunctive proposition, one must judge the truth of such statements.

A *conjunctive* proposition expresses a judgment that two alternative assumptions are not or cannot be true simultaneously. Examples: 'A body cannot be in motion and at rest at the same time'; 'rain and sunshine cannot occur at the same time'; 'a student cannot be diligent and indolent at the same time'; 'no one can be a sinner and a saint at the same time.' For the truth of such a proposition it is necessary that they are really irreconcilable 'at the same time'; if one can show that they may be present together, this would prove the statement to be false. Taking the second example, one may rightly object that 'Occasionally rain and sunshine do occur together.'

THIS ANALYSIS OF THE VARIOUS TYPES OF CATEGORICAL AND hypothetical proposition illustrates the fact that the fundamental pattern of the judgment is the same in all: it is the *affirmation or denial of one thing regarding another*; the only difference is this, that in some cases it is *ideas*, and in other cases it is *judgments*, which are compared and about which the agreement or disagreement is asserted. This fundamental pattern, however, assumes a multitude of expressions which manifest themselves in various *types* of propositions. The mind of man is not mechanical and refuses to formulate its judgments in the stereotyped form 'This is (not) that.' In consequence of this tendency of the mind we find propositions ranging all the way from a one-syllable and one-word sentence like 'Fire!' ('Something is burning!') to the complicated structures of sentences containing over a hundred ideas and a dozen part-judgments of previous experiences, united into 'one complete proposition. The propositions used as examples in this chapter are of a comparatively simple nature, because they were chosen to illustrate the construction of each type; but the cursory reading of any book or article will show how the simple judgment can be overlaid and nearly smothered with words. However, a working knowledge of the types of propositions, as explained here, will enable us to unravel the maze of words and detect the truth of the judgment underneath.

SUMMARY OF CHAPTER VIII

The function of language is to convey thought and truth from one mind to another; but the complexity of language tends to cover up the truth of a judgment with words. Hence, there is a necessity to study the various *types* of propositions. Propositions are either single or multiple, categorical or hypothetical. A *single* proposition consists of one subject and one predicate; a *multiple* proposition consists of two or more propositions united into one. A *categorical* proposition attributes (affirms or denies) the predicate to its subject outright; a *hypothetical* proposition asserts the dependence of one judgment on another.

1. *Single categorical* propositions are either complex or modal.

The *complex* categorical is one in which both the subject and the predicate or either one is a *complex term*. The qualifying term is either explicative or restrictive.

The *modal* categorical has the *copula* so modified as to express the manner (mode) in which the predicate belongs to the subject; namely, whether as something necessary or impossible or possible or contingent. This gives rise to necessary, impossible, possible, and contingent propositions.

2. *Multiple categorical* propositions are either overtly or covertly multiple.

The *overtly* multiple propositions are *plainly composed of two or more propositions*. They are five in number: the

copulative, adversative (discretive), relative, causal, and comparative.

The *covertly multiple* have the *appearance of single* propositions; they are called 'exponibles,' and they are five in number: the exclusive, exceptive, reduplicative, specificative, and inceptive-desitive.

3. The *hypothetical proposition* (which is always a multiple proposition) expresses the *dependence of one affirmation or denial* on another affirmation or denial. There are three types of hypotheticals: the conditional, disjunctive, and conjunctive.

READINGS

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Chapter 9

OPPOSITION OF PROPOSITIONS

AFTER EXAMINING THE GENERAL AND SPECIAL TYPES OF propositions, considered alone for themselves, we must now investigate certain *properties* of propositions when *compared to each other*. By this we do not mean the comparison of one proposition with any kind of other proposition, like the comparison of 'All men are mortal' with 'Apples are tasty'; we mean the comparison of one proposition with another, in both of which the *terms* used as *subject* and *predicate* are retained, but with some change in 'quality' or 'quantity' or both, as the comparison between 'All men are mortal' and 'No men are mortal' and 'Some men are not mortal' and 'Some men are mortal.' Truth and falsity are closely linked in these propositions, because they are evidently *opposed* to each other. Given the truth of one, how about the falsity of the others? And given the falsity of the one, how about the truth of the others? An investigation of this *logical opposition* between such propositions will be of importance in determining their truth and falsity and will be of great assistance in detecting and refuting errors in the course of an argumentation.

NATURE OF LOGICAL OPPOSITION

All truth is based upon the *three laws of thought*: the Principle of **Identity**, the Principle of **Contradiction**, and the Principle of the **Excluded Middle**. These principles form the foundation of all human knowledge. They are such that they need no demonstration, because they are self-evident; a mere explanation will suffice to show their truth.

The *Principle of Identity* reads 'Whatever is, is.' It is also stated in these words: 'Everything is what it is.' Or, as others put it: 'A thing is identical with itself.' Its truth is self-evident. The mere statement of the principle is sufficient to show its truth.

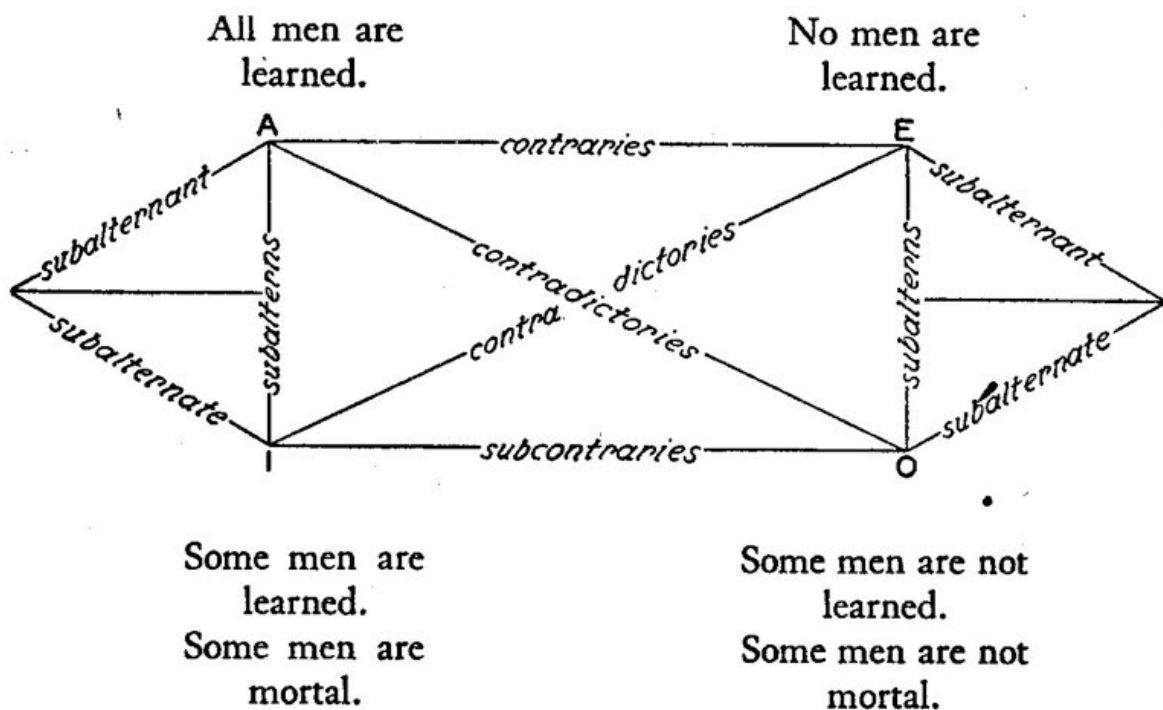
The *Principle of Contradiction* [aka 'non-contradiction, ed.] is formulated as follows: 'Whatever is, cannot at the same time not be,' or, 'It is impossible for the same thing both to be and not to be at the same time.' It will be observed at a glance that this principle is but a different expression of the Principle of Identity: if the first is true, then this second is true also. Surely, if a thing 'is,' one cannot say that it 'is not'; otherwise 'is' would be identical with 'is not,' and 'being' would be the same as 'not being,' and a 'thing' would be 'nothing.' This would be absurd on the very face of it. Of course, it is self-understood that we must use the principle of the *same thing at the same time under the same circumstances*. A person may 'sit and stand' at different times, but a person cannot 'sit and stand at the same time'; the latter would be a contradiction and therefore untrue. A person may be 'a boy and a man' at different stages of life, but not at the selfsame moment of

life. While the Principle of Contradiction applies with equal force to the order of reality and to the order of thought, we are here concerned with its application to the *'logical order* of thought only, and it then reads: *'The same attribute cannot at one and the same time be both affirmed and denied of the same thing.'*

The *Principle of Excluded Middle* is expressed in different ways: 'A thing either is or is not'; 'everything must either be or not be'; 'any attribute must be either affirmed or denied of any given subject'; 'two contradictories cannot be false together'; one of the two contradictories must be true'; 'between affirmation and denial there is no middle course'; 'between two contradictories a middle is excluded.' Obviously so. There is no middle thing possible between 'being' and 'not being'; it is either the one or the other. There is no middle stage or state possible between 'is' and 'is not'; it either 'is' or it 'is not.' This is self-evident. When applied to the *logical order*, the Principle of Excluded Middle has the necessary meaning: 'If I make an affirmation, I thereby deny its contradictory; if I make a denial, I thereby affirm its contradictory.'

Here, then, we have the fundamental laws and principles of correct thinking and truth. Keeping them constantly in mind, we will find little difficulty in understanding the properties of propositions when placed in *opposition* to each other. The *logical opposition* of propositions is the *relation which exists between propositions having the same subject and the same predicate, but differing in quality, or in quantity, or in both.*

There are four possible ways in which a proposition, having the same subject and the same predicate, may appear: a universal affirmative (A), a universal negative (E), a particular affirmative (I), a particular negative (O). Here is an example: 'All men are learned,' 'no men are learned,' 'some men are learned,' 'some men are not learned.' These propositions represent the four types of opposition. They are exemplified, together with their mutual relations as 'opposites,' in the sub joined *Square of Opposition*:



Square of Opposition

This diagram illustrates the four types of opposition and the four *relations* resulting from this opposition; namely:

The relation of *subalternation* is the opposition existing between a universal and particular affirmative (A and I), and between a universal and particular negative (E and O).

Both propositions, the universal and particular, are called 'subalterns'; the universal is the 'subalternant' (A and E), while the particular is the 'subalternate' (I and O).

The relation of *contradiction* is the opposition existing between a universal affirmative (A) and a particular negative (O), and between a universal negative (E) and a particular affirmative (I).

The relation of *contrariety* is the opposition existing between a universal affirmative (A) and a universal negative (E).

The relation of *subcontrariety* is the opposition existing between a particular affirmative (I) and a particular negative (O).

LAWS OF LOGICAL OPPOSITION

A little concentration will show us that these various relations of opposition entitle us to formulate certain *laws of truth and falsity* regarding propositions which contain these different relations.

Law of Subalternation: A — I and E — O. This law has two phases, the *first* rule of which states: *the truth of the universal involves the truth of the particular; but the truth of the particular does not involve the truth of the universal.* In other words, if A is true, I must be true; and if E is true, O must be true. A mere explanation will suffice to prove the truth of this rule. What is true of 'all' individuals of a class, must also be true of 'some' of these individuals; because what is true of the 'whole,' must be true of every 'part.' If '*All men are mortal,*' then surely '*Some men are mortal*';

and if 'All monkeys are not polar bears,' then 'Some monkeys are not polar bears' either. On the other hand, if I is true, we cannot conclude that A is true; and if O is true, we cannot argue that E is true. This is also obvious. What is true of 'some' need not be true of 'all'; because what is true of a 'part' of a class, need not be true of the 'whole' class. Bear in mind that it *may* be so, but it *need not* be so; because it might happen that what is said of 'some' pertains to the 'whole' class also, but we cannot argue validly in *virtue of the proposition* from 'some' to 'all' and from the 'part' to the 'whole.' Thus, because 'Some men are learned' we cannot conclude that 'All men are learned'; and because 'Some men are not learned' we cannot argue that 'No men are learned.' We are, therefore, never warranted to judge from the truth of the particular to the truth of the universal, even though *at times* we might strike the truth thereby, as in the cases: 'Some men are mortal,' hence 'All men are mortal'; 'Some men are not irrational,' hence 'All men are not irrational.' From the particular proposition, therefore, we can make no valid conclusion to the universal; the universal will always be doubtful.

The *second* rule of the law of subalternation states: *the falsity of the particular involves the falsity of the universal; but the falsity of the universal does not involve the falsity of the particular.* If I is false, A is false; if O is false, E is false: this is the first part of the rule, and it is plain enough. In order that something be true of 'all,' it must be true of each and *every* individual who makes up the 'all'; that something be true of the 'whole,' it must be true of *every* 'part' contained in the 'whole.' How, then, could something be

true of 'all,' if it is false of 'some'? Hence, if it is false that '*Some* men are learned,' it is all the more false to state that '*All* men are learned'; and if it is false to say that '*Some* men are not mortal,' it is also false to say that 'All men are not mortal.' From the falsity of the particular, therefore, we must conclude to the falsity of the universal. The *second* part of this rule reads: If A is false, I need not be false; and if E is false, O need not be false. In order that a universal be true, *every* individual of the class and *every* 'part' of the 'whole' must be true; hence, the universal will be *false*, if *not every* individual of the universal and *not every* 'part' of the 'whole' is true. This means that if a universal is false, *some* of its individuals must also be false, but *some* (of the others) *may be true*. Of course, here, too, all of the individuals *may* be false, but the falsity of the universal only *entitles* us to conclude that *some* of the individuals are false, leaving the matter undecided whether the *others* are true or false. For instance, if it is *false* that '*All* men are learned,' I cannot say that it is *false* that '*Some* men are learned'; because all I can conclude from the falsity of '*All* men are learned' is this, that '*Some* men *are not* learned.' Similarly, if it is false that '*No* men are learned,' I have no right to conclude that it is *false* to say that '*Some* men *are not* learned'; the only legitimate conclusion that I may draw is that '*Some* men *are* learned.' Hence, the falsity of the universal does not involve the falsity of the particular: the particular may or may not be false together with its universal; the falsity of the subalternant will always be in doubt, when the subalternant is false.

Law of Contradiction: A — O and E — I. This law also has a double phase, of which the *first* rule is: *contradictories cannot be true together*. If A is true, O is false; if O is true, A is false; if E is true, I is false; if I is true, E is false. In an affirmative universal (A) proposition, it is asserted that the predicate is affirmed of each and every individual belonging to the subject: 'All men are mortal.' If this is true, then it must be false to deny this statement of '*some*'; hence, the statement that '*Some* men are *not* mortal' (O) cannot be true. In a negative universal (E) it is asserted that the predicate must be denied of each and every individual belonging to the subject: 'No saints are sinners.' If this statement is true, then it must be false to say that '*Some* saints *are* sinners' (I). What is true of *all* must be true of every one of the class; to state at the same time that 'all are' and 'some are not,' and that 'none are' and 'some are,' would violate the Principle of Contradiction. Hence, if the universal affirmative (A) is true, the particular negative (O) is false; and if the universal negative (E) is true, the particular affirmative (I) is false. The law works also the opposite way: if O is true, A is false; and if I is true, E is false. If it is true that '*Some* men *are not* learned,' it is certainly false to assert that '*All* men *are* learned'; and if it is true that '*Some* dogs are mastiffs,' it must be false to assert that '*No* dogs are mastiff s.' From the truth of the particular negative (O), therefore, follows the falsity of the universal affirmative (A); and from the truth of the particular affirmative (I) follows the falsity of the universal negative (E). The *second* rule of the law of contradiction reads: *contradictories cannot be false together*. If A is false,

O is true; if E is false, I is true; if O is false, A is true; if I is false, E is true. The demonstration of this rule is merely a variation of the foregoing rule and should cause no difficulty. If it is false that '*All* men are learned,' it must be true that '*Some* men are not learned' ($A - O$). If it is false that '*No* men are learned,' it must be true that '*Some* men are learned' ($E - I$). If it is false that '*Some* men are not mortal,' it must be true that '*All* men are mortal.' If it is false that '*Some* men are monkeys,' it must be true that '*No* men are monkeys.' In all these examples, when '*some*' is placed in opposition to '*all*,' we must remember that '*some*' is equivalent to '*at least one, and possibly more.*' We now see the correctness of the following conclusions: from the falsity of the affirmative universal (A) follows the truth of the particular negative (O); from the falsity of the universal negative (E) follows the truth of the particular affirmative (I); from the falsity of the particular negative (O) follows the truth of the universal affirmative (A); and from the falsity of the particular affirmative (I) follows the truth of the universal negative (E).

From the above it will be clear that the contradictory pairs form a *perfect opposition* among themselves: they can be neither true nor false together; one must be true and the other must be false. From this it follows that, to overthrow the truth of any proposition, we must prove the contradictory of that statement: this is required and it is sufficient. If anyone makes the general assertion that '*No* acts of man are immaterial,' all that would be necessary to break down the truth of this statement would be to prove a *single* instance showing that '*At least one* act of man is

immaterial,' because that would entitle a person to make the contradictory statement that 'Some (meaning: at least one, possibly more) acts of man are immaterial.' The reason for this, as we saw when explaining the Principle of Contradiction, is that there is no neutral middle ground between contradictories: a thing either is or is not; if the one is true, the other must necessarily be false.

Law of Contrariety: A — E. The rules are: *contraries cannot be true together; contraries may be false together.* If A is true, E is false; if E is true, A is false. If A is false, E may be true or false; if E is false, A may be true or false.

The correctness of the *first* rule is easily demonstrated with the help of the 'square of opposition.' Suppose the universal affirmative (A) is *true*: 'All men are mortal.' What is the result? According to the Law of Contradiction just explained, O must be *false*; it is therefore false to say that 'Some men are not mortal.' Now, according to the Law of Subalternation: 'the falsity of the particular involves the falsity of the universal'; consequently, E (universal negative) is *false*, and the statement that 'No men are mortal' (E) cannot be true. Hence, if A is true, E is false. The same line of reasoning applies, if we suppose E, the universal negative, to be true: 'No stones have life.' If E is true, its contradictory (I) must be false, namely 'Some stones have life.' And since this particular affirmative (I) is *false*, it also involves (according to the Law of Subalternation) the falsity of its universal (A). 'All stones have life' is therefore also false. Therefore, if E is true, A must be false. This shows that contraries cannot be true together.

The *second* rule is proved in similar fashion by means of the square of opposition.' It is granted that A, the universal affirmative, is *false*: 'All fishes have lungs.' Since this is false, its contradictory (O) must be true: 'Some fishes have not lungs.' But we have seen from the Law of Subalternation, that 'the truth of the particular does *not* involve the truth of the universal.' Hence, although it is true that 'Some fishes have not lungs' (O), we *cannot* conclude from this that its universal (E) is also true and say that 'No fishes have lungs.' E *may* be false. Hence, both contraries may be false. Similarly, let it be granted that E, the universal negative is *false*: 'No professors are learned.' This makes the contradictory (I) *true*: 'Some professors are learned.' Again, 'the truth of the particular does not involve the truth of the universal.' Therefore, the truth of A is not established; it *may* be true to say 'All professors are learned,' but it *may* also be false. Hence, both contraries may be false.

We can therefore conclude the following: From the truth of one contrary we can conclude to the falsity of the other; but from the falsity of one contrary we cannot conclude to the truth of the other. The reason is simple. The contraries are the two *extremes* in a certain sphere, with a middle ground in between; like 'white' and 'black' in the sphere of color, with red and green and blue and other colors between them. Certainly, if a thing is 'white,' it cannot be 'black' or any of the other colors; and if it is 'black,' it cannot be 'white' or any other color. But if it is *not* 'white,' it *need* not be 'black,' because it might be red or blue or any other color; and if it is *not* 'black,' it *need* not be 'white,' for

the same reason. The same relation exists between contrary propositions.

Law of Subcontrariety: $I - O$. The double rule here states: *both subcontraries cannot be false; but both subcontraries may be true*. The *first* rule demands: If I is false, O is true; if O is false, I is true. We will take it as granted that the particular affirmative (I) is *false*: 'Some men are crippled.' Then its contradictory (E) must be *true*: 'Not men are crippled.' But the supposition is that the particular, negative (O) is *also false*: 'Some men are not crippled.' Consequently its contradictory (A) must be *true*: 'All men are crippled.' Therefore, if both I and O could be false together, the result would be that A and E would be *true together*; but we proved by the Law of Contraries a moment ago that contraries cannot be true together. Hence, subcontraries cannot be false at the same time; at least one of the two must be true.

The *second* rule of the subcontraries states that both may be true together: if I is true, O maybe true; if O is true, I may be true. We will suppose that I is *true*: 'Some men are crippled.' The contradictory of this (E) must be *false*, and we cannot say that 'No men are crippled.' But we know from the Law of Subalternation that 'the falsity of the universal does not involve the falsity of the particular.' Hence, even though E is false, we cannot conclude to the falsity of O: the proposition O *may* be true that 'Some men are not crippled.' We can also reverse the argument. If O is *true*, 'Some men are not crippled,' then its contradictory A is *false* that 'All men are crippled.' Since, however, we cannot conclude from the falsity of a universal to the falsity

of the particular (Law of Subalternation), we cannot infer that I is also false: the statement that 'Some men are crippled' *may* be true. Both subcontraries, therefore, may be true together.

Summarizing the results of the four types of opposition (subalternation, contradiction, contrariety, and subcontrariety), we arrive at the following list of *legitimate conclusions*:

If A is true: then I is true. E is false, O is false.

If A is false: then O is true, E is doubtful, I is doubtful.

If E is true: then O is true, A is false, I is false.

If E is false: then I is true, A is doubtful, O is doubtful.

If I is true: then E is false, A is doubtful, O is doubtful. If I is false: then O is true, A is false, E is true.

If O is true: then A is false, E is doubtful, I is doubtful.

If O is false: then I is true, E is false, A is true.

From these relations of 'opposites' it will be clear that we are often entitled to conclude from the truth or falsity of one proposition to the truth or falsity of another. This method of concluding from the truth or falsity of one statement to the truth or falsity of another is called *immediate inference*; it is called 'immediate,' because we can pass directly from the one to the other, without the necessity of adducing any other idea or judgment as proof. The 'square of opposition' and the Three Laws of Thought are sufficient to make their truth or falsity evident, provided

we know *beforehand* that one of these opposites is true or false.

The 'square of opposition,' therefore, with its relations of sub-alternation, contradiction, contrariety, and subcontrariety, will act as a powerful aid toward correct thinking.

SUMMARY OF CHAPTER IX

Propositions are said to be *logically opposed* to each other, when they have the same subject and predicate, but with a change in 'quality' or 'quantity' or both.

1. All truth is based upon the *three laws of thought*: the Principle of Identity, the Principle of Contradiction, and the Principle of the Excluded Middle. The *Principle of Identity* states: 'everything is what it is.' The *Principle of Contradiction* states: 'it is impossible for the same thing both to be and not to be at the same time.' The *Principle of Excluded Middle* states: 'everything must either be or not be (something).' These principles are self-evident and they underlie all being and thinking.

The '*square of opposition*' exemplifies the four types of logical opposition possible between propositions: subalternation, contradiction, contrariety, and subcontrariety.

2. *Subalternation* is the opposition existing between A and I, and between E and O. The *two rules* for subalternation are: the truth of the universal involves the truth of the particular, but the truth of the particular does not involve the truth of the universal; the falsity of the particular involves the falsity of the universal, but the falsity of the universal does not involve the falsity of the particular.

Contradiction is the opposition existing between A and O and between E and I. The *two rules* are: contradictories cannot be true together; contradictories cannot be false together.

Contrariety is the opposition existing between A and E. The *two rules* are: contraries cannot be true together; contraries may be false together.

Subcontrariety is the opposition existing between I and O. The *two rules* are: both subcontraries cannot be false; both sub-contraries may be true.

This method of concluding from the truth or falsity of one statement to the truth or falsity of another is called *immediate inference*.

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Chapter 10

EDUCTIONS

THE 'SQUARE OF OPPOSITION,' AS WE HAVE JUST SEEN, PERMITS US to draw certain conclusions from a given proposition to the truth or falsity of its opposites. Every judgment not only *states* something for itself, but it also *implies* something else. A sentence like 'All trees are perennial plants' states definitely that trees are plants which live from year to year; but it also implies thereby that it would be 'false to assert that some trees are not perennial plants.' This is implicitly contained in the first judgment, and it is deduced from it by a process of immediate inference. Logical opposition is only one source of such inferences. There are others. They are called 'eductions.'

An eduction is a process of immediate inference whereby, from any proposition taken as true, we derive others implied in it, though differing from the first in subject or predicate or both. In logical opposition the subject and predicate must retain their place in all opposed propositions. In an eduction, however, subject and predicate may be interchanged at times, without destroying truth; and in a similar manner, the 'quantity' and 'quality' of the original proposition may be altered, without destroying

the meaning. There are two main forms of eduction: obversion and conversion.

OBVERSION

Obversion (or *Equipollence*) is a process of immediate inference, *in which the inferred judgment, while retaining the original subject, has for its predicate the contradictory of the original predicate.* The purpose of obversion is to take an original proposition and, by the addition or subtraction of one or two negations, to make a second proposition which is equivalent (equipollent) in meaning to that of the first. Given the first statement, the second cannot be denied, because, though different in form, they actually mean the same thing. The original proposition is called the '*obvertend*,' the inferred proposition is called the '*obverse*.' Since the obverse proposition has a predicate which is the contradictory of the original predicate, the 'quality' of the copula in the obverse proposition will also have to be changed; hence, if the obvertend proposition is affirmative, the obverse will have to be negative, and if the obvertend is negative, the obverse will have to become affirmative. It will, therefore, be necessary to construct the obverse proposition according to the following rule: *retain the subject, contradict the predicate, negate the copula.* The rule can also be formulated in different words: 'negative the predicate, change the quality of the proposition, but leave the quantity of the proposition unchanged.' Since the 'quantity' remains the same and the 'quality' is changed, obversion gives us the following

results: A obverts to E; E to A; I to O; O to I. Examples will make this clearer.

The A proposition: SaP. It states that 'all S is P'; 'All men are bipeds.' Now, if 'all S is P,' the Law of Contradiction forbids us to say that 'all S is non-P,' and we must therefore *deny* that 'all S is non-P,' and that is done by negating the copula by saying that 'no S is non-P.' We have now carried out the rule of obversion by retaining the subject, contradicting the predicate, and negating the copula. The result is that the obverse proposition must be equivalent to the obvertend. Here, then, is how the original proposition is obverted:

Obvertend A: 'All men are bipeds.'

Obverse E: 'No men are non-bipeds.'

These propositions are truly equivalent. If the whole comprehension of 'biped' is affirmed of 'all men,' then the comprehension of 'non-biped' must be denied of 'all men.' Or to put it in a different way, if the whole class of 'all men' belongs to the class of 'bipeds,' then the whole class of 'all men' must be excluded from the class of 'non-bipeds'; and thus 'No men are non-bipeds' and 'All men are bipeds.'

The E propositions: SeP. In this type of proposition 'no S is P'; 'No insects are vertebrates.' According to the Law of Excluded Middle 'S is either P or non-P.' Now, the original statement as given states that 'no S is P'; hence, 'all S is non-P.' This will give us the two equipollent propositions:

Obvertend E: 'No insects are vertebrates.'

Obverse A: 'All insects are invertebrates.'

And this is true. If the comprehension of 'vertebrates' is excluded from the whole class of 'insects,' then the comprehension of 'non-vertebrates (invertebrates)' must be affirmed of 'all insects.' Or (which is the same thing), if 'no insects' belong to the class of 'vertebrates,' then 'all insects' must belong to the class of 'invertebrates.' Therefore, both the obvertend and the obverse are equipollent in meaning.

The I proposition: SiP. Here we state that 'some S is P'; 'Some automobiles are expensive.' If this is accepted, then the Law of Contradiction demands that we deny that these same some are inexpensive.' This we do by using 'inexpensive' as the predicate and negating the copula, 'some S is not non-P':

Obvertend I: 'Some automobiles are expensive.

Obverse O: 'Some automobiles are not inexpensive.'

Since, in the original statement, the comprehension of 'expensive' is affirmed as belonging to 'some automobiles,' the comprehension of 'non-expensive (inexpensive)' must be denied of these 'some.' Looked at from the standpoint of the subject 'some automobiles,' since they belong to the class of 'expensive' cars, they must be excluded from the 'inexpensive' class. This is why the obvertend and the obverse propositions mean the same thing.

The O proposition: SoP. The O type is a particular negative, 'some S is not P'; 'Some homicides are not murders.' The Law of Excluded Middle demands that 'some

S either is P or is not P.' It is granted in the original proposition that 'some S is not P.' We must, therefore, deny that 'some S is not non-P,' and this is done by negating the copula of this last sentence. A logical oddity is the result: we have a sentence with three negatives, 'some S is not not non-P.' Since, however, the two negatives of the copula neutralize each other, they cancel each other; and so we obtain a particular affirmative as the result, 'some S is (not not) non-P.' Hence, the propositions:

Obvertend O: 'Some homicides are not murders.'

Obverse I: 'Some homicides are non-murders.'

As long as the original statement asserts that the comprehension of 'murders' does not apply to 'some homicides,' we must affirm that the comprehension of 'non-murders' does apply to 'some homicides.' Similarly, since 'some homicides' do not belong to the class of 'murders,' these same 'some homicides' must belong to the class of 'non-murders.' 'Some homicides are non-murders' is therefore equivalent to 'Some homicides are not murders.'

In all these obverse propositions the predicate becomes a *negative term*: but the meaning of such a term is *positive in content*. The terms 'non-biped,' 'invertebrate (non-vertebrate),' 'inexpensive (non-expensive),' 'non-murders,' are not the same as 'nothing'; they mean '*something else*' outside the class of bipeds, 'vertebrates, expensive things, murders.' Hence, they are nego-positive terms, negative in form but positive in meaning. A 'biped,' for instance, is a 'two-legged being' while a 'non-biped' is either a 'no-legged

being' or a 'being with one leg or with more than two legs'; both terms represent separate classes of beings. And so with the other nego-positive terms. Obversion is, therefore, not a mere play on words; it is truly an immediate inference from one class of beings to a different class of beings.

CONVERSION

Conversion is a process of immediate inference, in which the inferred judgment takes the subject of the original proposition for its predicate, and the predicate of the original proposition for its subject. The original proposition is called the 'convertend,' and the inferred proposition is called the '*converse*.'

This interchange of subject and predicate would seem, at first blush, to be quite unwarranted and arbitrary. But it is a perfectly legitimate process, and its use is justified by the very nature of the judgment. Every judgment involves two ideas and the mental act asserting their agreement or disagreement among themselves. The ideas contained in the subject and predicate are perceived by the mind to be such, that they are identical or non-identical; accordingly, the judgment is either affirmative or negative. If they are identical, then it must be equally permissible to affirm the subject of the predicate as it is to affirm the predicate of the subject. If they are not identical, then the predicate is outside the class of the subject just as well as the subject is outside the class of the predicate. In both instances an interchange of the two terms should express the same relation. For example, if it is true that 'Trees are living

things,' it must be equally true that 'Some living things are trees'; and if 'No trees are animals,' then, also 'No animals are trees.' In the first example it is stated that the 'class of trees' belongs to the wider 'class of living things,' and consequently 'some class of living things' is identical with the 'class of trees,' and it must, therefore, be proper to turn the original statement around and state that 'Some living things are trees.' In the second example, we 'exclude the whole 'class of trees' from the whole 'class of animals,' and this also excludes the whole 'class of animals' from the whole 'class of trees,' and so we must be able to assert with equal truth that 'No animals are trees.'

Since it is the purpose of conversion to *infer* a second proposition of equal truth and value from a given original proposition, it is obvious that the second must follow *necessarily* from the truth of the first, and it must contain nothing which is not contained in the first. This demands a *double rule*, in order to insure the strict consequence of the converse from the convertend proposition: *the converse and convertend propositions must retain the same quality, i.e., must both be affirmative or both be negative; no term may be distributed in the converse, unless it was distributed in the convertend.*

It takes but a few moments' reflection to understand the necessity of these two rules. If we assert the identity between subject and predicate in the convertend, we must do the same in the converse, because the converse proposition is supposed to express the same truth and relation as the convertend. For the same reason the converse must be negative, if the convertend is negative. As

for the *second* rule, if a term is not distributed in the convertend, it is a particular term and applies only to a part of the class mentioned. But what is true of a 'part' of a class, need not be true of the 'whole' class, and so we are not allowed to conclude from a 'part' to the 'whole.' It follows, therefore, that a term which is undistributed (i.e., which is used as a particular term) in the convertend proposition may not be distributed (i.e., used as a universal term) in the converse proposition; otherwise we would infer *more* in the converse than is asserted in the original terms. Naturally, though, a term that is distributed in the obvertend proposition may be used as a particular term in the converse proposition, because what is true of the 'whole' must also be true of the 'part.' It will, therefore, be evident that 'no term may be distributed in the converse, unless it was distributed in the convertend'; but a term which is distributed (universal) in the convertend may be undistributed (particular) in the converse.

When the quantity (extension) of subject and predicate is the same in both the convertend and the converse, then such a conversion is called a *simple conversion*; but when the quantity of either subject or predicate, which is universal in the convertend, is limited to a particular term in the converse, then the conversion is called a *conversion by limitation*. And here we must recall that the predicate of an affirmative proposition is always particular and the predicate of a negative proposition is always universal; the subject will be universal in extension, if it is preceded by 'all' or 'every,' and the subject will be particular in extension, if it is preceded by 'some.' After these general

observations, we will consider the conversion of the four types of propositions, A, E, I, O.

Conversion of *A propositions*: SaP. The convertend (original) statement will read: 'all S is P'; 'All roses are plants.' Since this is an affirmative sentence, the predicate is particular. Hence, the converse proposition cannot be made into 'all P is S,' 'All plants are roses,' because 'all plants' would be universal, and that would infer more than the original proposition warrants. A universal affirmative proposition can only be converted *by limitation*, i.e., the converse will have to be an affirmative particular proposition, 'some P is S,' 'Some plants are roses.' Hence, by conversion A becomes I.

Convertend A: 'All roses are plants.'

Converse I: 'Some plants are roses.'

It will be well to note this peculiarity of the A proposition, because many people in the course of an argument are guilty of the fallacy of making a simple conversion here, where only a conversion by limitation is permissible. Nothing is more frequent than the erroneous inference: 'Insane people are eccentric, and therefore eccentric people are insane'; 'cowards are mean people, and therefore mean people are cowards'; 'martyrs are heroes of duty, and therefore heroes of duty are martyrs'; 'murder is homicide, and therefore homicide is murder'; 'hypocrisy is deceit, and therefore deceit is hypocrisy.' Such a course of inference will be correct only when the predicate is co-extensive with the subject, as is the case with *definitions*:

'All men are rational animals, and all rational animals are men.' But we cannot do this *in virtue of the proposition as such*, because the predicate in an affirmative proposition ordinarily is taken only according to a *part* of its extension ('some'), and in consequence of this the predicate must become a particular term when it is used as the subject of the converse proposition. All we are allowed to infer in the above-mentioned examples is:

'Some eccentric people are insane'; 'some mean people are cowards'; 'some heroes of duty are martyrs'; 'some homicides are murders'; 'some forms of deceit are hypocrisy.'

Conversion of *E pro positions*: SeP. Here 'no S is P'; 'no rubies are diamonds.' The subject, of course, is a universal term. And so is the predicate, because the predicate of a negative proposition is always distributed (universal). The negation of the copula signifies that the entire class of S is outside the class of P and, reversely, that the entire class of P is also outside the class of S. By a simple conversion, then, 'no S is P' becomes 'no P is S':

Convertend E: 'No rubies are diamonds.'

Converse E: 'No diamonds are rubies.'

Conversion of *I propositions*: SiP. In virtue of this proposition 'some S is P'; 'Some New Yorkers are millionaires.' The subject is undistributed (particular), as can be seen by the 'some'; the predicate is also undistributed (particular), because it is an affirmative proposition which takes the predicate only according to a

part of its extension. No change of extension, then, is necessary in transposing subject and predicate in the converse, because both terms will again be undistributed. Hence, by simple conversion 'some S is P' becomes 'some P is

Convertend I: 'Some New Yorkers are millionaires.'

Converse I: 'Some millionaires are New Yorkers.'

Conversion of *O propositions*: SoP. The sentence states that some S is not P; 'Some Americans are not Wisconsin citizens.' No conversion at all is possible for the O propositions. The converse would have to read: 'Some Wisconsin citizens are not Americans.' This is false on the face of it, because, if they are 'Wisconsin citizens,' they must be 'Americans.' The reason is not difficult to find why this sort of conversion is not a legitimate inference. The subject of the original (convertend) proposition is a particular term, because we speak of '*some* Americans'; it is, therefore, undistributed. But in the converse proposition this subject becomes the predicate of a negative sentence, and such a predicate is always distributed (universal). Now, what is true of 'some' need not be true of 'all'; what is true of a 'part' need not be true of the 'whole'; no conclusion (as we saw in the 'square of opposition') from the truth of the particular to the truth of the universal is valid. But that is precisely what we would do, if we took a particular subject and made it a universal predicate in a negative proposition. Hence, we cannot convert 'SoP' into 'PoS'; because 'Some Americans are not Wisconsin citizens,' it does not follow

that 'Some Wisconsin citizens are not Americans.' Such an inference may be true, but it would not be true in virtue of the proposition as *such*, and consequently we cannot be sure of the truth of the converse in O propositions.

Before attempting obversion and conversion, the original statement should always be put into *strict logical form*, otherwise errors will inevitably follow. Thus, we cannot say that 'Gangsters killed policemen' and then convert the statement into 'Policemen killed gangsters.' The original proposition must be reduced to 'Gangsters are men who killed policemen'; now we can legitimately convert this sentence into 'Some men who killed policemen are gangsters.' Similarly, it is obvious that we cannot convert the statement 'Criminals kidnaped the 'Lindbergh baby'' into the sentence 'The Lindbergh baby kidnaped criminals.' But, after reducing the first proposition into the strict logical form of 'Criminals are men who kidnaped the Lindbergh baby,' we can validly infer that 'Some men who kidnaped the Lindbergh baby are criminals.' One must be sure of the meaning and then change the wording of the sentence accordingly.

CONTRAPOSITION AND INVERSION

There are two other forms of eduction, *contra position and inversion*. These, however, are hardly more than applications of obversion and conversion; they possess only minor value, and will, therefore, receive only passing mention.

Contraposition takes place when the subject of the inferred proposition is the contradictory of the predicate of the original proposition. Let the original statement be: 'All ants are insects.' The obverse of this is: 'No ants are non-insects.' The contrapositive proposition will then read: 'No non-insects are ants.' In other words, if we convert the obverse of the original statements, we arrive at the contrapositive proposition. The original predicate is 'insects'; its contradictory is 'non-insects'; this, then, becomes the subject of the inferred proposition, and thus we have the contrapositive proposition 'No non-insects are ants.'

If *contraposition* seems an unusual and almost violent method of expressing a judgment, *inversion* is doubly so. *Inversion* is a method of eduction in which the mind, by means of obversion and conversion, finally arrives at a judgment in which the subject is the contradictory of the original subject. Here is a sample inversion:

Original A: 'All men are intelligent.'

Obverse E: 'No men are non-intelligent.'

Converse E: 'No non-intelligent beings are men.'

Obverse A: 'All non-intelligent beings are non-men.'

Converse I: 'Some non-men are non-intelligent.'

Inverse: 'Some non-men are non-intelligent.'

One must be something of a mental contortionist to twist and squirm through a set of obversions and conversions like this, in order to arrive at the inverse proposition. The final result is almost as if the mind were upside down and

standing on its head, so as to obtain the proper perspective and angle of vision in viewing the truth of the inverse. Of course, no one ever thinks this way and no one would ever dream of formulating a judgment in such a manner. It may be ingenious, but it is an unnatural procedure. Its value as an aid to correct thinking is small.

Our study of the judgment and the proposition has given us a better understanding of the mind and its workings. It has shown us how the intellect, after forming ideas of things, compares these ideas with each other and, like a judge in his tribunal, passes a verdict of agreement or disagreement on them. This verdict is expressed in the judgment, an affirmative judgment being an expression of agreement and a negative judgment being an expression of disagreement. Fundamentally, therefore, every judgment must consist of a subject and a predicate and a copula.

Due to the flexibility of the mind, the judgment is molded into a variety of propositions. The main divisions of propositions are the single and multiple categorical and the hypothetical; both these classes are subdivided into numerous types. But no matter how varied the type and how complicated the grammatical structure of these propositions may be, they can all be reduced to the fundamental pattern of a subject, a predicate, and a copula.

The basic purpose of all mental operations is the discovery and proof of truth. In order to proceed safely and accurately in this quest of truth, the mind must know the exact meaning and the full implication of judgments and propositions. Only then can the intellect be sure that its inferences are correct. Logical opposition and the different

types of eduction (obversion, conversion, contraposition, and inversion) supply us with this important insight into the meaning and implication of judgments and enable us to draw immediate inferences from propositions. These immediate inferences, though valuable, are very limited in scope, and the truths discovered by this process of immediate inferences are neither very startling nor far-reaching. Something else is needed. It is reasoning.

Reasoning, then, forms the subject matter of our next investigation.

SUMMARY OF CHAPTER X

Besides the immediate inference of logical opposition, we have the immediate inference of eduction. Eduction is a mental process whereby, *from any proposition taken as true, we derive another implied in it, though differing from the first in subject or predicate or both.*

1. *Obversion* (equipollence) is an eduction in which the inferred judgment, while retaining the original subject, has for its predicate the contradictory of the original predicate. The original proposition is the 'obvertend,' and the inferred proposition is the 'obverse.' The rule for obversion is *retain the subject contradict the predicate, negate the copula.* 'All S is P' becomes 'no S is non-P,' 'no S is P' becomes 'all S is non-P,' 'Some S is P' becomes 'some S is not non-P,' 'Some S is not P' becomes 'some S is non-P.'

2. *Conversion* is an eduction in which the inferred judgment takes the subject of the original proposition for its predicate, and the predicate of the original proposition for its subject. The original proposition is the 'convertend,' and the inferred proposition is the 'converse.' The rules for conversion are: *the converse and convertend must retain the same quality; no term, undistributed in the convertend, may be distributed in the converse.* 'All S is P' becomes 'some P is S.' 'No S is P' becomes 'no P is S.' 'Some S is P' becomes 'some P is S.' The particular negative (O) proposition cannot be converted.

3. *Contraposition* is an eduction in which the subject of the inferred proposition is the contradictory of the

predicate of the original proposition. For instance, 'all S is P' becomes 'no non-P is S.'

Inversion is an eduction in which the mind by means of obversion and conversion finally arrives at a judgment in which the subject is the contradictory of the original subject. For example, 'all S is P' becomes 'some non-S is non-P.'

READINGS

Coffey, P., Vol. I, Part II, Ch. VI; Hartman, S.J., Ch. XIII; Crumley, T., Ch. XV; Joyce, G. H., Ch. VI; Joseph, H. W. B., Ch. X.

PART III

INFERENCE AND ARGUMENTATION: DEDUCTION

Chapter 11

NATURE OF REASONING

REASONING IS THE SUPREME OPERATION OF MAN AS MAN. AMONG the ever-changing activities of all the multitudinous beings which constitute this universe, from the gyrations of the infinitesimal electrons to the ponderous wheelings of entire star-galaxies flashing through the immensity of space, there is none which can even remotely compare with the splendid achievement of man's reasoning. Man is the apex which graces the pyramid of beings in Nature. The material and the immaterial, the unorganized and the organized, the non-rational and the rational — all are drawn together in man's essence; he is the representative of all bodily creatures, and they reach their culmination point in his power of reasoning. For it is his power of reasoning which lifts man above and beyond all other things, making him a being apart; it is his grand and solitary prerogative, separating him by an unbridgeable abyss from every other creature in this visible world. Man alone can think and reason.

MEDIATE INFERENCE

Man thinks, when he forms ideas — those intellectual representations of things which image the essences underlying the fleeting shadows of phenomena. Man thinks, when he unites ideas into judgments, thereby overstepping the boundary line of sense and striking out into the realm of universal truth. But most of all, man thinks, when he reasons.

Like all other things in Nature, man reaches the full stature of his perfection only in gradual stages. As in his bodily life, so too in his intellectual growth, he is the product of a slow development. Knowledge comes by degrees. It begins in the senses and ends in reason. In the presence of sense objects man's mind automatically becomes active, first forming a *phantasm* and then fashioning an *idea*. Ideas, at the start, are very vague and most general — 'thing,' 'something.' Then, by means of constant observation and study, the mind distinguishes between the various attributes of objects, accidental and essential, until it has a comparatively full knowledge of the thing in its comprehension and extension. This is accomplished through analysis and synthesis and is expressed in the definition and division. Definition and division are the highest expression of ideas as such, and they rest ultimately on concepts which are so simple and evident that they cannot be defined: these are the transcendental ideas of 'being,' 'thing,' 'substance,' 'accident,' and so forth. They are the foundation of knowledge.

The function of the mind is to attain truth. But truth is not found in the ideas; they contain merely the elements of

truth. Truth resides formally in the *judgment*. Having fashioned ideas, the mind holds them up for inspection, compares them, recognizes their agreement or disagreement with each other, and then pronounces their mutual identity or non-identity in a judgment. We have then two ideas, a subject and a predicate, and the mental act of pronouncement in the copula. Since ideas represent things, the judgment expresses an agreement or disagreement between things as they exist in themselves, independent of the mind; and if the mind's judgment corresponds with reality, it is true, and if not, it is false. Here, then, is real progress in knowledge, because now the mind has arrived at truth. As in the case of ideas, so here in judgments, the mind finally reaches certain judgments which are basic and self-evident and are the foundation of all truth; they are the Principles of Identity, of Contradiction, of Excluded Middle. In virtue of these principles, the intellect, after recognizing a given judgment as true, is capable of drawing some conclusions regarding other judgments which are *implied* in the first; this is done by the process of immediate inference, as the result of logical opposition and eduction. As definition and division are the highest expression of ideas as such, so *immediate inference* is the highest expression of judgments as such.

Immediate inference is a primitive form of reasoning. It does not lead the mind very far on the road of knowledge and truth, because it is merely the explicit statement of what is implicitly contained in a given judgment recognized beforehand as true. Certainly, if I know that 'All men are animals,' I can validly infer that 'Some animals are men';

but there is obviously little advancement of knowledge in this. Many truths can be learned by the analysis of ideas, when compared with each other, as we saw in the analytic *a priori* judgments; but here, too, we are restricted to a limited number. More truths are discovered by the direct process of sense perception. I glance out of my window: 'The sun is shining; there is snow on the ground; it is morning; people are walking on the sidewalk; cars are riding the street; a boy is sliding down an embankment; two little girls are quarreling; people are leaving the church; bells are ringing; a chimney is smoking; a truck is stalled'; and so on. But such judgments are of no particular value for the advancement of knowledge and the discovery of important truths. These truths are commonplace. Upon closer consideration, though, even simple judgments like these contain elements which give rise to deep problems of science and philosophy. The sun: 'Is it large, small? how far away? is it an inexhaustible, eternal source of light and energy?' Light: 'Is it corpuscular? undulatory?' Energy: 'Is it a quality? or mere quantity?' People: 'What is life? the soul? is the soul immaterial? immortal?' Religion: 'Is it fact or fiction? is there a God? is there real morality or only convention?' How can we know? These are problems worthy of solution.

We can obtain no answer to these questions by the sole comparison of ideas. That 'The sun is shining' is a palpable truth; I see it, and I know that the attribute expressed by the predicate 'shining' belongs to the being designated by the subject 'sun.' But if I make the judgment 'The sun is a star about 860,000 miles in diameter,' then neither sense

perception nor an analysis of subject and predicate will permit me to assert the truth of this judgment; there is nothing to show that the predicate must or can be affirmed of the subject. 'God exists; God is a person; God is infinite' — by a mere comparison of subject and predicate I am unable to ascertain the truth or the falsity of these judgments. Similarly, the mere judgment alone will not tell me whether I should state that 'The world had a beginning' or 'The world had no beginning.' Nor is it a self-evident truth that 'Man has a soul'; much less is it clear that 'The soul of man is immaterial and immortal.' In these and in a host of other judgments an inspection of the statement will not reveal the fact whether the comprehension of the predicate is included in the comprehension of the subject. It is here that the reasoning power of man comes into play.

Whenever the mind cannot perceive the agreement or disagreement between two ideas by their mere analysis or by direct observation, it is in a state of doubt. And this state of doubt will remain unchanged, until the mind compares these questionable ideas with a known *third* idea and sees their identity or non-identity with this third. If both are identified with and in this third idea, then they are also identical with each other. This is due to the Principle of Identity, because 'things that are identical with a third must be identical with each other.' But if one of these two ideas is identified with this third, and the other is not, then they also disagree among themselves. This follows from the Principle of Contradiction, because 'two things, of which the one is the same as a third and the other is not, cannot be the same among themselves.' In the first case, we will affirm the one

as a predicate of the other, and in the second case we must deny it as a predicate of the other. Having observed the relation of the two questionable ideas with a third which is known and understood, the mind is now able to express a judgment of agreement or disagreement between the two ideas themselves. This is the fundamental process of *reasoning*.

In its most basic form, therefore, reasoning consists of three judgments: two judgments, in which each of the two doubtful ideas is compared separately with the known third; and one judgment, the conclusion, in which the newly discovered relation of identity or non-identity between the formerly doubtful ideas is now expressed as known and certain. In any and every process of reasoning, then, there must be at least three ideas and three judgments. It will now be readily understood why reasoning is called *mediate inference*: the agreement or disagreement between two doubtful ideas is 'inferred' through the 'mediation' of a third idea with which both are compared. Hence, mediate inference or reasoning is defined as *the process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them*. This definition may seem somewhat vague, but there are different types of reasoning or mediate inference, and the definition must fit them all.

The two main types of reasoning are deduction and induction. *Deduction is the process of reasoning in which we conclude from a general law or principle to a particular instance falling under the general law or principle*. Suppose there is a doubt in our mind whether the mimosa pudica,

due to its peculiar reaction to the touching of its leaves, possesses sentiency or no sentiency. And then suppose that science has definitely established the law that the nature of a plant is devoid of sentiency. We can now proceed with the following mediate inference:

All plants are devoid of sentiency;
But the mimosa pudica is a plant;
Ergo, the mimosa pudica is devoid of sentiency.

This is a case of deduction. From the general law that 'All plants are devoid of sentiency' we conclude that the 'mimosa pudica,' because it is one of the class of 'plants,' must fall under the general law governing 'all plants,' and therefore 'The mimosa pudica is also devoid of sentiency.'

We can also start out with a hypothetical proposition. The disjunction, if it enumerates all the possibilities, has the effect of a general principle; if we then accept one of these alternatives as true, we must conclude that all the others are false. For instance:

This criminal is either sane or insane;
He is sane;
Ergo, he is not insane.

The reverse process takes place in induction. *Induction is the process of reasoning in which we conclude from the individual cases to the existence of general laws or principles.* Here the general law or principle is in doubt, while the individual instances are known; we therefore

conclude from the truth of the particulars to the truth of the universal. Take this example:

Water, anywhere on land or sea, when at sea level,
freezes in every instance at $+32^{\circ}$ F.
But water anywhere on land or sea is all water.
Ergo, all water freezes at sea level at $+32^{\circ}$ F.

Of course, it has never been attempted to freeze water at every spot on the globe which is at sea level; but since, whenever and wherever done, water always froze, it is rightly concluded that this is a property necessarily connected with the essence of water and has, therefore, the value of a universal law applicable to all water.

This, then, is the nature of mediate inference in general: it is the process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them. It is characteristic of every such inference that there exists a *logical connection* between the judgments and ideas, in virtue of which the conclusion follows *necessarily* from the others. A *mere sequence* of ideas and judgments, even if true, *does not constitute an inference*. Here is a case in point:

Plants are no minerals;
Metals are no plants;
Ergo, metals are minerals.

The above conclusion has no logical connection with the other judgments. Neither 'minerals' nor 'metals' are

identified with the mediating idea 'plants'; hence, the mediating idea 'plants' shows no relation between the other two ideas as to their agreement or disagreement. The conclusion, therefore, does not follow necessarily from the other judgments. Now take this example:

All inorganic substances are minerals;
Metals are inorganic substances;
Ergo, metals are minerals.

Here we see how the mediating idea 'inorganic substances' establishes an identity between 'minerals' and 'metals,' enabling the mind to draw the conclusion that 'metals are minerals.' The ideas and judgments are not arranged in a mere sequence, as in the previous example; there is a definite logical connection between them all.

From the foregoing we can easily understand what constitutes the matter and form of the mediate inference. The *matter* consists in the various ideas and judgments of the inference. The *form* consists in that special arrangement of ideas and judgments, in virtue of which the conclusion follows *with necessary force* from the given ideas and judgments. This logical connection between ideas and judgments constitutes the *consequence or consistency* of the inference, and it is the specific differentia which distinguishes reasoning from every other mental act.

Consistency must not be confused with truth. Naturally, the very nature of the inference demands that the conclusion *must* be true, if the other judgments are true. But if the conclusion be drawn from judgments of which one

or all are false, then the conclusion may be false. We see this in the following inference:

No fishes are mammals;
The whale is a fish;
Ergo, the whale is no mammal.

This conclusion is untrue, because the statement that 'The whale is a fish' is untrue; but the conclusion follows strictly and legitimately from the preceding judgments, and it would also be true) if the statement that 'The whale is a fish' were true. Sometimes, though, the conclusion may be true, if drawn with consistency, even though the other judgments be false. For instance:

All fishes are mammals;
The whale is a fish;
Ergo, the whale is a mammal.

Here the conclusion is consistently drawn from the preceding judgments and it is also true, although both preceding judgments are untrue. It *happens* to be true in this case. The reason is this: there exists a true mediating idea establishing the identity between 'whale' and 'mammal,' but it is not the idea 'fish.' A little thought will discover the proper mediating idea; as follows:

All vertebrates which suckle their young are
mammals;
The whale suckles its young;
Ergo, the whale is a mammal.

Hence, regarding the relation between *consistency and truth* in mediate inference, we deduce the following rules: *The conclusion, if drawn with consistency from true judgments, must always be true; the conclusion, if drawn with consistency from false judgments, may be true or false.* The only time, therefore, that truth and consistency are certain to go hand in hand, leaving no doubt in the mind as to the truth of a legitimate conclusion, is when the conclusion is drawn with consistency from judgments which are true in themselves.

The greatest difficulty in any type of inference will always be found to consist in discovering whether the judgments composing the inference are true or false. Ultimately, every inference will have to rest upon judgments which are so clear and simple that they are self-evident and need no further proof of their truth. Such are the Principle of Identity, the Principle of Contradiction, the Principle of Excluded Middle. Such, too, are the axioms that 'The whole is greater than its part,' 'What is true of the whole must be true of all its parts.' In this class we must also reckon the analytic judgments, where a mere analysis of subject or predicate will reveal the other, as 'All men are rational animals,' 'All plants are non-sentient, living substances,' and so on; and all judgments which are the result of immediate experience, like 'Snow is cold,' 'fire burns,' 'gold is yellow,'

'iron is hard,' 'water is transparent,' 'liquids flow,' 'pain hurts', 'I live,' and a million similar judgments. They prove themselves. They are self-evident. They are the rock-bottom of truth and the proof which underlies every inference, when the inference is resolved into its final elements. But the farther we get away from these ultimate and simple judgments, the more difficulty we find in establishing the truth of a judgment we wish to use in our process of reasoning.

Supposing we desire to prove that the world had to have a beginning and that, consequently, it is not from eternity. We will have to formulate the proof something like this:

Every contingent being had a beginning;
Every being that changes is a contingent being;
The world is a being that changes;
Ergo, the world had a beginning.

This inference has consistency, and the conclusion, therefore, follows necessarily from the given judgments. But are these judgments *true*? It will be obvious that the truth of these judgments is not self-evident like the judgment that 'The whole is greater than its part,' or that 'Ice is a solid,' or that 'Man is a rational animal.' Each of these statements in the inference given above will demand a lengthy, careful, and exhaustive demonstration, before they can be accepted as true. Such a demonstration, however, may involve the marshaling of a host of facts and minor proofs, before it will be clear to our mind that each of them is really true; and the more complicated the

demonstration, the greater is the liability of error, because of the natural weakness of man's mind.

The falsity of an inference, therefore, will flow from one of two sources: from the *falsity of the judgments* used in the inference, which are supposed to give a true statement of facts, but do not; or from a faulty arrangement of true judgments in the inference, thereby giving us a conclusion that does not follow necessarily from them. The former constitutes the *material* falsity and the latter the *formal* falsity of an inference. The former rests upon a misinterpretation or ignorance of facts; the latter is the result of a violation of the laws of *correct thinking*. In order, then, that an inference be true in every respect, the mind must guard itself against errors of fact and against errors of inconsistency. Logic does not concern itself with the truth or error of facts; that belongs to the province of the sciences and the special departments of philosophy. Logic is the science of correct thinking, and it therefore devolves upon logic to analyze the different types of inferences and lay down the rules which govern each type, so as to guard itself against a violation of the laws of correct thinking and thereby guarantee the *consistency* of the argument. If the laws of these different types of inferences are faithfully observed, the conclusion will of necessity be correct and true, provided the judgments from which it is drawn are also correct and true. Ordinarily speaking, therefore, logic presupposes the material truth of all judgments in the inference (unless they are obviously false) and concerns itself only with the various types of inferences and the

special *laws of thought* which insure their *formal truth and consistency*.

There are, as has been stated before, two main types of mediate inference, *deduction* and *induction*. These must now be considered and studied in detail. The deductive inference is called the syllogism, and it will be treated first. Before we do so, however, it will be necessary to give an explanation of the verbal expression of the mediate inference.

ARGUMENTATION

Just as the verbal expression of the idea is the 'term' and that of the judgment is the 'proposition,' so the verbal expression of the mediate inference is called the *argumentation*, and it is defined as a *discourse which logically deduces one proposition from others*. The propositions from which the conclusion is deduced are called the *premises* or antecedents. The subject and predicate of the conclusion are the extremes; and the subject is called the minor extreme, or simply the *minor* (term), while the predicate is called the major extreme, or simply the *major* (term). The third term or idea with which they are compared in the argumentation is called the *middle* (term). The reason why we name them 'extremes' and 'middle' lies in their relative position; the 'middle' term functions as a mediating or connecting idea between the subject and predicate of the conclusion, in order to show whether the latter agree or disagree among themselves,

and so it occupies a 'middle' position between them as 'extremes':

S-----M-----P.

The predicate of the conclusion is called the 'major'; because the predicate of a sentence as a rule represents a 'class' whose extension is larger (major) than that of the subject; the subject of a sentence is as a rule only one of the members which belong to the predicate-class, and its extension is, therefore, smaller (minor) than the extension of the predicate. A simple sentence like 'All men are animals' shows that the extension of the predicate 'animals' is larger than the extension of the subject 'men.' Hence the terms 'major' and 'minor.' The premise which contains the major term (predicate of the conclusion) is called the *major premise*, while the premise which contains the minor term (subject of the conclusion) is called the *minor premise*; and these designations are standard, no matter in what order the premises follow each other in the argumentation. The sub-joined examples will illustrate the various designations:

Major premise: All animals (M) are substances (P);

Minor premise: All eels (S) are animals (M);

Conclusion: Ergo, all eels(S) are substances(P).

Minor premise: All metals (S) are minerals (M);

Major premise: All minerals (M) are inorganic (P);

Conclusion: Ergo, all metals(S) are inorganic(P).

These two argumentations show us how to discover which of the premises is the 'major' and which is the 'minor.' Starting with the subject (S) of the conclusion, we look for the premise which contains this term (S); that will be the minor premise. The other premise, then, which contains the predicate (P) of the conclusion, will be the major premise. The middle term (M) must occur in the major and minor premises as the 'term of comparison,' but will not occur in the conclusion at all.

After this examination into the nature of the mediate inference, we are ready to study the different types of argumentation, beginning with deduction.

SUMMARY OF CHAPTER XI

Reasoning is the supreme operation of man as man.

1. Man's mind forms ideas of things. Different ideas are then compared and united in a judgment expressing their mutual agreement or disagreement. Truth lies in the judgment. In many cases the agreement or disagreement between the ideas of a judgment is self-evident. In most cases, however, an analysis of subject and predicate or direct observation will not reveal their mutual identity or diversity. Here reasoning is necessary.

2. The mind compares two doubtful ideas with a *third* idea which is known. If both doubtful ideas agree with this third idea, they also agree among themselves; if one agrees with the third, and the other does not, then they also disagree among themselves: in the first case we have an affirmative conclusion, and in the second case a negative conclusion. This is reasoning or *mediate inference*, and it is defined *as the process by which, from certain truths already known, the mind passes to another truth distinct from, these but necessarily following from them*. There are two main types of mediate inference: *deduction*, where we conclude from the general law to a particular instance; and *induction*, where we conclude from the particular instances to the general law.

In order that a mediate inference be truly an inference, there must exist a *logical connection* between the various ideas and judgments, in virtue of which the conclusion follows with necessary force from them; this is called the

consistency of the inference. The various ideas and judgments constitute the *matter*, and the logical connection constitutes the *form* of the inference.

Consistency is not the same as truth. A conclusion may be drawn with consistency from false judgments, giving us a false, though consistent, conclusion. In order that a conclusion be true with certainty, the conclusion must be deduced with *consistency* from *true* judgments. Errors in inferences, therefore, may flow from two sources: from false judgments or from lack of consistency. Logic, the science of correct thinking, is concerned with the laws of thought which will guarantee consistency, and it presupposes the truth of the judgments as such.

3. The verbal expression of the inference is called *argumentation*, which is defined as a *discourse which logically deduces one proposition from others*. The subject of the conclusion is called the 'minor extreme,' and the predicate of the conclusion is the 'major extreme.' The mediating idea between them is the 'middle term.' The propositions from which the conclusion is drawn are the premises; the one containing the 'minor' term is the minor premise, and the one containing the 'major' term is the major premise.

READINGS

Coffey, P., Vol. I, Part III, Ch. I; Crumley, T., Ch. XVIII; Pesch, Tilmann, *Institutiones Logicales*, n. 1029-1065; Bittle, Celestine, *Reality and the Mind*, Ch. XVIII; Joseph, H. W. B., Ch. XIV.

Chapter 12

CATEGORICAL SYLLOGISM

CORRECT THINKING IS THE AIM OF LOGIC, AND THINKING CONSISTS primarily in reasoning. Consequently, it is the function of logic to investigate the various types of argumentation and the rules which govern their consistency, because consistency is the very essence of correct thinking. The two chief divisions of argumentation are deduction and induction. Since argumentations are composed of propositions, and propositions are of two main types, categorical and hypothetical, we obtain two main types of deductive argumentation, the categorical and hypothetical syllogism. The *categorical syllogism*, therefore, will be the first form of argumentation which must now be examined.

NATURE OF SYLLOGISM

The *syllogism* is defined as *an argumentation in which, from two judgments that contain a common idea and one at least of which is universal, a third judgment, distinct from either of the former, follows with necessity*. The fundamental arrangement of the syllogism consists, therefore, of two premises and a conclusion. One of the

premises contains a comparison of the major term (P) with the middle term (M), and the other contains a comparison of the minor term (S) with the middle term (M); the conclusion expresses the agreement or disagreement between the minor term (S) and the major term (P). The syllogism is a *categorical syllogism*, when the *premises are categorical propositions*. Here are two typical examples:

All M is P - All birds (M) have wings (P);
All S is M - All ostriches (S) are birds (M);
All S is P - Ergo, all ostriches (S) have wings (P).

No M is P - No birds (M) are quadrupeds (P);
All S is M - All ostriches (S) are birds (M);
No S is P - Ergo, no ostriches (S) are quadrupeds (P).

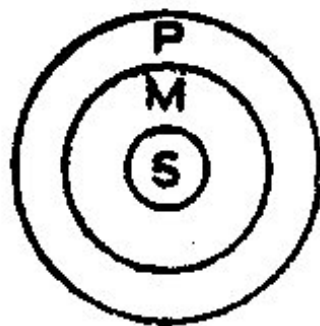
These simple categorical syllogisms show us the *nature* of the syllogism as just defined, namely, the pronouncement of agreement or disagreement between the minor (S) and the major (P) terms in the conclusion, due to their identity or non-identity with the middle term (M) in the two premises; in the one case we obtain an affirmative conclusion and in the other a negative conclusion.

If we examine the *general axiom* or principle which underlies the syllogism, we find it expressed in what is called the *Dictum de omni et nullo*—the Law of All and None:

Dictum de omni dicitur de singulis.

Dictum de nullo negatur de singulis.

This axiom can be rendered as follows: 'What is affirmed of a logical whole may be affirmed of a logical part of that whole; and what is denied of a logical whole may be denied of a logical part of that whole.' This sounds a little mystifying, but the meaning is really quite simple. The middle term (M) in the major premise is a 'logical whole' or universal term ('all birds'), and the entire comprehension of the major term ('have wings') is affirmed of the middle term; and since the minor term ('all ostriches') is a 'logical part' or member belonging to the class-extension of the middle term ('all birds'), therefore the entire comprehension of the major term ('have wings') must also be affirmed of the minor term ('all ostriches'); and so the conclusion must be correct that 'All ostriches have wings.' We can illustrate the principle by means of circles and symbols:



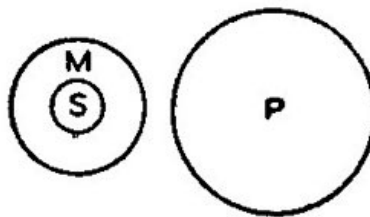
All birds (M) have wings (P);

All ostriches (S) are birds (M);

Ergo, all ostriches (S) have wings (P).

The circles represent the principle graphically. M ('all birds') is a universal or 'logical whole' which includes S ('all ostriches'). The M ('all birds') is included in P ('beings with wings'). Therefore S ('all ostriches') is also included in P ('beings with wings'), since it is a 'logical part' or member included in the extension of M ('all birds'). Consequently, the comprehension of P, since it is found in all M, must also be found in all S, and the conclusion holds that 'All ostriches (S) have wings (P).' Here we have the application of the *Dictum de Omni*.

The application of the *Dictum de nullo* is equally clear:



No birds (M) are quadrupeds (P);

All ostriches (S) are birds (M);

Ergo, no ostriches (S) are quadrupeds (P).

Here we see that M ('all birds'), as a 'logical whole' or universal, includes S ('all ostriches') in its extension as a 'logical part or member. But M ('all birds') is excluded from the extension of P ('quadrupeds'). Therefore, S ('all ostriches'), since it falls as a 'logical part' or member under the class-extension of M ('all birds'), must also be excluded

from P ('quad rupeds'); and so the conclusion must be correct that 'No ostriches are quadrupeds,' and thus the axiom of the *Dictum de omni et nullo* is established.

In the examples given above the middle term (M) was the subject of the major premise and the predicate of the minor premise. The arrangement, however, may be changed. The middle term (M) may be shifted to any position in either premise, so that there are four possible arrangements for the categorical syllogism. The following diagrams will illustrate the various positions:

MP	PM	MP	PM
<u>SM</u>	<u>SM</u>	<u>MS</u>	<u>MS</u>
SP	SP	SP	SP

The categorical syllogism may appear in any of these forms and more will be said of them later, when we examine them individually and investigate the particular rules which govern their consistency.

EIGHT GENERAL SYLLOGISTIC RULES

From the nature of the categorical syllogism, as just explained, logicians have developed *Eight General Rules* or canons which govern every type of categorical syllogism and must be rigidly observed; otherwise the consistency of the argumentation will be destroyed, and the conclusion will either be false or will not follow with logical force from the premises.

1. Only three terms may appear in the syllogism.
2. Neither the major nor the minor term may be a universal in the conclusion, if it was only a particular term in the premises.
3. The middle term may not occur in the conclusion.
4. The middle term must be used at least once distributively (i.e., as a universal) in the premises.
5. If both premises are affirmative, the conclusion must also be affirmative.
6. Both premises may not be negative; one at least must be affirmative.
7. If one of the premises is negative, the conclusion must be negative. If one of the premises is a particular proposition, the conclusion must be a particular proposition.
8. No conclusion can be drawn from two particular premises; one at least must be a universal proposition.

In order to assist the memory in retaining these rules, the following mnemonic lines have been devised:

The terms are only three, to this attend;
Nor let the consequent a term extend.
Conclusions ne'er the middle term admit;
At least one premise must distribute it.
Two negatives no consequent can show;
From affirmations no negations flow.
A universal premise you'll provide;
And let conclusions take the weaker side.

These Eight General Rules are a direct product of the very idea and nature of the categorical syllogism, and their truth and application must be thoroughly understood. A familiarization with these rules will enable us to judge the validity of any categorical syllogism that may occur. At the same time, they will give us a deeper insight into the reasoning function of the mind in this type of argumentation. To facilitate their understanding and perceive their necessity as rules of correct thinking, each one will be explained and proved separately. Wherever expedient, symbols will also be used. The customary symbols S, M, P will be used to designate the minor, middle, and major term. A 'p' before any of these terms will signify that they are 'particular' terms; and a 'u' before them will indicate that they are 'universal' terms. It may be well to remind ourselves again that if a proposition has a particular subject, the whole statement is particular; and if the subject is a universal term, the whole statement is universal. Similarly, the predicate of an affirmative sentence is always a particular term, while the predicate of a negative sentence is always a universal term. When a term is used as a 'universal,' it is said to be 'distributed'; and when it is used as a 'particular' term, it is 'undistributed.' Keeping these uses of terms strictly in mind, the understanding and proof of the eight syllogistic rules should not be difficult. Here, then, are the various symbols:

M = middle.

S = minor (subject of conclusion).

P = major (predicate of conclusion).

pM = particular (undistributed) middle term.

uM = universal (distributed) middle term.

pS = particular minor term.

uS = universal minor term.

pP = particular major term.

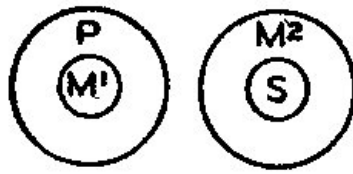
uP = universal major term.

+ = an affirmative proposition (e.g., M+P).

- = a negative proposition (e.g., M—P).

PROOF OF EIGHT GENERAL RULES

First General Rule: Only three terms may appear in the syllogism. This follows from the very idea of the syllogism as an inference. It is the purpose of the argumentation to discover whether two doubtful ideas agree or disagree by comparing them with a *mediating* idea. This mediating idea is the third, or middle term, with which the other two agree or disagree. A third idea or term must, therefore, always be present. But this very function of the middle term excludes any other idea from the premises, otherwise there would be no common bond of comparison between the two questionable ideas. If the minor term agrees with a third, and the major with a fourth, there will be no necessity to state in the conclusion that they agree or disagree among themselves. The following example and diagram show this plainly:



All plants (M^1) are living (P);
 All stones (S) are minerals (M^2);
 All stones (S) are (are not?) living (P).

Four terms will be used, with an invalid syllogism as the result, if we use an equivocal term in different meanings.

Beings who are not free, are not morally responsible;
 Slaves are not free;
 Ergo, slaves are not morally responsible.
 (Equivocation between 'moral' and 'civil' freedom.)

A frequent source of errors in argumentation results from the introduction of four terms by using the middle term twice as a particular. The fallacy of this will be seen when we treat of the Fourth General Rule, which specifically requires that the middle term be distributed at least once.

Second General Rule: Neither the major nor minor term may be a universal in the conclusion, if it was only a particular term in the premises. The reason is obvious: if either of these terms is a particular term in the premises, then it is taken according to only a part of its extension, and only this part of its extension is identified with the middle

term. Hence, it will also be necessary in the conclusion to identify this major term with the minor term only according to *this part*, since that is all that the premises warrant. It is never permissible to conclude from the truth of the particular to the truth of the universal, as we saw when discussing the 'square of opposition'; because what is true of a 'part' of the extension need not be true of the 'whole' of the extension, since what is true of 'some' may not apply to 'all.' To use a term in the conclusion as a universal, when it is only a particular term in the premises, really amounts to using a *different* term, and results in a four-term construction of the syllogism; and that would be a violation of the First General Rule. This rule is violated most frequently by using the major term (P) as the predicate of an *affirmative* sentence in the premises (such a predicate is always *particular*) and then making it the predicate of a *negative conclusion* (such a predicate is always *universal*).

A violation of this rule is called an *illicit process*: if the major (P) is wider in the conclusion than in the premises, it is an 'illicit process of the major'; and if the fault lies with the minor, it is an 'illicit process of the minor.' The following examples, therefore, involve an illicit process:

uM + pP - All men are animals;

uS - uM - No brutes are men;

uS - uP - Ergo, no brutes are animals. (illicit major)

uM - uP - No birds are viviparous;

uM + pS - All birds are bipeds;

uS - uP - Ergo, no bipeds are viviparous. (illicit minor)

In the first example, the major term ('animals') is undistributed (particular) in the premise, because it is the predicate of an affirmative proposition; but in the conclusion it is distributed (universal), because it is the predicate of a negative proposition. In the second example, the minor term ('bipeds') is undistributed in the premise, because it is the predicate of an affirmative sentence; it should, therefore, also be undistributed in the conclusion, and the conclusion should read 'some bipeds are not viviparous.'

Third General Rule: The middle term may not occur in the conclusion. This follows from the nature of the syllogism, which attempts to discover the agreement or disagreement between the major and minor terms. That is done by comparing them with the middle term, and this takes place in the premises; the conclusion has the sole function of expressing the agreement or disagreement between the major and minor after their relation has been discovered in the premises. Hence, there is no place for the middle term in the conclusion; its purpose has been fulfilled in the premises. This rule is violated in the following examples:

M + P - Aristotle was a philosopher;

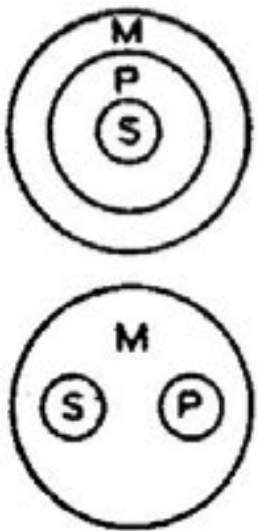
M + S - Aristotle was poor;

M + SP - Ergo, Aristotle was a poor philosopher.

M - P - No monkeys are jackrabbits;
M + S - All monkeys are four-handed;
M - SP - Ergo, no monkeys are four-handed
jackrabbits.

Fourth General Rule: The middle term must be used at least once distributively (i.e., as a universal) in the premises. If the middle term were taken as a particular term in both premises, it would never be taken according to the 'whole' of its extension, but both times according to a *part of its extension*, so that M would mean only 'some M.' In that case, however, the minor (S) may agree with one part of M, and P may agree with a *different* part of M; and thus the middle term would be equivalently a *double* term, bringing a four-term construction into the syllogism and thereby violating the First General Rule. Of course, it is possible that both S and P refer to the same part of the extension of M, but we could not know this, unless it were expressly mentioned that the 'some M' mentioned in both premises are the 'same some M'; the form of the syllogism alone will never entitle us to do this. In order, therefore, to avoid the fallacy of a four-term construction, the middle term must be used at least once as a universal term, because what is true of the 'whole' will be true of all its 'parts,' since the 'parts' are contained in the 'whole'; there will thus be no danger of the minor (S) pertaining to a different part of M than the major (P). This fallacy of the undistributed middle usually occurs, when the middle term is used as the predicate of two affirmative premises, since such predicates are always particular terms. The two

subjoined examples show how one can never be certain of the consistency of the conclusion, if the premises contain an undistributed middle; in both cases the middle term is a particular term, because it is the predicate of an affirmative sentence:



$uP + pM$ - All men are mortal;
 $\underline{uS + pM}$ - All negroes are mortal;
 $uS + pP$ - Ergo, all negroes are men.

$UP + pM$ - All men are mortal;
 $\underline{uS + pM}$ - All fish are mortal;
 $uS + pP$ - Ergo, all fish are men.

IN THESE EXAMPLES WE PERCEIVE GRAPHICALLY WHY THE RULE demands that the middle be distributed at least once in the

premises. In both syllogisms M is twice particular, because it is the predicate of two affirmative premises. The form of both syllogisms is identical and both, if correct, should give a true conclusion; but the first conclusion is obviously true, and the second conclusion is obviously false. The circles show us the reason why. In the first example S ('negroes') and P ('men') *happen* to strike the *same* 'part' of M, because 'negroes' belong in the class of 'men'; but in the second example S ('fish') and P ('men') belong to *different* 'parts' of the extension of M, and thereby no relation of identity between S and P is established. Hence, we can never be assured of the consistency of a syllogism, unless the middle term be distributed (i.e., used as a universal term) at least once. To have the middle term undistributed, always carries with it the danger and the uncertainty of a four-term construction.

Fifth General Rule: If both premises are affirmative, the conclusion must also be affirmative. This is quite self-understood. The nature of the syllogism demands it. If both premises are affirmative, then it is affirmed that both the major and the minor terms are identified with the middle term; consequently the Principle of Identity will require that also the conclusion state expressly that the major and minor terms are identified with each other. But this is done in an affirmative conclusion: S is P. A negation is not implicitly contained in two affirmative premises; therefore, a negative conclusion would state something explicitly which is not implicitly contained in the premises, and that would be a violation of the Principle of Contradiction. It is

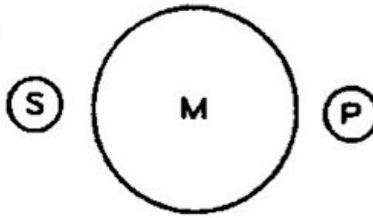
wrong, therefore, to make an argumentation like the following:

M + P - All lemons are sour;

S + M - Some ripe fruit are lemons;

S - P - Ergo, some ripe fruit are not sour.

Sixth General Rule: Both premises may not be negative; one at least must be affirmative. The very purpose of the syllogism as an inference would be defeated, if both premises were negative. In that case neither the major nor the minor is identified with the middle. Hence, the middle term is no common bond between the two, and it tells us nothing whatever about the relation of agreement or disagreement which exists between them; as a result, the conclusion cannot legitimately make any statement about the identity or diversity existing between the major and minor terms. In other words, if both 'premises are negative, the middle term is no 'middle' at all, since it does not perform the function of a middle term, which is to reveal the agreement or disagreement of major and minor. No conclusion, then, can follow from two negative premises; at least one of them must be affirmative, so that either the major or the minor term will be identified with the middle. The fallacy involved in the violation of this rule, can readily be seen in the following example:



M - P - No animal is a stone;

S - M - No diamond is an animal;

S - P - Ergo, no diamond is a stone.

Some logicians are of the opinion that a legitimate conclusion can be drawn from two negative premises. And they give us as an example the following perfectly consistent syllogism:

What is not metallic is not capable of powerful
magnetic influence.

Carbon is not metallic.

Ergo, carbon is not capable of powerful magnetic
influence.

Here we have apparently three negative propositions, two of which are negative premises. It is well to note, however, that one of these premises is only *apparently* negative, namely, the minor premise 'carbon is not metallic.' Why? Let us consider each sentence carefully. In the major premise we have 'what is not metallic' as the subject; 'is not' is the copula; 'capable of powerful magnetic influence' is the predicate. This is, of course, a negative premise. Note that the subject of this major premise is a *complex term*

('what is *not* metallic'), and it is the middle term, since it also occurs in the minor premise. Now consider the minor premise: 'carbon is not metallic.' Is this really a negative sentence, or a hidden affirmative sentence? It is a hidden affirmative sentence. The word 'not' ('carbon is not metallic') does not belong to the copula 'is,' but to the middle term 'metallic' ('*not* metallic'); this can be seen clearly in the major premise, where the middle term reads 'what is not metallic.' Hence, the minor premise ('carbon is not metallic') consists of the following terms: 'carbon' is the subject; 'is' is the copula; 'not metallic' is the predicate. It is, therefore, really an *affirmative* sentence, although at first sight it would be considered a negative sentence. A slight change in the wording, while leaving the meaning the same, will remove all ambiguity and doubt. Instead of the words 'what is not metallic' make the subject of the major premise to read 'a non-metallic substance'; both phrases mean the same thing here. If we make this substitution and formulate the same syllogism, we will find that the minor premise is obviously affirmative:

M - P - A non-metallic substance is not capable of powerful magnetic influence.

S + M - Carbon is 'a non-metallic substance.'

S - P - Ergo, carbon is not capable of powerful magnetic influence.

We see, then, that the example given is not in violation of the Sixth General Rule; on the contrary, our analysis shows that it really conforms to the rule, since one premise is

negative and the other affirmative (though *apparently* negative). Syllogisms of this sort occur quite frequently, especially when the middle term is a complex term containing a negative particle of speech. Here is a similar example:

‘What is not a compound’ (i.e., a simple substance) is
not divisible;
The soul is ‘not a compound’ (i.e., is a simple
substance);
Ergo, the soul is not divisible.

Seventh General Rule: If one of the premises is negative, the conclusion must be negative; if one of the premises is a particular proposition, the conclusion must be a particular proposition. Logicians often combine the two phases of this rule into one by stating that ‘the conclusion must follow the weaker side.’ A ‘particular’ is considered weaker than ‘a universal,’ because the particular is only a part of the extension of the universal. And a ‘negative’ proposition is weaker than an affirmative proposition, because the negative can only be known through the positive; for instance, we can understand the negative idea ‘sickness’ only then, if we understand the positive idea ‘health,’ because ‘sickness’ is the ‘absence of health.’ And now for the reason of the rule in its two phases.

The *first phase* of the Seventh General Rule states: ‘if one of the premises is negative, the conclusion must be negative.’ The proof of this is simple and can be put in a few words. When one of the premises is affirmative and the

other negative, then one of the extremes (major or minor terms, S or P) *agrees* with middle term (M) and the other disagrees with the middle term (M). But this implies that the major and minor terms (S and P) *disagree among themselves*. Hence, the conclusion must also state that the major and minor terms disagree ('S is not P'), and thus the conclusion must be a negative sentence. This is what the first phase of the Seventh General Rule claims to be necessary.

The *second phase* of the Seventh General Rule states: 'if one of the premises is a particular proposition, the conclusion must also be a particular proposition.' It is immaterial whether both premises are affirmative, or whether one is affirmative and the other negative (both cannot be negative, on account of the Sixth General Rule); the rule applies in either case. First, then, let us consider the case where we have two *affirmative premises*, of which one is *universal* and the other *particular*: the rule demands a 'particular' conclusion, simply because one of the premises is 'particular.' We have, then, the following arrangement in the premises:

Given:

Two affirmative premises.

One of these is universal (universal subject).

One of these is particular (particular subject).

Result:

One subject is universal (universal premise).

One subject is particular (particular premise).

Two predicates are particular (both premises are affirmative, and the predicates of affirmative sentences are always particular).

Now, then, of the four terms in the premises (S—M—M—P) three are particular terms, and only *one* term is *universal*. This one universal term must be the middle (M), because the Fourth Rule demands that 'the middle term must be used at least once as a universal in the premises.' Hence, the three remaining terms (S—M—P) are all *particular*; and, as a consequence of this, also the minor term (S) is particular in the premises. But the minor term (S) is the subject of the conclusion and as such it must also be particular (pS), due to the Second General Rule. Hence, since the subject of the conclusion is a particular term (pS), the *conclusion is a particular proposition*; and that is precisely what the second phase of the Seventh General Rule demands.

We will now investigate whether this second phase of the rule also applies, if one of the premises is *affirmative* and the other *negative*, with one of them a universal proposition and the other a particular proposition: the rule demands that also in this case the conclusion must be a particular proposition. Here, then, is the arrangement in the premises:

Given:

One affirmative premise.

One negative premise.

One of these is universal.
One of these is particular.

Result:

One subject is universal (universal premise).
One subject is particular (particular premise).
One predicate is universal (predicate of a negative sentence is universal).
One predicate is particular (predicate of an affirmative sentence is particular).

Two of these four terms (S—M—M—P) are universal and two are particular. According to the Fourth General Rule, the *middle* term (M) must be one of these *universals*. This leaves three terms (S—M—P) in the premises, of which one is universal and two are particular. Since one of the premises is a negative proposition, the conclusion must be negative (according to the first phase of this Seventh General Rule); therefore the *major* term (P) in the conclusion must be a *universal*, because it is the predicate of a negative sentence. But if the *major* term (P) is universal in the conclusion, it must also be *universal* in the premises, otherwise the Second General Rule would be violated. There are only two universal terms in the premises, and these are now used up by the middle (M) and the major (P) terms. Hence, the minor term (S) is one of the two *particular* terms which remain in the premises. But if the minor term (S) is a particular term in the premises, it must also be a *particular* term in the *conclusion*, due to the

Second General Rule. A particular subject, however, makes the whole proposition particular. Ergo, the conclusion must be particular, and that is exactly what this rule claims.

We thus see the necessity and the truth of the Seventh General Rule: 'If one premise is negative, the conclusion must be negative; and if one premise is particular, the conclusion must be particular.' The first phase of this double rule is violated in the following example:

P - M - No good soldiers are good statesmen;
S + M - The Germans are good statesmen;
S + P - Ergo, the Germans are good soldiers.

The second phase of this rule is not applied in these examples:

M + P - All men are intelligent;
pS + M - Some animals are men;
uS + M - Ergo, all animals are intelligent.

M - P - No negroes are white;
pS + M - Some men are negroes;
uS - P - Ergo, no men are white.

Eighth General Rule: No conclusion can be drawn from two particular premises; one at least must be a universal proposition. The proof of this is similar to the proof of the last rule. There are two possibilities: either both premises will be *affirmative* propositions, or one will be an *affirmative* and the other a negative proposition (the Sixth General

Rule will not allow both premises to be negative). The rule states that both arrangements will lead to an invalid conclusion. Let us see if this is so.

If we suppose *both* premises to be *particular affirmative* propositions, then all four terms (S — M — M — P) used in the premises will be *particular*: the *two subjects* will be *particular*, because the propositions are particular; and the *two predicates* will be *particular*, because both premises are affirmative, and the predicates of affirmative propositions are always particular terms. But if all four terms (S — M — M — P) are particular, then the *middle* term (M) is never taken as a universal, and that is a violation of the Fourth General Rule. Hence, any syllogism which consists of two particular affirmative premises will always be invalid. Here is an example:

pM + pP - Some men are taxi drivers;
pS + pM - Some Americans are me;
pS + pP - Ergo, some Americans are taxi drivers.

This seems to be a legitimate syllogism; but if we substitute the word 'Europeans' for 'taxi drivers,' the fallacy will immediately be apparent.

The *second* possible arrangement would be, if one of the *two particular* premises is *negative* and the other *affirmative*. In this arrangement we have the following terms in the premises:

Two particular subjects (subjects of particular propositions). One universal predicate (the predicate of the negative premise).

One particular predicate (the predicate of the affirmative premise).

Of the four terms (S — M — M — P) three are particular, and one is universal. The *middle* term (M), according to the Fourth General Rule, must be a universal at least once. Consequently, the *major* term (P) will be *particular* in the premise. But the conclusion must be negative (Seventh General Rule), and this negative conclusion will make the *major* term (P) *universal*; this, however, is a violation of the Second General Rule. If we wish to avoid this 'illicit process of the major' and let the major term (P) be the one universal term present in the premises, then there is no other universal term left in the premises, and the middle term will be used *twice* as a *particular*; but this violates the Fourth General Rule. No matter how the syllogism is made, it will contain either an 'illicit major' or an 'undistributed middle.' Hence, also this arrangement is invalid, and we thus see that no conclusion can be drawn from two particular premises. The following example will, therefore, be invalid:

pM + pP - Some orators are American citizens;
pS - uM - Some New Yorkers are not orators;
pS - uP - Ergo, some New Yorkers are not American
citizens.

This, of course, is obviously false. But if we substitute 'demagogues' for 'American citizens,' the conclusion would state that 'Some New Yorkers are not demagogues'; and such a conclusion might seem correct, although it is equally

illegitimate, because the conclusion contains an 'illicit major.' If we change the premises, by making the major premise negative, so as to obtain a universal major term, then we will have an 'undistributed middle,' which is just as bad. For instance:

pM - uP - Some orators are not American citizens;
pS + pM - Some New Yorkers are orators;
pS - uP - Ergo some New Yorkers are not American
citizens.

The Eight General Rules are the indispensable conditions for consistency in the categorical syllogism. If they are observed and if the premises are true statements of fact, the conclusion must of *necessity* be true also. If any of these rules are violated, the conclusion may possibly contain a truth; but this will be *incidental* and will not follow *in virtue* of the argumentation. Certainty can only come with consistency.

Looking back over the eight rules, it will be noted that the first four rules refer to the proper use of the terms, while the other four pertain to the 'quality' and the 'quantity' of the *propositions*. They can be summarized in the brief statement:

'There must be no fourth term, and the middle must be distributed at least once; both premises must not be negative, nor both particular; the conclusion must follow the weaker side of the premises, and must not distribute a term, nor be negative, unless one premise does the same.'

If one is interested in Latin hexameters, he will find the rules expressed in the following lines:

*Terminus esto triplex, major, mediusque, minorque.
Latius hos, quam praemissae, conclusio non vult.
Nequaquam medium capiat conclusio fas est.
Aut semel aut iterum medius generaliter esto.
Ambae affirmantes nequeunt generare negantem.
Utraque si praemissa neget, nihil inde sequetur.
Pejorem sequitur semper conclusio partem.
Nil sequitur geminis ex particularibus unquam.*

The main fallacies which must be guarded against, because they easily escape notice, are: the hidden four-term construction, the undistributed middle, the illicit major or minor, and two particular premises. Argumentations in conversation, books, and articles are usually so cloaked with excess words that a fallacy is not readily detected, unless the argument is arranged in strict logical form and then analyzed according to the rules. The rules, therefore, should be thoroughly understood and memorized and applied.

SUMMARY OF CHAPTER XII

The two chief divisions of argumentation are deduction and induction. The two main types of deduction are the categorical and hypothetical *syllogisms*.

1. The *syllogism* is an *argumentation which, from two judgments that contain a common idea and one at least of which is universal, a third judgment, distinct from either of the former, follows with necessity*. It is a *categorical syllogism*, if the propositions composing it are categorical.

A categorical syllogism consists of two premises and a conclusion. One premise contains a comparison of the major term (P) with the middle term (M), and the other contains a comparison of the minor term (S) with the middle (M). The conclusion expresses the agreement or disagreement of the minor (S) and major (P), as revealed in the premises.

The *general axiom* underlying the categorical syllogism is the *Dictum de omni et nullo*: 'What is affirmed of a logical whole may be affirmed of a logical part of that whole; and what is denied of a logical whole may be denied of a logical part of that whole.'

2. The nature of the syllogism gives rise to the *Eight General Rules*:

(1) Only three terms may appear in the syllogism.

(2) Neither the major nor the minor term may be a universal in the conclusion, if it was only a particular term in the premises.

(3) The middle term may not occur in the conclusion.

(4) The middle term must be distributed at least once in the premises.

(5) If both premises are affirmative, the conclusion must also be affirmative.

(6) Both premises may not be negative; one at least must be affirmative.

(7) If one of the premises is negative, the conclusion must be negative; if one of the premises is particular, the conclusion must be particular.

(8) No conclusion can be drawn from two particular premises; at least one must be universal.

The proof of these eight rules would take us too far in a mere summarization. Consult the individual proofs.

READINGS

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Chapter 13

SYLLOGISTIC FIGURES AND MOODS

ALL AVIATORS ARE DARING; ALTHOUGH THE EIGHT GENERAL RULES enumerated in the last chapter are in themselves sufficient to test the consistency of all categorical syllogisms, it will be of great advantage to examine the various forms in which the syllogism may appear and lay down the special rules which govern each form. These forms are few and the rules simple. The investigation of the validity of a syllogism is thereby shortened considerably. At the same time it enables the mind to understand the peculiarities and characteristics of this type of argumentation much better. This brings us to the *syllogistic figures and moods*; they are the two determining factors in the form of a syllogism.

SYLLOGISTIC FIGURES AND MOODS

By syllogistic *figure* we understand the *disposition of the middle term with respect to the major and minor terms in the premises*. The minor term is always the subject and the major term the predicate of the conclusion; here there can be no change. Whatever variations, then, take place in the relative position of the terms among themselves, occur in

the premises. In the major premise the middle term is compared with the major extreme, and in the minor premise it is compared with the minor extreme. There are, therefore, four possible arrangements, which give rise to four different syllogistic *figures*, depending on the position of the middle term relative to the others. Here we have the diagrammed results:

Fig.1	Fig.2	Fig.3	Fig.4
M - P	P - M	M - P	P - M
<u>S - M</u>	<u>S - M</u>	<u>M - S</u>	<u>M - S</u>
S - P	S - P	S - P	S - P

In Figure 1 the middle term is the *subject* of the *major* premise and the *predicate* of the *minor* premise. Whenever a syllogism occurs in which the terms are arranged in this manner it belongs to Figure 1. Here is an example:

M - P All sentimentalists are a nuisance;
S - M All crooners are sentimentalists;
S - P Ergo, all crooners are a nuisance.

In Figure 2 the middle term is the *predicate* of *both* premises. Example:

P - M No artists are great philosophers;
S - M Some statesmen are great philosophers;
S - P Ergo, some statesmen are not artists.

In Figure 3 the middle term is *subject* of *both* premises.
Example:

M - P All aviators are daring;
M - S Some aviators are Americans;
S - P Ergo, some Americans are daring.

In Figure 4 the middle term is the *predicate* of the *major* premise and *subject* of the *minor* premise. Example:

P - M All senators are politicians;
M - S All politicians are great talkers.
S - P Ergo, some great talkers are senators.

Aristotle considered Figure 1 the 'perfect' syllogism. And rightly so. It is the one figure to which the *Dictum de omni et nullo*, which is the basic formula of the syllogism, applies normally and naturally. It is the model of all other forms of argumentation. In it the mind passes spontaneously from one idea to another, predicating the total comprehension of the major term over to the middle term and then drawing the minor term into the extension of the middle term, so that the total comprehension of the major term is applied to the minor term in the conclusion. When I state that 'All mammals have lungs,' I am stating something about the *nature* of the mammals, and this statement has scientific value. Then, when I state that 'All whales are mammals,' I am including the 'whales' as a class in the wider extension of 'mammals.' And thus I am entitled to apply the comprehension of 'beings which have lungs' to 'whales,' so

that the conclusion 'Whales have lungs' is a natural deduction. The three other 'figures' are correct forms of syllogistic reasoning, but a mere glance at their examples will reveal the fact that they are not as natural for the mind as Figure 1.

Aristotle did not consider Figure 4 a real syllogistic figure, because it is not a direct and natural way of reasoning. The direct and natural way of thinking is to make the idea which has a wider extension the predicate of an idea of narrower extension; hence, this should also be the case in the conclusion. But in Figure 4 the reverse is true. If I take the three ideas 'roses,' 'plants,' and 'living beings,' the direct and natural way to reason would be according to Figure 1: 'All plants are living beings; all roses are plants; ergo, all roses are living beings.' Instead of this, Figure 4 reasons: 'All roses are plants; all plants are living beings; ergo, some living beings are roses.' In this conclusion the idea with narrower extension ('roses') becomes the predicate of an idea with wider extension ('living beings'), and this is not the natural way for the mind to think; the conclusion in Figure 4 is the converse of 'all roses are living beings,' and Figure 4 is thereby shown to be merely a modification of Figure 1. However, since Figure 4 represents a correct (though somewhat unusual) form of reasoning and is really the fourth possible way of arranging the terms in the premises, it will receive the same treatment as the others.

Besides syllogistic 'figures,' we also speak of syllogistic moods, and by *moods* (or, modes) we understand the *arrangement of the premises according to quantity*

(*universality or particularity*) and *quality* (*affirmation or negation*). From the standpoint of 'quantity' each of the four figures can have: both premises universal; or both premises particular; or the major premise universal, and the minor premise particular; or the major premise particular, and the minor premise universal. As regards 'quality' the four figures can have: both premises affirmative; or both premises negative; or the major premise affirmative, and the minor premise negative; or the major premise negative, and the minor premise affirmative. Going back to the customary symbols A, E, I, O, we must recall that A = universal affirmative proposition; E = universal negative; I = particular affirmative; and O = particular negative. Absolutely speaking, then, the following combinations of moods are possible in the construction of premises in *each* of the four syllogistic figures:

A A A A - E E E E

A E I O - A E I O

I I I I - O O O O

A E I O - A E I O

Theoretically, all these combinations are possible. *Practically*, however, *half* of them are *invalid*, because they violate one or the other of the Eight General Rules which govern the syllogism. The Sixth General Rule, for instance, forbids two negative propositions as the premises; this eliminates E E, E O, O E, and O O. The Eighth General Rule forbids two particular propositions to be used as the

premises; and this throws out I I, I O, and O I. The combination I E is also invalid, because this means a particular affirmative major premise and a universal negative minor premise. Now, in this major premise (I) the subject is a particular term (it is a particular proposition) and the predicate is a particular term (it is an affirmative sentence), and consequently the major term (P) will be particular. Since, however, the minor premise is negative (E), the conclusion must also be negative (Seventh General Rule); but then the major term (P), being the predicate of a negative conclusion, is a universal in the conclusion, while in the major premise above it was only a particular term. Hence, this combination (I E) violates the Second General Rule by bringing an 'illicit major' into the conclusion. We thus see that, of the sixteen possible combinations, *only eight can be valid*. The eight valid syllogistic moods are:

A A A A - E E I O
A E I O - A I A A

We must now combine these *various moods* with the four syllogistic *figures* and see what rules govern each figure and how these rules affect the validity of the single moods. It stands to reason that the shifting of the middle term in the different figures will not permit all these moods to be applied in each figure. This will become clear as we study the single figures in turn.

RULES OF THE SYLLOGISTIC FIGURES

First Figure. Here the middle term is the subject of the major premise and the predicate of the minor premise, as we see in the symbolic diagram:

Fig. 1

M - P

S - M

S - P

The rule for this First Figure reads: *The minor premise must be affirmative; the major premise must be universal.* A brief examination will show the necessity of this double rule. The *first* part of the rule demands that the *minor* premise be *affirmative*. If the minor premise of this figure would ever be negative, then the conclusion would also be negative (Seventh General Rule), and the major term (P) in the conclusion, being the predicate of a negative sentence, would be universal (S - uP). However, if the minor premise is negative (as supposed), then the major premise would have to be affirmative, because both premises are not allowed to be negative (Sixth General Rule); and thus the major term (P) would be particular in the major premise, since it is the predicate of an affirmative sentence (M + pP). But then the major term (P) would be particular in the premise and universal in the conclusion, and that would be an 'illicit major' in the conclusion, which is in opposition to the Second General Rule. In order, therefore, to avoid an illicit major in the First Figure, *the minor premise must be affirmative.*

The *second* part of the rule for the First Figure demands that the major premise be universal. The reason is clear. If the major premise were particular, then the middle term (M), since it is the subject of this particular sentence, would be a particular term ($pM \pm P$). Since, however, the minor premise in this First Figure must be affirmative (as demanded by the first part of this rule, just proved), the middle term (M), because it is the predicate of this minor premise, will be particular here also ($S + pM$). Hence, if the major premise were particular, the middle term (M) would be particular in both premises ($pM \pm P$, and $S \pm pM$); but this would involve an 'undistributed middle,' which is against the Fourth General Rule. The only way to obtain a 'distributed middle' is to make the *major premise universal*. Consequently, the necessity of the rule for the First Figure is proved: the minor premise must be affirmative; and the major premise must be universal.

If we now turn our attention to the *moods* which are valid for syllogisms of the First Figure, we find that, of the eight combinations which could possibly be legitimate, *four* are valid and four invalid in this figure. Using symbols instead of sentences, for the sake of brevity and clarity, the results are graphically illustrated in the following diagrams.

A	uM + pP
A	uS + pM
<hr/>	
	uS + pP
(valid)	

A	uM + pP
E	uS - uM
<hr/>	
	uS - uP
(illicit major)	

A	uM + pP
I	pS + pM
<hr/>	
	pS + pP
(valid)	

A	uM + pP
O	pS - uM
<hr/>	
	pS - uP
(illicit major)	

E	uM - uP
A	uS + pM
<hr/>	
	uS - uP
(valid)	

E	uM - uP
I	pS + pM
<hr/>	
	pS - uP
(valid)	

I	pM + pP
A	uS + pM
<hr/>	
	uS + pP
(undistributed middle)	

O	pM - uP
A	uS + pM
<hr/>	
	uS - uP
(undistributed middle)	

The diagrams show clearly that the only *valid* moods for the First Figure are A A, A I, E A, and E I. On comparing them with the rule of the First Figure, it will be noticed that each one follows the rule: ‘The minor premise must be affirmative; the major premise must be universal.’ The moods A E and A O are invalid, because they necessarily bring an ‘illicit major’ into the conclusion, and this is due to the fact that they violate the first part of the rule for the First Figure: ‘The minor premise must be affirmative.’ The moods I A and O A are invalid, because an ‘undistributed middle’ is the result of such an arrangement, due to violating the second part of the rule for the First Figure: ‘The major premise must be universal.’

The following examples are verbal illustrations of the four *valid* moods of the First Figure:

A - Every passion causes emotional instability;

A - Greed is a passion;

Ergo, greed causes emotional instability.

A - Excessive hoarders of money are misers;
I - Some lawyers are excessive hoarders of money;
Ergo, some lawyers are misers.

E - No quadrupeds have wings;
A - All donkeys are quadrupeds;
Ergo, no donkeys have wings.

E No thieves will prosper;
I Some politicians are thieves;
Ergo, some politicians will not prosper.

Second Figure. In the construction of this figure, the middle term is the predicate in both premises. The diagram shows the relation of the middle term to the major and minor extreme:

Fig. 2

P - M

S - M

S - P

The rule for the Second Figure is: *One premise must be negative; the major premise must be universal.* The *first* part of this rule states that one premise must be negative. Neither the major nor the minor premise is specified; so it makes no difference which of them will be negative. The reason for this part of the rule is obvious from the very nature of the figure as constructed. In both premises the middle term (M) is the predicate, and if both are

affirmative, then the middle term would be twice particular ($P + pM$, and $S + pM$); as such it would violate the Fourth General Rule, because we would have an undistributed middle. The only way in which the middle term can be used in a distributed sense, so as to avoid violating the Fourth General Rule, is to make one of the two premises negative; then, since the predicate of a negative proposition is always universal, the middle term would be distributed at least once. Hence, *one premise must be negative*.

The second part of this rule states that the *major* premise must be *universal*. A little reflection will disclose the necessity of this. In the major premise the subject is the major term (P). Now, since one of the premises in this figure must be negative, the conclusion will also be negative, in virtue of the Seventh General Rule, and consequently the major term there will be universal ($S - uP$). Since, however, the major term (P) is universal in the conclusion, it must also be universal in the major premise; otherwise we would have an- 'illicit major' and violate the Second General Rule. But if the major term (P) is universal in the premise, then the whole premise as a proposition is universal, because the major term (P) is the subject of that premise. Hence, if we wish to avoid an 'illicit major' in the Second Figure, *the major premise must be universal*. The whole rule of the Second Figure, therefore, is true: one premise must be negative, and the major premise must be universal.

Of the eight legitimate moods which could possibly come into account in this Second Figure, *four* will be discovered to be valid and four invalid. A study of the subjoined diagrams will show this:

A	uP + pM
A	uS + pM
<hr/>	
	uS + pP
<hr/>	
(undistributed middle)	

A	uP + pM
E	uS - uM
<hr/>	
	uS - uP
<hr/>	
(valid)	

A	uP + pM
I	pS + pM
<hr/>	
	pS + pP
<hr/>	
(undistributed middle)	

A	uP + pM
O	pS - uM
<hr/>	
	pS - uP
<hr/>	
(valid)	

E	uP - uM
A	uS + pM
<hr/>	
	uS - uP
<hr/>	
(valid)	

E	uP - uM
I	pS + pM
<hr/>	
	pS - uP
<hr/>	
(valid)	

I	pP + pM
A	uS + pM
<hr/>	
	uS + pP
<hr/>	
(undistributed middle)	

O	pP - uM
A	uS + pM
<hr/>	
	uS - uP
<hr/>	
(illicit major)	

The only *valid* moods for the Second Figure are A E, A O, E A, and E I, and each follows the double rule that 'one premise must be negative, and the major premise must be universal.' Any other combination will violate one of the Eight' General Rules. Because of the peculiar position of the middle term (M) as predicate in both premises, no combination which would involve two affirmative premises can be valid; because this would give us two 'undistributed middle' terms in violation of the Fourth General Rule. That is why A A, A I, and I A are not legitimate moods of the Second Figure. The mood O A is eliminated, because the fact that the major premise here is a particular proposition brings an 'illicit major' into the conclusion in opposition to the Second General Rule. Comparing the moods A A, A I, and I A with the special rule of the Second Figure, we find that they do not follow the first part of this rule which demands that 'one premise must be negative'; while the mood O A does not follow the second part of this special rule, namely, 'the major premise must be universal.'

And now for an example of each of the *valid* moods of the Second Figure.

A - All men are rational;
E - No monkeys are rational;
Ergo, no monkeys are men.

A - All dunces are awkward;
O - Some students are not awkward;
Ergo, some students are not dunces.

E - No poor people are money-lenders;
A - All bankers are money-lenders;
Ergo, no bankers are poor people.

E - No real artists are devoid of imagination;
I - Some poets are devoid of imagination;
Ergo, some poets are not real artists.

Third Figure. Here the position of the middle term (M) is the reverse of that occupied in the Second

Figure; it is the subject of both premises, as will be seen from the diagram:

Fig. 3

M - P

M - S

S - P

The *rule* which governs the Third Figure reads: *The minor premise must be affirmative; the conclusion must be particular.* To this should really be added: *one of the premises must be universal.* If one of the premises were not universal, but both particular, then the middle term, which is the subject of both premises, would be 'undistributed,' and that would violate the Fourth General Rule. However, the matter is already taken care of by the Eighth General Rule, which states that no conclusion can be drawn from two particular premises; and so no special rule is necessary to cover the contingency of an 'undistributed middle' by having two particular premises. Hence, the two-part rule, as given above, will suffice.

The *first* part of the rule requires that the *minor* premise must be *affirmative*. Naturally. If it were ever negative, then the major premise would have to be affirmative, because the premises cannot consist of two negative propositions (Sixth General Rule). But in that case the major term (P), which is the predicate of the major premise in the Third Figure, would be a particular term, because it is the predicate of an affirmative sentence (M + pP). However, due to the Seventh General Rule, a negative minor premise would necessitate a negative conclusion; and that would make its predicate, which is the major term (P) a universal term (S - uP), thereby introducing an 'illicit major,' violating the Second General Rule. This result will occur every time the minor premise is negative; the minor premise, therefore, can never be negative. In order to avoid an 'illicit major,' then, *the minor premise must be affirmative.*

The second part of the rule for the Third Figure requires that the *conclusion be particular*. This should be obvious. The minor term (S) will always be a particular term in the premise, because the minor premise must be affirmative, according to the first part of the present rule, and in this minor premise it (S) is the predicate; and the predicate of an affirmative sentence is always particular (M + PS). But the minor term (S) is the subject of the conclusion; hence, it must also be a particular term in the conclusion, else we would have an 'illicit minor' there and thereby violate the Second General Rule. It will, therefore, be necessary that the *conclusion be particular*.

And so we see that the rule stands: the minor premise must be affirmative, and the conclusion must be particular.

Due to the rule of the Third Figure, that the minor premise must be affirmative, any mood which contains a negative minor premise is automatically eliminated. This happens in two of the eight possible moods, leaving *six valid* moods for this particular figure. As in the preceding figures, the diagram of symbols will reveal the reason why this must be so:

A	uM + pP
A	uM + pS
<hr/>	
	pS + pP
(valid)	

A	uM + pP
E	uM - uS
<hr/>	
	uS - uP
(illicit major)	

A	uM + pP
I	pM + pS
<hr/>	
	pS + pP
(valid)	

A	uM + pP
O	pM - uS
<hr/>	
	pS - uP
(illicit major)	

E	|	uM - uP
A	|	uM + pS
<hr/>		
	|	pS - uP
(valid)		

E	|	uM - uP
I	|	pM + pS
<hr/>		
	|	pS - uP
(valid)		

I	|	pM + pP
A	|	uM + pS
<hr/>		
	|	pS + pP
(valid)		

O	|	pM - uP
A	|	uM + pS
<hr/>		
	|	pS - uP
(valid)		

Here we see plainly that only two moods are invalid in this Third Figure, namely, A E and A O; in each case we have a negative minor premise, introducing an ‘illicit major’ (P) in the conclusion. This bears out the necessity of the rule that ‘the minor premise must be affirmative.’ In all the other moods, A A, A I, E A, E I, I A, and O A, we have an affirmative minor premise, and they are all valid. It will also be noticed, that in each valid mood the minor term (S) is the predicate of an affirmative minor premise, and it thereby becomes a particular term (M + pS). Hence, in order to avoid an ‘illicit minor in the conclusion, the minor term (S) must always be a particular term (PS) also in the conclusion.

The six examples which follow show us how syllogisms can be made according to the six valid moods of the Third Figure:

A - All birds have wings;
A - All birds are bipeds;
Ergo, some bipeds have wings.

A - All fools think themselves wise;
I - Some fools are professors;
Ergo, some professors think themselves wise.

E - No misers are spendthrifts;
A - All misers are people who abuse wealth;
Ergo, some people who abuse wealth are not spendthrifts.

E - No bodies are immaterial;
I - Some bodies are elements;
Ergo, some elements are not immaterial.

I - Some socialists are revolutionary;
A - All socialists are radicals;
Ergo, some radicals are revolutionary.

O - Some criminals do not steal;
A - All criminals are lawbreakers;
Ergo, some lawbreakers do not steal.

Fourth Figure. This syllogistic figure is the reverse of the First Figure, for here the middle term (M) is the predicate of the major premise and the subject of the minor premise.

Fig. 4

P - M

M - S

S - P

A triple rule governs the consistency of the syllogism in this figure, each part of the rule depending on a condition: *If the major premise is affirmative, the minor premise must be universal; if the minor premise is affirmative, the*

conclusion must be particular; if one of the premises is negative, the major premise must be universal. Keeping the general arrangement of the terms of this figure constantly in view, we can readily perceive the necessity of each of these three parts of the rule.

The first part claims that 'if the major premise is affirmative, the minor premise must be universal.' The reason is not hard to find. In the major premise, if it were affirmative, the middle term (M), being the predicate of an affirmative sentence, would be particular. But the middle term (M) is also the subject of the minor premise. Now, if the minor premise were not universal, it would be particular, and that would mean that its subject, which in this case is the middle term (M), would be particular. Both middle terms would then be particular in the premises, and that involves an 'undistributed middle,' violating the Fourth General Rule. Therefore, *if the major premise is affirmative, where the predicate (M) will have to be particular, the minor premise must be universal*, so that the middle term will be distributed at least once.

The *second* part of the special rule for the Fourth Figure says: 'If the minor premise is affirmative, the *conclusion* must be *particular*.' Here, too, the reason is plain. If the minor premise is affirmative, its predicate, which is the minor term (S), will be particular, being the predicate of an affirmative sentence. But this minor term (S) is also the subject of the conclusion, and it must, therefore, also be particular in the conclusion, otherwise we would have an 'illicit minor' in the conclusion, which is against the Second General Rule. Hence, the necessity of this second part of

the rule: *If the minor is affirmative, the conclusion must be particular.*

The *third* part of this rule states: 'If one of the premises is negative, the *major* premise must be *universal*.' Undoubtedly. In this figure the major term (P) is the subject of the major premise. Now, if one of the premises is negative, the conclusion will also be negative (Seventh General Rule), and then this major term would be universal (uP), because it is the predicate of a negative conclusion. Since the major term (P) is the subject of the major premise, it will have to be a universal term (uP), otherwise it would be wider in the conclusion than in the premises, and this would be an 'illicit major' (Second General Rule). Hence, the major term must be a universal term in the major premise, and that means a universal major premise. Consequently the rule is correct, that *if one of the premises is negative, the major premise must be universal*. All three parts of the special rule for the Fourth Figure are thus proved to be necessary, in order to insure consistency in this figure.

If we now investigate the eight possible *moods*, we find that *five* are valid and three are invalid in this Fourth Figure:

A	|	uP + pM
A	|	uM + pS
<hr/>		
	|	pS + pP
<i>(valid)</i>		

A	|	uP + pM
E	|	uM - uS
<hr/>		
	|	uS - uP
<i>(illicit major)</i>		

A	|	uP + pM
I	|	pM + pS
<hr/>		
	|	pS + pP
<i>(undistributed middle)</i>		

A	|	uP + pM
O	|	pM - uS
<hr/>		
	|	pS - uP
<i>(undistributed middle)</i>		

E	|	uP - uM
A	|	uM + pS
<hr/>		
	|	pS - uP
<i>(valid)</i>		

E	|	uP - uM
I	|	pM + pS
<hr/>		
	|	pS - uP
<i>(valid)</i>		

I	|	pP + pM
A	|	uM + pS
<hr/>		
	|	pS + pP
<i>(valid)</i>		

O	|	pP - uM
A	|	uM + pS
<hr/>		
	|	pS - uP
<i>(illicit major)</i>		

Looking over the eight possible moods, we immediately perceive that A I and A O do not conform to that part of the rule of this figure which says: 'If the major premise is affirmative, the minor must be universal.' In consequence of this we have a particular middle (pM) in the major premise, because the middle term is here the predicate of an affirmative sentence (P + pM), and we have also a particular middle term (pM) in the minor premise, because here the middle term is the subject of a particular proposition. Hence, we have an 'undistributed middle' (pM) in both premises of A I and A O, violating the Fourth General Rule. The mood O A will always be invalid in this figure, because it is in opposition to the third part of the rule of the Fourth Figure: 'If one of the premises is negative, the major premise must be universal.' The proposition o is a particular negative sentence, and the major term (P), which is the subject here, becomes a particular term (pP). The conclusion, however, must be negative, because one of the premises is negative (Seventh General Rule), and the predicate of the conclusion must be universal (uP), being the predicate of a negative sentence.

Hence, the major term in the conclusion, being universal (uP), is wider than in the premises, where it is particular (pP - uM), and thus the conclusion contains an 'illicit major'; and that violates the Second General Rule. All the other moods, A A, A E, E A, E I, and I A, observe the special rules of the figure and the Eight General Rules of the syllogism and are, therefore, valid for this Fourth Figure.

As a verbal illustration of the five *valid* moods of this figure, we submit the following examples for perusal:

A - All murders are crimes;
A - All crimes are something detestable;
Ergo, something detestable is murder.

A - All animals are sentient beings;
E - No sentient beings are lifeless beings;
Ergo, no lifeless beings are animals.

E - No plants are sentient beings;
A - All sentient beings are living beings;
Ergo, some living beings are not plants.

E - No inorganic bodies are living beings;
I - Some living beings are sentient beings;
Ergo, some sentient beings are not inorganic bodies.

I - Some bodies are plants;
A - All plants are living beings;
Ergo, some living beings are bodies.

From the above analysis of the four syllogistic figures and the valid moods in each, we see that there are four valid moods in the First Figure, four in the Second Figure, six in the Third Figure, and five in the Fourth Figure. There are, consequently, exactly *nineteen* different ways in which the *simple categorical syllogisms* may validly be formulated. Any other formulation would entail a violation of one of the Eight General Rules which must be observed in this type of argumentation, in order to insure consistency. All these nineteen combinations are valid and correct forms of argumentation, based on the general three-term plan of the syllogism.

The syllogism, as studied so far, is the *standard* form of mediate inference; it is the fundamental pattern of argumentation. It should be clearly understood, and a second reading of this portion will be time well spent.

SUMMARY OF CHAPTER XIII

The categorical syllogism is built up of figures and moods.

1. The syllogistic *figure* is defined as the *disposition of the middle term with respect to the major and minor terms in the premises*. There are four syllogistic figures. In the First Figure the middle term is the subject of the major premise and the predicate of the minor premise. In the Second Figure the middle term is the predicate of both premises. In the Third Figure it is the subject of both premises. In the Fourth Figure it is the predicate of the major premise and the subject of the minor premise.

The syllogistic *mood* is defined as the *arrangement of the premises according to quantity and quality*. There are eight possible valid moods: A A, A E, A I, A O, E A, E I, I A, and O A.

2. *First Figure*. The rule: the minor premise must be affirmative; the major premise must be universal. There are four valid moods in this figure: A A, A I, E A, and E I.

Second Figure. The rule: one premise must be negative; the major premise must be universal. This figure has four valid moods: A E, A O, E A, and E I.

Third Figure. The rule: the minor premise must be affirmative; the conclusion must be particular. Here we have six valid moods: A A, A I, E A, E I, I A, and O A.

Fourth Figure. The rule: if the major premise is affirmative, the minor premise must be universal; if the minor premise is affirmative, the conclusion must be particular; if one of the premises is negative, the major

premise must be universal. There are five valid moods in this figure: A A, A E, E A, E I, and I A.

All in all, there are *four syllogistic figure*: and *nineteen valid moods*.

READINGS

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Chapter 14

VARIETIES OF CATEGORICAL SYLLOGISMS

THE STANDARD CATEGORICAL SYLLOGISM, ONCE ITS FIGURES AND moods are thoroughly understood, offers no undue complications, because its propositions are simple and plain. The mind, however, usually does not run in such plain and simple grooves while performing an act of syllogistic reasoning. Any sort of categorical proposition may be used in the construction of an argumentation, and there will be as many varieties of the categorical syllogism as there are varieties of categorical propositions. Some of them may be complex or modal, and some of them may be multiple propositions. Each kind presents its own special difficulties, which often perplex the mind and give rise to numerous fallacies, unless they are analyzed carefully and the component parts studied separately.

The *general rule* is: Divide the multiple categorical proposition into its component statements and reduce each part to the standard syllogism according to figure and mood; keep a strict control over the terms, and consider the meaning more than the words; then apply the general and special rules pertaining to the syllogism. In order to test the consistency of an argumentation, we are always permitted

to change the wording, if necessary, as long as the meaning of the proposition is not destroyed or impaired, because people are usually somewhat loose in the employment of terms to express their ideas. After all, ideas count, not words. Bearing this in mind, we will now consider the different varieties of syllogisms which result from the presence of the manifold types of categorical propositions in the premises.

COMPLEX AND MODAL SYLLOGISMS

The single *complex* proposition should offer no special difficulty, provided the complex terms are held strictly together and are used in the same combination throughout the argumentation. If a term is modified in any way by another term or clause, whether explicative or restrictive, it should remain so in the entire process of reasoning; otherwise we will run the risk of a four-term construction, with a correspondent violation of the First General Rule. The following syllogism is wrong, because the middle term 'racing automobile,' which is complex, is not retained in its completeness:

All racing automobiles are high-gearred cars;
All Fords are automobiles;
Ergo, all Fords are high-gearred cars.

Sometimes it seems that a complex term is split, one part being united to one term and the other part being linked with another term, thereby introducing more than three

terms. Upon analysis, however, the meaning of such argumentations is found to be correct by a change of wording. Take the following:

George Washington was the first United States president;
Mary Ball Washington was the mother of George Washington;
Ergo, Mary Ball Washington was the mother of the first United States president.

Here 'George Washington' is obviously the middle term. But in the minor premise it is 'the mother of George Washington.' The major term in the major premise is 'the first United States president,' while in the conclusion it is 'the mother of the first United States president.' However, if we look at the *meaning*, the argument can be resolved as follows:

The mother of George Washington was the mother of the first United States president;
Mary Ball Washington was the mother of George Washington;
Ergo, Mary Ball Washington was the mother of the first United States president.

Some propositions, from a grammatical standpoint, contain a principal and an incident clause; logically, however, when considering the meaning, we find that the

incident clause is often the principal clause. Here is a case in point:

It is true that all good democrats are patriotic;
It is equally true that F. D. Roosevelt is a good
democrat;
Ergo, it is true that F. D. Roosevelt is patriotic.

Here we seem to bring a part of the middle term into the conclusion. But the meaning is obvious. Logically speaking, the phrase 'it is true that' is superfluous; it adds no new idea and can be omitted entirely, so that the real syllogism will read:

All good democrats are patriotic;
F. D. Roosevelt is a good democrat;
Ergo, F. D. Roosevelt is patriotic.

Special precaution must be taken, when the qualifying clause or complex term contains a negation. The peculiarity of such a complex term has been discussed before, in giving the proof for the Sixth General Rule of the syllogism; loose language here is responsible for an apparent violation of the laws of correct thinking, while in reality the reasoning may be perfectly valid. A slight alteration of the wording will usually make the test of validity easy; this can be seen in the following legitimate syllogism, where the minor premise is really affirmative:

All athletes who do not train will not be champions;
Some pugilists do not train (i.e., are athletes who do
not train);
Ergo, some pugilists will not be champions.

Modal propositions as premises are best resolved by changing the sentence in such a manner that the 'mode' is made a part of a term, instead of being a statement. Here, too, one must look more to the meaning than to the mere sequence of words. Take this:

It is necessary at times that a nation go to war;
America is a nation;
Ergo, it is necessary at times that America go to war.

The meaning is clear:

All nations at times must go to war;
America is a nation;
Ergo, America at times must go to war.

It is best to refrain from formulating argumentations in which each premise contains a different kind of 'mode'; for instance, when one premise includes a 'mode of necessity' and the other a 'mode of possibility.' This is called 'the cross of the logicians,' because of the difficulty in determining which of these 'modes' should be allowed in the conclusion. The following example will illustrate the difficulty:

It is necessary that all soldiers be brave;
It is possible that some soldiers be heroes;
It is possible (necessary?) that some heroes be brave.

Here, too, a change in wording will help considerably in arriving at a correct conclusion. If we put the 'mode of necessity' into the verb of the major premise and make the 'mode of possibility' an adjective in the minor premise, the solution will be easy:

All soldiers must be brave;
Some soldiers are possible heroes;
Ergo, some possible heroes must be brave.

OVERTLY MULTIPLE SYLLOGISMS

From the complex and modal syllogisms we now pass on to those containing *overtly and covertly multiple propositions* in the premises. In these types the rule must be strictly observed:

In case of doubt *resolve the multiple proposition into its component propositions and arrange each one into a separate syllogism, testing each syllogism according to the rule of the figure into which it falls.* The overtly multiple propositions are, as we know, *five* in number: copulative, adversative, relative, causal, and comparative.

The syllogism containing one or two *copulative* premises should present no special difficulty. In most instances the sense of the propositions is so clear that no reduction should be necessary; as when we reason:

All mammals are vertebrates, are viviparous, and
have lungs;
All kangaroos are mammals;
Ergo, all kangaroos are vertebrates, are viviparous,
and have lungs.

But if we wish, we can construct three syllogisms from
this one, using each of the major terms 'vertebrates,'
'viviparous,' and 'having lungs' separately. Like this:

All mammals are vertebrates;
All kangaroos are mammals;
Ergo, all kangaroos are vertebrates.

All mammals are viviparous;
All kangaroos are mammals;
Ergo, all kangaroos are viviparous.

All mammals have lungs;
All kangaroos are mammals;
Ergo, all kangaroos have lungs.

The *adversative* proposition is similar to the copulative.
The component parts can be reduced to separate
syllogisms; as a rule, however, this will be found
unnecessary. In the following example the adversative
portion of the sentence, 'though difficult,' forms an integral
part of the major term and should remain with it
throughout:

All parts of philosophy are important, though difficult;
Now, logic is a part of philosophy;
Ergo, logic is important, though difficult.

Since both terms, 'important' and 'difficult,' are parts of the major term, it stands to reason that the conclusion may take one or both of these parts, if so desired; it would thus be equally legitimate to simply conclude: 'Logic is important' or 'Logic is difficult' or 'Logic is both important and difficult' or 'Logic is important, though difficult.'

The *relative* proposition introduces the element of time or place in relation to which something occurs. This should cause no particular trouble, as long as this relation is not transferred to some part or term to which it does not belong.

After winning the war the Allies divided the spoils
among themselves;
Now, all nations, dividing the spoils of war among
themselves, make permanent enemies;
Ergo, the Allies, after winning the war, made
permanent enemies.

Except for the wording and for the fact that the minor premise is placed first, this syllogism is correct and the conclusion legitimate.

Every *causal* proposition used as a premise is in itself an abbreviated syllogism, in which the part giving the reason or cause and expressed by the particle 'because' or 'for' contains the middle term. After constructing the complete

sylllogism by using the two parts of the causal proposition as the premises, the figure and mood will become apparent and the rules can be applied. The statement, for instance, was frequently made:

‘Prohibition should be repealed, because it does the nation more harm than good.’ This implies a complete syllogism which may be formulated as follows:

A law which does the nation more harm than good
should be repealed;
Prohibition is a law which does the nation more harm
than good;
Ergo, Prohibition should be repealed.

Sometimes the causal syllogism is expressed in a manner which seems to involve an obvious four-term construction, thereby violating the First General Rule of the syllogism. Upon closer inspection, however, it will be noticed that one of the terms is merely given as an example of the principle enunciated. For instance:

The pauper is miserable, because he has not the
necessaries of life;
But the miser has not the necessaries of life;
Ergo, the miser is miserable.

Here there are apparently four terms. The middle term is without question ‘one who has not the necessaries of life.’ But that would give us three extremes: ‘pauper,’ ‘miserable,’ and miser.’ However, in the major premise the

word 'pauper is taken as a concrete illustration of the general statement that everyone who has not the necessities of life is miserable'; that part of the general statement can, therefore, be omitted without harming the meaning intended. The real syllogism could just as well be worded:

Everyone who has not the necessities of life is
miserable;
The miser, like the pauper, has not the necessities of
life;
Ergo, the miser, like the pauper, is miserable.

Considered, then, not from the standpoint of grammatical construction, but from the standpoint of logical intention, this sort of reasoning is perfectly legitimate. As long as a mere change of phrasing will produce a valid conclusion, the argumentation should be allowed to stand.

The comparative proposition will cause little difficulty. If the comparative term is part of a complex term, one should see that it is not separated from this complex term, but remains an integral part of it.

The spirit is more important than the body;
The soul of man is a spirit;
Ergo, the soul of man is more important than the
body.

No inorganic being is as noble as a spirit;
But the whole physical world is inorganic;
Ergo, the whole physical world is not as noble as a
spirit.

COVERTLY MULTIPLE SYLLOGISMS

While the overtly multiple premises are comparatively easy of solution, the *covertly multiple premises* present real difficulties. Some of these syllogisms are quite puzzling and require careful analysis. Since the multiple character of these propositions is hidden beneath some innocent looking word or phrase, a surreptitious violation of the rules of consistency may at times creep into the syllogism and vitiate the process of reasoning without detection, unless we are aware of the danger. This is particularly true when one of the component sentences contains a negation, while the other contains an affirmation. In these types, therefore, it is practically necessary to resolve the proposition into its 'exponents' and make distinct syllogisms for each. There are as many varieties of syllogisms on this score as there are types of 'exponibles.'

The syllogisms containing one or more *exclusive* propositions are particularly tricky. The exclusive sentence manifests itself by some word like 'only,' 'alone,' 'none but,' and 'solely.' This type should always be resolved into its component sentences, and each part should be investigated according to figure and mood; only in this way will fallacies be avoided. Consider the following argumentation:

The eternal lives forever;
 Only God is eternal;
 Ergo, only God lives forever.

Is this a legitimate conclusion? It certainly seems valid. It would be perfectly correct, if the syllogism read:

The eternal lives forever;
 God is eternal;
 Ergo, God lives forever.

The one element of doubt engendered in the mind lies in the little word 'only.' Does this apparently harmless word make any difference in the first conclusion? It would not seem so. But let us resolve the minor premise 'only God is eternal' and construct a double syllogism from the resulting two propositions. The minor premise implies two things: 'God is eternal, and everything else is not eternal.' Here is the double syllogism:

<i>First syllogism:</i>		<i>Second syllogism:</i>	
<u>The eternal lives forever</u>		<u>the eternal lives forever;</u>	
<u>God is eternal;</u>	and	<u>what is not God is not eternal;</u>	
Ergo, God lives forever,	and	what is not God does not live forever.	
Ergo, only God lives forever.			
$uM + pP$		$uM + pP$	
<u>$uS + pM$</u>		<u>$uS - uM$</u>	
$uS + pP$		$uS - uP$	
(valid)		(invalid)	

Now examine the result. The first syllogism follows the First Figure, and its rule demands: 'The minor premise must be affirmative, and the major premise must be universal.' The rule is carried out to the letter in the first syllogism, and there is no *flaw* in its consistency. How about the second syllogism, constructed, with the proposition implied in the term 'only'? This, too, is a syllogism of the First Figure, and it must also obey the rule of this figure: 'The minor premise must be affirmative.' But in this second syllogism the minor premise is *negative*: 'What is not God *is not* eternal.' This necessitates a negative conclusion with a universal major term (because it is the predicate of a negative sentence), while in the major premise the major term is particular (because it is the predicate of an affirmative sentence); and so we find an 'illicit major' in the conclusion. Hence, the second syllogism is devoid of consistency; the conclusion is invalid. The original conclusion, therefore, that '*only* God lives forever,' cannot be drawn with consistency from the premises; the word 'only' must be omitted, in the conclusion, so that the original syllogism will read:

The eternal lives forever;
Only God is eternal;
Ergo, God lives forever.

It would be a totally different syllogism, if both premises contain an exclusive proposition. Examine this:

Only the uncreated is eternal;
 Only God is uncreated;
 Ergo, only God is eternal.

Each of these propositions contains two hidden statements. The major premise is composed of these two: 'The uncreated is eternal, and everything created is not eternal.' The minor premise consists of these two: 'God is uncreated, and whatever is not God is created.' Now we are ready to formulate the double syllogism:

<i>First syllogism:</i>		<i>Second syllogism:</i>
<u>The uncreated is eternal;</u>	and	<u>everything created is not eternal;</u>
<u>God is uncreated;</u>	and	<u>whatever is not God is created;</u>
Ergo, God is eternal;	and	whatever is not God is not eternal.
Ergo, only God is eternal.		
uM + pP		uM - uP
<u>uS + pM</u>		<u>uS + pM</u>
uS + pP		uS - uP
(valid)		(valid)

Upon examination, we find that both syllogisms follow the first syllogistic figure, the rule of which demands: 'The minor premise must be affirmative, and the major premise must be universal.' Applying this rule to the two syllogisms, we see that in both cases the minor premise is affirmative and the major premise is universal. In the second syllogism we have a negative conclusion; but this does not involve an 'illicit major,' because the major term is also a universal term in the major premise, because it is the predicate of a negative sentence there also. Hence, both syllogisms and their conclusions are valid; and so we are entitled to

combine the conclusion of the first syllogism ('God is eternal') with the conclusion of the second syllogism ('and whatever is not God is not eternal') and form a single exclusive proposition from both: 'Only God is eternal.' The original syllogism, as given, is therefore a valid and legitimate argumentation.

Now consider this syllogism:

Only God is eternal;
But the world is not God;
Ergo, the world is not eternal.

Here we have a First Figure, and its rule demands that 'the minor premise must be affirmative.' On the face of it, the syllogism violates this rule, because the minor premise ('The world is not God') is not affirmative but negative. That this is really the 'minor' premise, is clear from the fact that the subject of the conclusion ('the world'), which is always the minor term, is also the subject of this premise. We have a negative conclusion, with a universal major term there, which is a particular term in the major premise: an obvious 'illicit major' in the conclusion. So it would seem. However, the major premise is an exclusive proposition containing two component statements: 'God is eternal, and whatever is not God is not eternal.' Constructing a syllogism on the last of these two propositions, we obtain the following result:

God is eternal;	and	whatever is not God is not eternal; The world is something which is not God; Ergo, the world is not eternal.
-----------------	-----	--

$uM - uP$
 $\frac{uS + pM}{uS - uP}$
(valid)

There can be no question now that the syllogism is correct. It follows the First Figure, and it obeys the rule of the First Figure which requires that 'the minor premise must be affirmative, and the major premise must be universal.' This double rule is observed, and the conclusion is validly drawn from the premise.

The syllogism simply followed the *hidden* proposition, implied by the exclusive particle 'only,' and a perfectly legitimate argumentation was the result. This shows, however, how carefully the exclusive propositions must be examined, when used as premises, and what logical pitfalls lurk beneath their seemingly innocent words.

The treatment of the *exceptive* proposition in a premise is practically the same as that of the exclusive, because both are patterned along similar lines. The exception mentioned will always contain a partial denial of the main statement expressed, and the danger of an inconsistent conclusion in one of the component sentences is, therefore, ever to be feared. Safety lies here, too, in dissolving the exceptive proposition into its exponents and then formulating a syllogism with each; any hidden fallacy will then come to

the surface. At first glance the following syllogism appears to be perfectly correct:

All wounded members of the squad received a
decoration;
All, except one, were wounded members of the squad;
Ergo, all, except one, were decorated.

A merely superficial reading of this argumentation would hardly detect anything wrong with it. It sounds plausible. It seems natural. However, just what does the major premise really state? It states that 'the wounded members' were decorated. But it states nothing whatever about those of the squad who were not wounded; it does not say that the unwounded did not receive a decoration. The unwounded member may have been the bravest of them all; he may have obtained a decoration for his bravery, if not for a wound. Of course, the original proposition does not say either, that this unwounded member of the *squad* did receive a decoration for bravery: nothing is affirmed or denied of this one member. After this general analysis of the contents of the major premise, let us divide the exceptive proposition of the minor premise into its exponents, construct separate syllogisms with each, examine the results and see whether these results agree with the general observations made above. The minor premise, when resolved, reads: 'All were wounded members of the squad, and one was not a wounded member of the squad.'

<i>First syllogism:</i>		<i>Second syllogism:</i>
All wounded members of the squad received a decoration;		All wounded members of the squad received a decoration
All were wounded members of the squad;	and	One was not a wounded member of the squad;
Ergo, all were decorated,	and	One was not decorated.
Ergo, all, except one, were decorated.		
uM + pP		uM + pP
<u>uS + pM</u>		<u>uS - uM</u>
uS + pP		uS - uP
(valid)		(invalid)

The first syllogism is correct. It follows the First Figure, whose rule it obeys: 'The minor premise must be affirmative, and the major premise must be universal.' The second syllogism also follows the First Figure, but it violates the first part of the rule that 'the minor must be affirmative.' As a result of this violation we have an 'illicit major' in the conclusion. The major term is particular (pP) in the major premise, because it is the predicate of an affirmative sentence; and it is a universal term in the conclusion (uP), because it is the predicate of a negative sentence. This, of course, offends against the Second General Rule. Hence, it is inconsistent to state in the conclusion that 'all, except one, were decorated.' The syllogism does not warrant any conclusion about this one; he may, or he may not, have received a decoration for some other reason than for being wounded. Not only is the final conclusion ('All, except one, were decorated') inconsistent and false, but even the conclusion of the first syllogism ('All were decorated') cannot be allowed to stand as stated. This 'one unwounded member' also belongs to the squad, and he *may* have been decorated for bravery as well as the rest; but he also *may not* have been decorated. We do not know.

Consequently, all we can consistently conclude is that the ‘wounded members were decorated’; that, however, has already been stated in the major premise.

The whole syllogism would be entirely different, if the major premise could be changed into the exclusive proposition ‘*only* the wounded members of the squad received a decoration.’ In this case the major premise would also be multiple in character, and the two exponent propositions would read: ‘All wounded squad members received a decoration, and no unwounded squad members received a decoration.’ A legitimate conclusion could be drawn from this double sentence without any trouble. Both syllogisms will now follow the First Figure and both will be found to obey its rule: ‘The minor premise must be affirmative, and the major premise must be universal.’

On the next page is shown the new double syllogism:

<i>First syllogism:</i>		<i>Second syllogism:</i>	
All squad members who were wounded received <u>a decoration;</u>	and	All squad members who were not wounded, did <u>not receive a decoration;</u>	
All were squad members who were wounded;	and	One was a squad member who was not wounded;	
Ergo, all received a decoration;	and	One did not receive a decoration.	
Ergo, all, except one, received a decoration.			
uM + pP		uM - uP	
<u>uS + pM</u>		<u>uS + pM</u>	
uS±pP		uS - uP	
(valid)		(valid)	

Naturally, we are not allowed to make arbitrary changes in propositions, especially when such changes involve a *different* meaning. We see that here. To change the plain

categorical statement 'All wounded squad members received a decoration' into the exclusive categorical proposition '*Only* the wounded squad members received a decoration' is unwarranted and inadmissible, unless we are aware of the *actual* facts in the case and know that only those who were wounded received a decoration. Then, of course, such a radical alteration of the meaning would be allowed. Ordinarily speaking, we must accept all statements according to their natural meaning; viewed in this light, the original syllogism is incorrect.

As far as the *reduplicative* and *specificative* propositions are concerned, they present no difficulty. One must remember, however, not to allow the reduplicative and specificative phrase to become separated from the term which it qualifies.

The following syllogism is correct:

Man, in as much as he is rational, is a morally free agent;
But a morally free agent is responsible for his actions;
Ergo, man, in as much as he is rational, is responsible for his actions.

In the subjoined syllogism the reduplication has been altered, giving rise to a fallacious conclusion; the error is evident:

Man, as man, is intellectual;
But man is an animal:
Ergo, man, as an animal, is intellectual.

The inceptive and desitive propositions, when used as premises, are hardly capable of introducing a fallacy into a syllogism, since they merely state the time element when something began or ended. The following argumentation shows this plainly:

The World War began in 1914;
But the war in which the Germans were defeated,
 was the World War;
Ergo, the war in which the Germans were defeated,
 began in 1914.

These, then, are the varieties of categorical syllogisms which result from the fact that a complex or modal proposition or a multiple proposition is used as a premise. Some of them are simple enough; others are more complicated and may give rise to inconsistent conclusions. The exclusive and exceptive propositions are the ones most liable to produce inconsistency in the argumentation; they need careful watching. Because a syllogism, containing such a proposition, appears to be correct, is no guarantee that it is correct. Appearances deceive — also in logic.

SUMMARY OF CHAPTER XIV

Since different kinds of categorical propositions may be used as premises, there will be as many varieties of categorical syllogisms as there are varieties of categorical propositions. The *general rule* is: Divide the multiple proposition into its component statements and reduce each part to the standard syllogism according to figure and mood; keep a strict control over the terms, and consider the meaning more than the words; then apply the general and special rules pertaining to the syllogism.

1. In syllogisms using *complex* propositions, the combinations of complex terms should be kept strictly together.

Modal propositions present difficulties, when different 'modes' occur in the premises. This should be avoided. A change of wording will often help to remove confusion.

2. In *overtly* and *covertly multiple* propositions the *general rule* should be observed: In case of doubt, resolve the multiple proposition into its component statements and arrange each into a separate syllogism, testing each syllogism according to the rule of the figure into which it falls. The overtly multiple propositions are five in number.

The *copulative*, *adversative*, and relative propositions present no special difficulties.

The *causal* proposition is an abbreviated syllogism and can be formulated according to figure and mood.

In the comparative proposition the comparative particle should be constantly retained in the complex term to which

it belongs.

3. The *covertly multiple* propositions often present serious difficulties. Here, more than anywhere else, the proposition should be resolved into its exponibles and each constructed into a syllogism, in order to test its consistency.

The *exclusive* proposition with its particle 'only,' and the *exceptive* proposition with its particle 'except,' always involve a hidden sentence which contains some denial of the main statement. They should, therefore, always be resolved and their exponibles tested separately.

The *reduplicative* and *specificative* propositions, when used as premises, are simple enough, provided the reduplicative and specificative phrases are not separated from the terms which they qualify.

The *inceptive* and *desitive* propositions should cause no trouble.

READINGS

Hartman, S.J., Ch. XIV.

Chapter 15

HYPOTHETICAL SYLLOGISMS

SO FAR THE CATEGORICAL SYLLOGISM HAS COME UNDER consideration. This type of syllogism, as the name implies, is constructed of categorical propositions, and these consist of a direct assertion between the subject and predicate of a sentence. The *hypothetical* propositions are totally different. They do not contain a direct, straightforward assertion of agreement or disagreement between subject and predicate. *They express the dependence of the truth or falsity of one statement upon the truth or falsity of another statement.* The truth of a hypothetical judgment consists in the truth of this dependence, of this logical relation, between the one statement and the other; if this dependence actually exists, the statement is true, and if this dependence does not exist, the statement is false. Thus, when I state, 'If the ice is hard, the skaters will race,' I am not asserting that the 'Ice is hard' or that 'The skaters will race'; I am merely asserting the dependence of the fact of the race on the fact of the hardness of the ice, and if this relation of dependence of the latter on the former actually is as stated, then the judgment as such is true.

It will be evident that a hypothetical proposition readily lends itself as the major premise of a syllogism. If the minor premise can then definitely affirm or deny one part of these connected statements, the conclusion may possibly affirm or deny the other part. A *hypothetical syllogism*, then, is a syllogism *in which a hypothetical proposition occurs as the major premise*. Obviously, there will be as many types of hypothetical syllogisms as there are types of hypothetical propositions, and these are three in number: conditional, disjunctive, and conjunctive.

CONDITIONAL SYLLOGISMS

The *conditional hypothetical* syllogism is defined as a syllogism *which contains a conditional proposition as the major premise*. Some logicians give the name 'hypothetical' exclusively to the 'conditional' syllogism. Names, of course, are of secondary importance; and if anyone insists on identifying the 'conditional' syllogism with the 'hypothetical' syllogism, there is little sense in quarreling about a mere point of nomenclature. However, the term 'hypothetical,' used in its common meaning of 'problematical,' is wider in significance than 'conditional.' All three types of propositions (conditional, disjunctive, and conjunctive) agree in this one feature that they are problematical in character; none of them makes a direct assertion, involving an act of the mind expressing an outright agreement or disagreement between two ideas. Consequently, there should be some generic term covering and designating all three. The term 'hypothetical,' in the sense of

‘problematical,’ seems to be the best for this purpose, and its meaning is thus used in this connection.

Conditional propositions are ‘if’ statements. There are two parts to such propositions. The first part contains the *condition* and is introduced by the particle ‘if’; the truth of the second part depends on the *fulfillment of the condition* expressed in the first part. Only when the first part, or antecedent, is true, can the truth of the second part, or consequent, also be stated. The antecedent gives the ground, the reason, the cause; the consequent gives the result, the dependent, the effect. This is the logical sequence of ideas in every conditional proposition.

If a syllogism, both in its premise and in its conclusion, consists entirely of conditional propositions, it is a *pure* conditional syllogism; but if one of the premises is a conditional proposition and the other a categorical proposition, it is a *mixed* conditional syllogism. An example of each follows:

Pure conditional syllogism:

If a vertebrate is a mammal, it is no fish;
If a whale suckles its young, it is a mammal;
Ergo, if a whale suckles its young, it is no fish.

Mixed conditional syllogism:

If a whale suckles its young, it is no fish;
The whale suckles its young;
Ergo, the whale is no fish.

Consider these two argumentations. It will be noticed that in the pure conditional syllogism the conclusion is also a conditional proposition; it does not render a conclusion which makes a clear-cut statement of agreement or disagreement between two ideas. The whole argumentation, from beginning to end, is problematical and leads to no definite result, as far as truth and knowledge are concerned. In the example given above, we arrive at a conclusion which does not settle the question whether the whale is a fish or a mammal. On the other hand, the mixed conditional syllogism leads to a definite assertoric decision, as we see in the second example. Truth and falsity are present in categorical statements only, and every conclusion should, therefore, be a categorical proposition. Since the mixed conditional syllogism ends in a categorical proposition for its conclusion, it is a logical instrument of reasoning, capable of advancing truth and knowledge. Nothing further need be said, then, of the pure conditional syllogism; at best its value consists in suggesting a line of thought which may assist the mind in formulating a mixed or conditional-categorical syllogism.

The mixed *conditional-categorical* syllogism, then, has this characteristic that the major premise is a conditional proposition, while the minor premise and the conclusion are categorical propositions. The logical relation between the two premises is such that the *major* premise enunciates a *general principle*, which principle the minor premise *applies to the case in question*. The major premise states positively that the consequent will necessarily follow, *provided* the condition expressed in the antecedent is

fulfilled. The minor premise will state one of two things: it will either state that the condition is fulfilled, and then the conclusion will assert the truth of the consequent; or it will state that the consequent did not follow, and then the conclusion must assert that the condition in the antecedent was not fulfilled.

There are two possible ways of drawing a valid conclusion from the premises in this type: *to accept the antecedent is to accept the consequent; to reject the consequent is to reject the antecedent*. In other words: If I assert that the condition in the antecedent was fulfilled, I must also assert the truth of the consequent, because the truth of the consequent is dependent on the fulfillment of the condition; reversely, if the consequent did not occur, then I know that the condition in the antecedent could not have been fulfilled, otherwise the consequent must also have occurred. Here are two examples which illustrate the point:

Accepting the antecedent:

If he has cancer of the stomach, he is seriously ill;
But he has cancer of the stomach;
Ergo, he is seriously ill.

Rejecting the consequent:

If he has cancer of the stomach, he is seriously ill;
But he is not seriously ill;
Ergo, he has no cancer of the stomach.

Both these syllogisms are valid argumentations. The consequent ('he is seriously ill') depends entirely on the truth of the condition expressed in the antecedent ('if he has cancer of the stomach'). There is the relation of *cause and effect* between the antecedent and the consequent: if the cause has operated ('he has cancer'), then the effect must follow ('he is seriously ill'); and if the effect did not follow ('he is not seriously ill'), then the cause did not operate ('he has *no* cancer'). From this we deduce the double principle: From the truth of the antecedent follows the truth of the consequent; and from the falsity of the consequent follows the falsity of the antecedent.

This leads us to the question: If we reject the antecedent, must we reject the consequent? And if we accept the consequent, must we accept the antecedent? In the two subjoined syllogisms this is done:

Rejecting the antecedent:

If he has cancer of the stomach, he is seriously ill;
He has no cancer of the stomach;
Ergo, he is not seriously ill.

Accepting the consequent:

If he has cancer of the stomach, he is seriously ill;
He is seriously ill;
Ergo, he has cancer of the stomach.

It takes but little thought to realize that these syllogisms are not valid. The mere fact that 'he has no cancer' does not

warrant the conclusion that 'he is not seriously ill' he may be seriously ill from any other dangerous disease, even if 'he has no cancer,' because he may have acute appendicitis, typhoid fever, or something similar. For the same reason, the conclusion of the second syllogism is inconsistent. The fact that 'he is seriously ill' need not have as its cause that 'he has cancer of the stomach'; the cause could be some other disease. The reason is obvious. It is certainly true: '*If* he has cancer of the stomach, he is seriously ill'; this particular cause will assuredly produce this particular effect. But the reverse does not necessarily follow: '*If* he is seriously ill, he must have cancer of the stomach'; this particular effect may be produced by some other cause also. Similarly, the fact that 'He has no cancer of the stomach' will not exclude the possibility that 'He may be seriously ill' from some cause other than cancer. The conditional proposition merely gives *one of the possibly many causes which might produce the same effect*, and it would be inconsistent to exclude all these others as causes, since there is nothing in the antecedent to restrict this effect ('being seriously ill') to this one single cause ('cancer'). The whole matter under discussion can be illustrated thus:

If he has typhoid fever,...

If he has acute appendicitis,...

If he has advanced tuberculosis,...

If he has arterio-sclerosis,.....}=> then=> He is
seriously ill.

If he has cholera,...

If he has a fractured skull,...
If he has, a cerebral lesion,...
If he has cancer of the stomach....

Here we see why the suggested process of reasoning is fallacious. If we reject the antecedent ('He has cancer of the stomach') and state in the minor premise that 'He has no cancer of the stomach,' we must not necessarily reject the consequent ('He is seriously ill') and conclude that 'He is *not* seriously ill'; because he might be 'seriously ill' from any of the *other* causes, even if 'he has no cancer.' And if we accept the consequent ('He is seriously ill'), it does not necessarily follow that the cause of this serious illness is cancer; any other illness might be the cause of this dangerous state of health. We thus see the truth of this second double principle: to reject the antecedent does not involve the necessity to reject the consequent; and to accept the consequent does not involve the necessity to accept the antecedent. Summing up, we find the *law of the conditional* syllogism to be:

From the truth of the antecedent follows the truth of the consequent; but from the falsity of the antecedent the falsity of the consequent does not follow. From the falsity of the consequent follows the falsity of the antecedent; but from the truth of the consequent the truth of the antecedent does not follow.

This law shows that there are two, and only two, valid moods or modes to the conditional syllogism. If the minor premise accepts or 'posits' the antecedent, the conclusion must accept or 'posit' the consequent. And if the minor

premise rejects or 'sublates' the consequent, the conclusion must reject or 'sublate' the antecedent. No other syllogism of this type is valid. The antecedent and the consequent may both be affirmative sentences; or both may be negative; or the one affirmative and the other negative. When we accept or 'posit' them, we must accept the affirmative as an affirmative and the negative as a negative. When we reject or 'sublate' them, we must change the affirmative into its contradictory negative and the negative into its contradictory affirmative. The mood in which the minor premise 'posits' the antecedent and the conclusion 'posits' the consequent is called the *constructive mood*; while the mood in which the minor premise 'sublates' the consequent and the conclusion 'sublates' the antecedent is called the *destructive mood*. Each of these two moods can appear in *four forms*: the antecedent and consequent may both be affirmative; the antecedent and consequent may both be negative; the antecedent may be affirmative and the consequent negative; the antecedent may be negative and the consequent affirmative. This gives us four valid forms for the constructive mood and four for the destructive mood.

Constructive Mood:

- | | |
|---|---|
| (1) If it is A, then it is B;
It is A;
Ergo, it is B. | If socialism is a false system, it is dangerous;
It is a false system;
Ergo, socialism is dangerous. |
| (2) If it is A, then it is not B;
It is A;
Ergo, it is not B. | If prohibition produces serious evils, it should not prevail;
It produces serious evils;
Ergo, it should not prevail. |
| (3) If it is not A, then it is B;
It is not A;
Ergo, it is B. | If Christ is not an impostor, Christ is the Son of God
Christ is not an impostor;
Ergo, Christ is the Son of God. |
| (4) If it is not A, then it is not B;
It is not A,
Ergo, it is not B. | If the world is not infinite, it is not eternal;
The world is not infinite;
Ergo, it is not eternal. |

Destructive Mood:

Destructive Mood:

- | | |
|---|--|
| (1) If it is A, then it is B;
It is not B;
Ergo, it is not A. | If this novel is real art, it is ennobling;
It is not ennobling;
Ergo, it is not real art. |
| (2) If it is A, it is not B;
It is B (i.e., it is not not B);
Ergo, it is not A. | If the soul is a material substance, none of its acts are spiritual;
Some of its acts are spiritual;
Ergo, the soul is immaterial. |
| (3) If it is not A, it is B;
It is not B;
Ergo, it is A.
(i.e., it is not not A) | If life is not created, it existed forever;
Life did not exist forever;
Ergo, it is created. |
| (4) If it is not A, it is not B;
It is B (i.e., it is not not B);
Ergo, it is A
(i.e., it is not not A). | If man is not morally free, he is not morally responsible;
Man is morally responsible;
Ergo, man is morally free. |

The constructive and destructive moods, as illustrated above, are then the only valid forms of the conditional-categorical syllogism: the truth of the antecedent involves the truth of the consequent, and the falsity of the consequent involves the falsity of the antecedent. Inconsistency, with the possibility of error, enters into this type of argumentation, when we attempt to conclude from the falsity of the antecedent to the falsity of the consequent, or from the truth of the consequent to the truth of the antecedent. The very idea and nature of the conditional-categorical syllogism will not allow such a method of inference. The *fallacy* contained in this illicit procedure is, however, a very common occurrence and the prolific source of errors. The following argumentation, though true enough, is not a consistent form of inference:

If a communist is not a patriot, he is a traitor;
He is a traitor;
Ergo, he is not a patriot.

We cannot draw a legitimate conclusion by passing in this way from the consequent to the antecedent. It is bad logic. Though true in some cases, it is not true in all cases; we cannot, therefore, be sure of our conclusions. Take this syllogism:

If a book has artistic merit, it will be widely read;
This book is widely read;
Ergo, it has artistic merit.

This judgment on books is met with quite frequently; but it is fallacious. A book may be widely read for other reasons than 'artistic merit.' It may be a book of intense historical or political interest, without any particular artistic merit; it may be a mere textbook on biology or astronomy or philosophy or relativity or what not; it may be a prurient novel on some morbid or salacious subject, with a strong appeal to primitive passion: the fact of its being 'widely read' does not give us any information about its 'artistic merit.' A similar fallacy, one which has created immense havoc in educated circles, is the plausible and seemingly legitimate inference:

If evolution took place, we must find a gradual transition from the simpler to the more complicated structures of life in the fossil remains of the earth, together with a definite homological plan for all animals and plants;

But this is precisely what we find in nature;
Ergo, evolution took place.

This conclusion does not follow. The result contained in the consequent will be the effect of either one of two causes: creation or evolution. Hence, the mere fact that the consequent is true does not prove that evolution is the cause; it may be, but it need not be, because it may be the result of creation just as well.

The same sort of fallacy occurs, when we sublate the antecedent in the minor premise and then proceed to sublate the consequent in the conclusion. The following syllogism is fallacious:

If there is progress, there is change;
There is no progress;
Ergo, there is no change.

Even if there is no progress, there may be change. Change may go in two directions, toward progress and toward deterioration. Hence, the fact that progress has ceased does not necessarily preclude the possibility of a continued change in the opposite direction. The above syllogism is no better than the following: 'If it rained, the grass is wet; it did not rain; ergo, the grass is not wet.' It may have been sprinkled with a hose. There are, therefore, only two legitimate ways to draw a consistent conclusion in the conditional- categorical syllogism: to posit the antecedent or to sublate the consequent.

DISJUNCTIVE SYLLOGISMS

The *disjunctive* syllogism is relatively simple. It is one whose *major premise consists of a disjunctive proposition*. A disjunctive proposition, as we know, is an 'either — or' statement: 'The sun is either shining or not shining.' Care must be taken to distinguish clearly between the proper and the improper disjunctive propositions, because the significance of these two types is totally different and produces two distinct kinds of syllogisms.

It is characteristic of the proper disjunction that its component parts can *neither be true nor false together*. If this disjunction consists of only two components, the matter presents no difficulty. The general rule, then, will be: *if one*

is true, the other must be false; and if one is false, the other must be true. As a result of this general rule the two-part disjunctive syllogism will have two valid moods: if one part is posited in the minor premise, the other part must be sublated in the conclusion; and if one part is sublated in the minor premise, the other part must be posited in the conclusion. And since both components may be affirmative, or both negative, or the first affirmative and the second negative, or the first negative and the second affirmative, we can readily see that the positing mood and the sublating mood may each appear in four possible forms.

The *positing* twopart proper disjunction:

- | | |
|---|---|
| (1) It is either A or B;
It is A;
Ergo, it is not B. | This criminal is either sane or insane;
He is sane;
Ergo, he is not insane |
| (2) It is either A or not B;
It is A;
Ergo, it is B
(i.e., it is not not B). | The depression is either man-made or not controllable;
It is man-made;
Ergo, the depression is controllable. |
| (3) It is either not A or B;
It is not A;
Ergo, it is not B. | The soul is either not material or mortal;
It is not material;
Ergo, it is not mortal. |
| (4) It is either not A or not B;
It is not A;
Ergo, it is B (i.e., it is not not B). | Either the world is not self-sufficient or not created;
The world is not self-sufficient;
Ergo, the world is created. |

The *sublating* two-part proper disjunction:

- | | |
|---|---|
| (1) It is either A or B;
It is not A;
Ergo, it is B. | The will of man is either determined or free;
It is not determined
Ergo, it is free. |
| (2) It is either A or not B;
It is not A;
Ergo, it is not B. | Man is either a brute or not a descendant of the ape;
Man is not a brute;
Ergo, he is not a descendant of the ape. |
| (3) It is either not A or B;

It is A (i.e., it is not not A);
Ergo, it is B. | The existence of God either cannot be proved or it is
certain;
It can be proved;
Ergo, it is certain. |
| (4) It is either not A or not B;

It is A (i.e., it is not not A);
Ergo, it is not B. | Morality is either not of divine origin or not a matter of
convention;
Morality is of divine origin;
Ergo, morality is not a matter of convention. |

It will be noticed in this type of syllogism, as in the conditional syllogism, that if one part is 'posited,' it must be 'posited' *just as it stands*, whether affirmative or negative; the part that is 'sublated' must be turned into the contradictory of the original, so that the affirmative part is changed into its contradictory negative and the negative part into its contradictory affirmative. To fail to follow this

essential rule would make us guilty of *fallacy*. A careful scrutiny of the syllogisms given above will show plainly how this rule is carried out. With a strict adherence to this rule, the two-part proper disjunctive syllogism should not cause undue difficulty.

When a proper disjunctive proposition consists of *more than two component parts*, the matter is somewhat different. Here, too, only one part can be true, and all the others must be false. Hence, if one component part is posited, all the other parts must be sublated by using the particles 'neither — nor.' For instance:

It is either spring or summer or autumn or winter;
It is winter now;
Ergo, it is neither spring nor summer nor autumn.

But if one of these component parts is sublated, the remaining parts must be posited by means of another disjunction, using again an 'either — or' proposition. One must continue in this way, until one has reached a two-part disjunction for a last syllogism; and this last syllogism will then follow the rule of the two-part proper disjunctive syllogism as explained above. Taking the example given, the procedure will be as follows:

It is either spring or summer or autumn or winter;
It is not spring;
Ergo, it is either summer or autumn or winter.

It is either summer or autumn or winter;
It is not summer;
Ergo, it is either autumn or winter.

It is either autumn or winter;
It is not autumn;
Ergo, it is winter.

The nature of the *improper disjunctive* proposition is quite at variance with that of the proper disjunctive statement, in as much as the members of the improper disjunction are *not mutually exclusive*. It is characteristic of this type that all cannot be false, but some or all may be true together. Hence, if one member of the disjunction is posited, we are not entitled to sublate the other; this would be fallacious, because the others may also be true. But if one member is sublated in the minor premise, the other members must again be *posited with an improper disjunction*. This is the only legitimate conclusion that can be drawn. Here is an example:

In attempting to abolish the depression, President
Roosevelt is influenced by motives either of fame
or of personal profit or of love of humanity or of
patriotism;
His motive is not personal profit;
Ergo, he is influenced by motives either of fame or of
love of humanity or of patriotism.

Naturally, if we know all the facts in the case and are able by a process of elimination to sublate one member after the other, until only one member is left, then the final conclusion will legitimately posit this one remaining member. The following conclusion would thus be correct:

Roosevelt is motivated neither by fame nor by
personal profit nor by love of humanity;
Ergo, he is influenced by motives of patriotism.

In the disjunctive syllogism, therefore, we must first be clear in our own mind whether the disjunction is proper or improper. Each has its own peculiarity and implication. To treat them alike would be a serious logical error which cannot but lead to fallacies. Once the nature of these two forms of disjunction is correctly understood, the rules are simple and the application easy.

CONJUNCTIVE SYLLOGISMS

The *conjunctive syllogism* presents the least difficulties among the hypothetical syllogisms. The conjunctive proposition in the major premise states that two or more things are impossible at the same time. It lies in the nature of this statement that no two of the conjunctive members can be true at the same time; but they may all, for that matter, be false together.

Hence the general rule: *from the truth of one member follows the falsity of the others; but from the falsity of one member the truth of the other (or others) does not follow.*

Supposing we have the statement: 'This thing cannot be a plant and an animal at the same time.' If we are able to make the further statement that 'It is an animal,' then we are certainly correct in concluding that 'It is not a plant.' But if we state that 'It is not an animal,' we cannot necessarily conclude that 'It is a plant,' because the thing may be neither an animal nor a plant, but merely a stone or a dab of mud or anything else. Similarly, if we state that 'It is not a plant,' we are not warranted to state in our conclusion that 'It is an animal,' for the same reason. It is only when we are able to *posit* one member that we can sublate the other; but the nature of a conjunctive proposition does not entitle us, when sublating one member, to posit the other (or others), because they may all be false together. The only valid mood, therefore, in the conjunctive syllogism, is the following:

If the minor premise posits one member of the conjunctive major premise, the conclusion must sublate the other (or others).

It cannot be night and twilight and day at the same
time;

But it is day;

Ergo, it is not night or twilight.

He cannot have been in Chicago and in New York at
the same time;

He was in New York;

Ergo, he was not in Chicago.

A man cannot be guilty and innocent at the same
time;
But he is innocent;
Ergo, he is not guilty.

Fallacies will creep into this type of syllogism, when we sublate a member of the conjunctive major premise and then posit the other member (or members) in the conclusion. This would be the case in the second of the three syllogisms given, if the minor premise stated that 'He was not in New York at the time,' and the conclusion then proceeded with the assertion that 'He must therefore have been in Chicago.' That would not necessarily follow; he *may* have been in Chicago, but there are a thousand other places besides Chicago, in any of which he may have been at the time.

This type of syllogism is very frequently used in criminal court cases, in order to establish an alibi for defendants. The argument will run as follows:

This murder was committed in Chicago;
But he was in New York at the time;
Ergo, the defendant did not commit the murder.

If the prosecutor merely attempted to break down this alibi by proving that 'The accused was not in New York at the time,' that would not automatically place the accused in Chicago; the prosecutor would still have to procure evidence which would undeniably place the accused at the seat of the crime. If he can procure this evidence and also

disprove the alibi, then he is on a fair way to establish the guilt of the accused.

The only consistent argumentation, therefore; based on a conjunctive proposition, is the one in which the *minor premise posits* one of the conjunctive members and the *conclusion sublates* the other (or others). Of course, if the conjunctive statement consists of two members which are the *contradictories* of each other, then it would be a legitimate inference to sublate the one in the minor premise and posit the other in the conclusion; but this is due to the fact that such a proposition is equivalent to a two-part disjunctive proposition, and not because of the nature of the conjunctive statement as such. The third example in the three syllogisms given above would be a case in point. 'Guilty' and 'innocent' are mutually exclusive. To say that 'A man cannot be guilty and innocent at the same time' is equivalent to saying that 'A man is either guilty or innocent'; and the one member is the contradictory of the other. Here it would be permissible, therefore, to sublate the one member in the minor premise and posit the other member in the conclusion. We can readily see, however, that we cannot change every conjunctive statement into a two-part proper disjunctive proposition. Thus, while it is perfectly true to assert that 'A man cannot be in New York and Chicago at the same time,' we cannot arbitrarily assert on that account that 'A man is either in New York or in Chicago.' Hence, the rule of the conjunctive syllogism must stand: the only legitimate mood for a consistent conclusion is *to posit one member in the minor premise and sub/ate*

the other (or others) in the conclusion. No other procedure will insure consistency in this form of argumentation.

These, then, are the three types of syllogisms based on a hypothetical proposition: the conditional, disjunctive, and conjunctive syllogisms. And these, together with the categorical syllogisms, are the various *forms of deduction* which the mind uses in its reasoning. In every instance the intellect begins with some sort of general principle and then applies this principle to the case in hand, passing from the generic to the specific, from the universal to the particular, from the whole to the part.

SUMMARY OF CHAPTER XV

A *hypothetical* syllogism is one which uses a hypothetical proposition as a major premise. There are three types: conditional, disjunctive, and conjunctive.

1. The conditional syllogism contains a *conditional proposition as the major premise*. There are two component members to a conditional proposition: the antecedent, which expresses the condition ('if'); and the consequent, which expresses the result of the fulfillment of the condition.

If the entire syllogism consists of conditional propositions, it is a pure conditional syllogism; if the major premise is a conditional statement and the minor premise and conclusion are categorical statements, it is a *mixed or conditional-categorical syllogism*. The latter alone is of real value for truth and knowledge, and its *general law* reads: From the truth of the antecedent follows the truth of the consequent, but from the falsity of the antecedent the falsity of the consequent does not follow; from the falsity of the consequent follows the falsity of the antecedent, but from the truth of the consequent the truth of the antecedent does not follow.

There are, therefore, only *two valid moods* to the conditional-categorical syllogism: if the minor premise posits the antecedent, the conclusion must posit the consequent; and if the minor premise sublates the consequent, the conclusion must sublate the antecedent.

The former is the constructive and the latter is the *destructive mood*.

2. The *disjunctive* syllogism has a *disjunctive proposition for its major premise*. This type appears in two forms, depending on the fact whether the proposition contains a proper or an improper disjunction.

In the *two-part proper* disjunction the rule is: if one part is true, the other is false; and if one part is false, the other is true. Hence, there are two valid moods: if the minor premise posits one part, the conclusion must sublate the other; and if the minor premise sublates one part, the conclusion must posit the other.

In the proper disjunction which contains *more than two parts*, only one part can be true; the others must all be false. Hence, if the minor premise posits one of these parts, the conclusion must sublate all the others. But if the minor premise sublates one part, the conclusion must posit the others by means of another proper disjunction; and this process of elimination must continue until only two of the original members are left, and these two members will then follow the rule of the two-part proper disjunctive syllogism.

The *improper* disjunction is different. Here all the parts cannot be false, but all may be true together. The only valid *mood*, therefore, is: if the minor premise sublates one member, the conclusion must posit the others with another improper disjunction.

3. The *conjunctive* syllogism, having a *conjunctive proposition for its major premise*, has as its general rule: from the truth of one member follows the falsity of the others; but from the falsity of one member the truth of the

other (or others) does not follow. Consequently, it has *one valid mood*: if the minor premise posits one member, the conclusion must sublate the other (or others).

READINGS

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Chapter 16

VARIATIONS OF THE SYLLOGISM

THE MIND OF MAN IS NOT A MECHANICAL, INSTRUMENT OF reasoning. Were it such, it would undoubtedly cast its deductive reasoning processes in the rigid and stereotyped form of the syllogistic pattern in every instance of argumentation. We would then have nothing but various types of syllogisms with one major premise, one minor premise, and a conclusion, as we observe them in books on logic. But the mind is a living reality, and its functioning is anything but mechanical. Like all living things, it abhors the fixity of movement so characteristic of material appliances and works in the looser and more supple fashion of a self-determining being. In books, magazines, and conversations we seldom meet with a strict syllogistic figure. Deductive arguments are formulated in a free and easygoing manner, with many omissions and additions, which make them deviate from the standardized form. Of course, the basic elements are always present, and all these abridged or amplified variations of the regular method of argumentation can be reduced to the strictly logical process of the syllogism. The laws of consistency are the same, and each argument, no matter in what garb it

appears, must conform to them. We will now consider some of the variations of the standard syllogisms. They are the enthymeme, epichireme, polysyllogism, sorites, and the dilemma.

THE ENTHYMEME

The *enthymeme* is an abridged syllogism in which *one of the premises or the conclusion is omitted*. In most cases, this is the form in which a syllogistic discourse appears in ordinary conversation or writing, since the mind finds it comparatively easy to supply the missing proposition and follow the logical trend of thought. A fallacy, of course, may lurk in the suppressed proposition, and it will be good to test the validity of the argumentation by supplying the missing member and then examining the syllogism according to the rules of the figure to which it belongs.

Every *categorical* syllogism, as we know, has three distinct terms, and each of these occurs twice in the course of the premises and conclusion; the middle term is used twice in the premises, and the major and minor terms are used once in the premises and once in the *conclusion*. This enables us to reconstruct the syllogism without much trouble. If the enthymeme, then, consists of two categorical propositions containing three, and only three, terms, we know that it is an abridged categorical syllogism. As a rule, the tenor of the propositions or the words 'therefore,' 'ergo,' 'consequently,' or a similar expression, will manifest the conclusion. Being certain of the conclusion, we are certain of the minor (S) and major (P) terms. If the

remaining proposition contains the comparison of the minor (S) term with the middle (M), then the suppressed proposition will be the major premise. And if the remaining proposition contains the major (P) term, then the minor premise is the one omitted.

An example or two will illustrate the matter. Consider this enthymeme: 'Prohibition encourages gangland activities; consequently it should be abolished.' The word 'consequently' indicates the conclusion: 'Prohibition (S) should be abolished (P).' We have discovered two of the three terms, the minor (S, 'prohibition') and the major (P, 'should be abolished'). The other sentence must be one of the premises, and it is the minor premise, because the minor term ('prohibition') is compared in it with the middle term (M, 'encourages gangland activities'). The suppressed premise is, therefore, the major premise. It is now possible to reconstruct the complete syllogism, and it will be found to belong to the First Figure.

$(uM + pP)$ – (Any law which encourages gangland activities should be abolished);

$uS + pM$ – Prohibition is a law which encourages gangland activities;

$uS \pm pP$ – Consequently prohibition should be abolished. (valid)

Here is another enthymeme: 'All vices are dishonorable; therefore smoking is no vice.' The last part is the conclusion, with 'smoking' as the minor (S) term and 'vice' as the major (P) term. The term 'dishonorable' must be the

middle (M). Since the major term (P, 'vice') is compared with the middle term (M, 'dishonorable'), the first sentence is the major premise, and the minor premise is omitted. This will be found to be a syllogism of the Second Figure:

uP + pM – All vices are dishonorable;
(uS - uM) – (Smoking is not dishonorable);
uS - uP – Therefore smoking is no vice. (valid)

Now consider the following enthymeme: 'No government based on principles contrary to human nature can survive permanently; but that is the case with the Soviet (i.e., the Soviet is a government based on principles contrary to human nature).' We naturally expect a final judgment: 'Ergo, it can— not survive permanently.' This shows that in this enthymeme the conclusion is missing, while the two premises are given expressly. This again is a syllogism of the First Figure:

uM - uP – No government based on principles contrary to human nature can survive permanently;
uS + pM – But the Soviet is a government based on principles contrary to human nature;
(uS - uP) – (Ergo, the Soviet cannot survive permanently). (*valid*)

That the suppressed premise of a seemingly consistent enthymeme may at times contain a hidden fallacy, can be seen from the following argument: 'Legal interest-taking is not dishonesty; legal interest-taking is therefore no crime.'

The latter portion. of the enthymeme is, of course, the conclusion; the minor (5) term is 'legal interest-taking,' and the major (P) term is 'crime.' Since the minor term ('legal interest') is also found in the given premise, this is the minor premise. Hence, the major premise is omitted. The major premise must read 'All dishonesty is a crime' (and that is obviously the meaning), or it must read 'Some crime is dishonesty.' Common sense forbids us to make it read 'All crimes are dishonesty,' because there are many crimes (murder, for instance) which are not identical with dishonesty; and then, too, 'crime' is the genus to which 'dishonesty' belongs as a species. In any case, the syllogism is inconsistent, whether we say that 'All dishonesty is a crime,' or 'Some crime is dishonesty.'

(uM + pP) – (All dishonesty is a crime);
uS - uM – Legal interest-taking is no dishonesty;
uS – uP – Ergo, legal interest-taking is no crime.

(pP + pM) – (Some crime is dishonesty);
uS - uM – Legal 'interest-taking is no dishonesty;
uS - uP – Ergo, legal interest-taking is no crime.

In the first instance we have a First Figure with an 'illicit major,' because this syllogism violates the rule of the First Figure, which states that 'the minor must be affirmative.' In the second instance we have a Second Figure, also with an 'illicit major,' because the rule of that figure was not carried out which demands that 'one premise must be negative and the major premise must be universal.' Naturally, an

enthymeme may also be an abridged *hypothetical syllogism*. Whenever we encounter an enthymeme with a premise and a conclusion and notice that neither of the terms of the conclusion appears in the premise, then we have a *conditional* syllogism. 'God is the Creator; therefore man is not independent.' This enthymeme is resolved as follows:

If God is the Creator, man is not independent;
God is the Creator;
Ergo, man is not independent.

This does not mean, of course, that the major or minor term of the conclusion may not occur in the premise; it will all depend on the conditional proposition. For instance: 'God is the Creator; ergo, God is man's master.' Here the minor term 'God' occurs both in the conclusion and in the premise, because the major premise will read: 'If God is the Creator, God is man's master.'

Enthymemes may also be abridged *disjunctive* and *conjunctive* syllogisms. The former will appear in the following form:

'He is not orthodox; ergo, he is heretical.' The missing major premise reads: 'He is either orthodox or heretical.' And this is an example of the latter: 'He was in New York all day last Monday; hence, he could not be in Chicago at the same time.' The missing major premise is clear: 'He could not be all day last Monday in New York and in Chicago at the same time.' These types need no further explanation.

THE EPICHIREME

The *epichireme* is a syllogism in which the *proof is conjoined to one or more premises*. In the following epichereme the proof of the statement is added to each of the premises; the word 'because' introduces the proof.

Man has a spiritual soul, because his soul can think;
But a spiritual soul is immortal, because a spiritual
being cannot be dissolved;
Ergo, man has an immortal soul.

Each of the premises, as will be noted, is really an enthymeme. The main proposition is the conclusion, while the clause containing the reason is the premise. Resolving each enthymeme into a standard syllogism, we obtain the following result:

A thinking soul is a spiritual soul,
Man's soul is a thinking soul;
Ergo, man's soul is a spiritual soul.

A spiritual being cannot be dissolved;
Man's soul is a spiritual being;
Ergo, man's soul cannot be dissolved.

A being which cannot be dissolved is immortal;
Man's soul is a being which cannot be dissolved;
Ergo, man's soul is immortal.

THE POLYSYLLOGISM

The preceding argumentation, developed from the epichireme given above, is also an example of a polysyllogism or 'chain of reasoning.' The *polysyllogism* is defined as an argumentation consisting of two or more syllogisms, logically linked together in such a way that the conclusion of the preceding syllogism becomes the premise of the one following. The arrangement of a polysyllogism is plainly visible in the above-mentioned example, and no further comment need be made. The single syllogisms will belong to the standard figures and moods and must, of course, comply in all points with the respective rules which govern them.

THE SORITES

The *sorites* is an abridged polysyllogism, consisting of three or more premises in such a way that *the predicate of the preceding premise becomes the subject of the following premise, the final conclusion being composed of the subject of the first premise and the predicate of the last; or, inversely, it is an abridged polysyllogism in which the subject of the preceding premise becomes the predicate of the following premise, with the conclusion composed of the subject of the last premise and the predicate of the first premise.* As will be noted from this rather lengthy definition, the sorites appears in two distinct forms; the first is called the *Aristotelian*, the second the *Goclenian* sorites. Rudioiphus Goclenius, professor at Marburg, in 1598, was

the first to expound this second type of sorites; hence the name. We can best study the nature and arrangement of these two types by means of letters:

Aristotelian sorites:

A=B - Aristotle is a man;

B=C - All men are mammals;

C=D - All mammals are living beings;

D=E - All living beings are substances;

A=E - Ergo, Aristotle is a substance.

Goclenian sorites:

D=E - One who has no peace of mind is miserable;

C=D - One who lacks much has no peace of mind;

B=C - One who has many desires lacks much;

A=B - One who has many vices has many desires;

A=E - Ergo, one who has many vices is miserable.

There is no essential difference between the Aristotelian and Goclenian sorites; it is merely a matter of arrangement. A glance at the twofold construction illustrated above will show that by inverting the order of the premises an Aristotelian sorites becomes a Goclenian, and vice versa. Both types of sorites follow the First Figure.

Aristotelian sorites:

B=C - All men are mammals;

A=B - Aristotle is a man;

A=C - Ergo, Aristotle is a mammal.

C = D - All mammals are living beings;
A = C - Aristotle is a mammal;
A = D - Ergo, Aristotle is a living being.

D = E - All living beings are substances;
A = D - Aristotle is a living being;
A = E - Ergo, Aristotle is a substance.

Goclenian sorites:

D = E - All living beings are substances;
C = D - All mammals are living beings;
C = E - Ergo, all mammals are substances.

C = E - All mammals are substances;
B = C - All men are mammals;
B = E - Ergo, all men are substances.

B = E - All men are substances;
A = B - Aristotle is a man;
A = E - Ergo, Aristotle is a substance.

There is, of course, no great truth contained in these two resolved sorites. This very simple example was chosen purposely, in order to illustrate the fact that the same premises may be arranged into both types, the Aristotelian and the Goclenian. Both follow the First Figure of the categorical syllogism, and the rules governing the First Figure must be rigidly observed from beginning to end in each of the separate syllogisms into which the sorites can

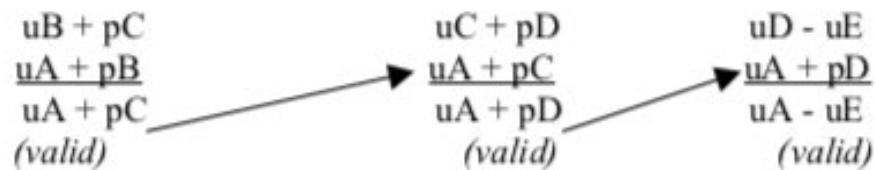
be resolved. These rules will be upheld in the *Aristotelian* sorites by applying this rule: *no premise may be negative except the last; no premise may be particular except the first.*

If any premise, except the last, were negative, the conclusion would involve an ‘illicit major.’ Every intermediate conclusion in an Aristotelian sorites becomes the *minor* premise of the succeeding syllogism ($A = C$, $A = D$), and the rule of the First Figure demands that ‘the minor premise must be affirmative’; otherwise an ‘illicit major’ will result. The only premise that is not used as a minor premise in the course of the argumentation is the last one ($D = E$); it is the *major* premise of the last syllogism and is, therefore, permitted to be negative, because the rule of the First Figure merely states that the minor premise must be affirmative. If we construct the sorites into syllogisms with letters instead of sentences, the whole matter will be visually clear:

$$\begin{array}{ccc}
 \begin{array}{l} uB + pC \\ \hline uA - uB \\ \hline uA - uC \end{array} & \longrightarrow & \begin{array}{l} uC + pD \\ \hline uA - uC \\ \hline uA - uD \end{array} \\
 & & \longrightarrow \begin{array}{l} uD + pE \\ \hline uA - uD \\ \hline uA - uE \end{array}
 \end{array}$$

All three syllogisms have an ‘illicit major,’ as will be noted, because they violate the rule of the First Figure. The first of these three could be made a valid syllogism by making the major premise negative ($B - C$) and the minor premise-affirmative ($A + B$). But that would not help matters, because the conclusion would still be negative ($A - C$), and this conclusion will become the minor premise in

the second syllogism; thereby an 'illicit major' is introduced into the conclusion of the second syllogism (A - D), vitiating the whole argumentation. Hence, none of the premises may be negative *except the last*. If the last premise is negative, and all the preceding premises are affirmative, the final conclusion will be negative, and the whole sorites will be valid:



The *second part* of the rule for the Aristotelian sorites states that *no premise may be particular except the first*. Here is the reason. The subject of the first premise (A) and the predicate of the last premise (E) are the minor and major terms of the final conclusion. All the other terms (B, C, D) act as middle terms. The preceding diagram shows that each of these middle terms is the subject of the major premise and the predicate of the minor premise in its respective syllogism. As we have just seen, these syllogisms belong to the First Figure, in which the minor premise must be affirmative; the middle term, being the predicate of this affirmative minor premise, will be particular. But this same term is also the subject of the major premise; hence, if any of these major premises (except the first, where A is the subject) were particular propositions, the middle term would also be particular here. And thus the middle term would be twice particular, and that would involve an

undistributed middle; that, of course, would vitiate the sorites. The truth of this can be seen in the following diagram:

$$\frac{\begin{array}{l} pB + pC \\ uA + pB \\ \hline uA + pC \end{array}}{\quad} \longrightarrow \frac{\begin{array}{l} pC + pD \\ uA + pC \\ \hline uA + pD \end{array}}{\quad} \longrightarrow \frac{\begin{array}{l} pD + pE \\ uA + pD \\ \hline uA + pE \end{array}}{\quad}$$

Here we see how an undistributed middle results from making the premises (except the first) particular propositions. Even if we made only one of them particular, the sorites would be consistent no longer; the whole sorites would be invalid. We also see why the first premise ($A = B$) may be particular. The subject of the *first* premise (A) is never used as a middle term, because it is the minor term in the conclusion, and it could therefore be used as a particular term throughout without involving any violation of the rule of the First Figure, which demands that ‘the minor premise must be affirmative and the major premise must be universal.’ From all this we see the necessity of the rule for the Aristotelian sorites: ‘No premise may be negative except the last, and no premise may be particular except the first.’

Since the *Goclenian* sorites contains merely an inverted arrangement of the premises of the Aristotelian sorites, the same rule, but in an inverted order, applies: *no premise may be negative except the first, and no premise may be particular except the last*. As we have just seen, the first premise of the Aristotelian sorites ($A B$) may be particular ($pA \pm pB$); and since this premise is the last one in the

Goclenian sorites, the last premise of the Goclenian sorites may be particular. The last premise of the Aristotelian sorites (D E) may be negative; this being the first premise of the Goclenian sorites, it is obvious that the first premise of the Goclenian sorites may be negative. The other premises occupy the same intermediate position in both types; therefore, they may be neither negative nor particular. Hence the rule.

Occasionally a sorites may seem to consist of categorical propositions, while in reality they do not. The following humorous sorites is a case in point:

High dog tax, less dogs;
Less dogs, more cats;
More cats, less mice;
Less mice, more bumblebees;
More bumblebees, more pollination of clover;
More pollination of clover, more clover seed;
Ergo, high dog tax, more clover seed.

It is only when attempting to resolve a sorites like this into the regular syllogistic form that we realize that we are not dealing with categorical propositions. The line of argumentation is evidently hypothetical in character; we feel that each statement is an 'if' proposition, a conditional sentence. This sorites, therefore, resolves itself into a series of conditional premises:

If the dog tax is high, the number of dogs decreases;

If the number of dogs decreases, the number of cats increases;

If the number of cats increases, the number of mice decreases;

If the number of mice decreases, the number of bumblebees increases;

If the number of bumblebees increases, the pollination of clover increases;

If the pollination of clover increases, there will be more clover seed;

Ergo, if the dog tax is high, there will be more clover seed.

We may, of course, raise many objections as to the truth of the *fact*: mentioned in these conditional premises and thus challenge the *truth* of the final conclusion; but, granted the truth of each statement, the argumentation as such would be *formally valid*. And if we posit the condition of the first premise, namely, 'The dog tax is high,' the final conclusion would consistently follow that 'There will be more clover.' Such a so-rites, naturally, must observe the general rules which govern the conditional-categorical syllogism: 'To posit the antecedent is to posit the consequent, and to sublate the consequent is to sublate the antecedent.'

THE DILEMMA

One of the most interesting types of syllogistic reasoning, as convincing as it is effective, is the *dilemma*. It is defined as

an argument in which the major premise consists of a disjunctive proposition and the minor premise consists of conditional propositions, each of which takes one member of the disjunction and from it draws a conclusion detrimental to the adversary. As far as the structure of the dilemma is concerned, we thus have the following arrangement: the first proposition is a disjunctive statement; the second is a conditional statement; the third is a conditional statement; and the fourth is a conclusion which makes a definite, categorical decision following necessarily from both conditional statements. From a logical standpoint it makes no difference whether the double conditional proposition (the minor premise) or the disjunctive proposition (the major premise) is placed first in the argument; very frequently the minor premise leads off. Here are two examples:

He who speaks disrespectfully of holy things, speaks
either in earnest or in jest.

If he speaks in earnest, he is guilty of blasphemy; if he
speaks in jest, he is guilty of levity.

In either case his conduct is reprehensible.

If God exists, you are wrong in not worshiping Him; if
He does not exist, you are foolish in leading a
moral life.

But God either exists or He does not exist.

Ergo, you are either wrong or you are foolish.

The main force of the argument will depend upon the correct enumeration of the possible members in the disjunction. Where these members are contradictory, there can be no more than two. At times, however, three or four or more members constitute the complete disjunction, and all of them will have to be mentioned. When three members are used, we have a *trilemma*; when four, a *tetralemma*; when more than four, a *polylemma*. But usage sanctions the term 'dilemma' to designate them all. The basic idea, of course, is the same, no matter how many members are included in the disjunctive premise. In order that the dilemma be a consistent form of argumentation, the following rules must be observed:

First Rule: The disjunctive enumeration must be complete. A contradictory disjunction, as has been stated, is the best for the purpose, because there can be no neutral middle ground between them. The adversary cannot escape; he will be gored by one of the two 'horns' of this dilemma. We have a case of this kind in the dilemma of Tertullian against the decree of the Roman Emperor Trajan, which ordered that the Christians should not be sought out, but, if brought before the tribunal, they should be punished. Tertullian argued:

The Christians are either guilty or innocent of crime.

If they are guilty, why should they not be sought, out?

If innocent, why should they be punished when found?

In either case, the decree is unjust.

There is no middle course between 'guilty or innocent of crime'; a person is either the one or the other, and the logic of the two 'horns' of the disjunction is inescapable. But when the dilemma contains an incomplete disjunction, and the adversary avoids the uncomfortable consequences of the disjunction by pointing out that a further possibility has been overlooked which enables him to destroy the consistency of the argument, he is said to 'escape between the horns.' Here is an illustration:

If I am rich, I must worry about losing my wealth; if I
am poor, I must worry about making a living.
But I must be either rich or poor.
Hence, I must always worry.

To this, one can rightly answer: 'You may be neither rich nor poor, but in moderately comfortable circumstances, where there is neither danger of losing great wealth nor danger of starvation; ergo, you have no need to worry.' Here one accepts a third possibility which does not involve the consequences mentioned.

SECOND RULE: THE CONDITIONAL STATEMENTS AND THE GENERAL conclusion drawn from them must really follow with consistency and necessity. The very complexity of the dilemma, which makes it so convincing and effective, if correctly constructed, is the greatest source of danger, because inconsistency may lurk in the incompleteness of the disjunction or in the lack of real cogency in either of the

conditional statements based upon the members of the disjunction. Here is a dilemma that has consistency in all its parts. The Koran of the Mohammedans considers Jesus a true prophet, but not the Son of God; this allows the following dilemma:

Either Christ is a true prophet or He is not.

If He is a true prophet, then He is also the Son of God, because He claims it, and a true prophet cannot lie in such a vital matter; but then the Koran is false, because it denies that He is the Son of God. If He is not a true prophet, then the Koran is false, because it considers Him a true prophet.

Ergo, the Koran is false in either case.

If an adversary can show that the conclusions drawn from the members of the disjunction are not the results of a necessary deduction, but that a person may accept one or both of the alternatives and arrive at an entirely different conclusion, he is said to destroy the argument by 'taking the dilemma by the horns.' This is always the case when a particular cause may have different effects, any of which may result with equal probability; or when different causes may produce the same kind of an effect, so that the particular cause alleged in the dilemma may be denied. As long as one of the 'horns' can be turned against the antagonist, it is sufficient to overthrow the dilemma. Let us suppose that an opponent in the course of controversy makes the following dilemma:

If my adversary were intelligent, he would see the worthlessness of his arguments; if he were honest, he would acknowledge himself wrong.

But either he does not see that his arguments are worthless; or, seeing it, he will not acknowledge himself wrong.

Ergo, he is wanting in intelligence or he is dishonest.

To this one could answer by accepting the first 'horn' and showing that the opposite effect may result: 'Certainly I am intelligent: but that does not necessarily mean that I must recognize my arguments as invalid; on the contrary, just because I am intelligent, I know them to be correct.'

THIRD RULE: THE DILEMMA SHOULD NOT BE OPEN TO A REBUTTAL.

A dilemma is rebutted, when the selfsame disjunctive members are accepted and conclusions are drawn from them which are the very opposite of those made by the opponent. A celebrated instance of the use of the dilemma is 'Empson's fork.' Empson was an agent of King Henry VII, and he devised the following argument to justify the imposition of large fines upon people:

If the accused lives at a small rate, his savings must have made him very rich; if, on the other hand, he maintains a large household, his expenditure proves him to be wealthy.

But he does either the one or the other.

Ergo, he must be very wealthy and can afford to pay a heavy fine into the king's treasury.

Here the mode of living is taken as an indication of wealth; but it does not need much intelligence to realize that the mode of living is not a real index of one's financial status. Empson's dilemma is open to the obvious rebuttal:

If the accused lives at a small rate, his parsimony is an evident sign of poverty; if he maintains a large household, this fact alone must have hindered him from accumulating great wealth.

But he lives either in the' one way or in the other.

Ergo, one way or the other, he is not wealthy and can pay no heavy fine.

Considered closely, the rebuttal in this case is just as faulty as the original dilemma of Empson; the mode of living as described is neither a sign of poverty nor of wealth, because in both modes the accused may be poor or rich or merely in moderate circumstances. But the rebuttal is certainly valid, in as much as it shows that Empson's 'fork' is based on invalid premises, which do not warrant his conclusion; because the opposite conclusion could be drawn with equal right and cogency. And that is all that a rebuttal is supposed to do: prove the inconsistency of the original dilemma.

EXTRA-SYLLOGISTIC INFERENCES

An interesting phase of the process of reasoning is the problem of extra-syllogistic inference. The question refers to certain forms of mediate inference which follow the general line of thought characteristic of the — syllogistic figures, but do not seem to conform to the basic idea of these figures. The essential feature of the figures consists in this that a conclusion is drawn with necessity from two premises in virtue of the *Dictum de omni* and the *Dictum de nullo*: 'What can be affirmed of the logical whole, can be affirmed of every logical part of this whole; and what can be denied of the logical whole, can be denied of every logical part of this whole.'

It is precisely this necessary *relation of logical whole to logical part* which underlies the consistency of the categorical syllogism in its figures. Two ideas are compared with a known middle term; and this comparison is based on the relations of *extension* and *comprehension*, giving rise to a necessary and universal principle in one of the premises, which general principle is then applied to a single or less general case falling under this principle. The mind, by an act of *intuition*, perceives the evident relation of the one idea as a 'logical part' to the other idea as the 'logical whole' and realizes that the comprehension of the major term must be affirmed (or denied) of the minor term in the conclusion because the minor belongs to (or is excluded from) the extension of the major. The whole process of reasoning is such, therefore, that the copula ('is, is not; are, are not') expresses an identity or non-identity of *comprehension* (attributes) between minor, major, and middle terms. This axiom of the *Dictum de omni et nullo*,

though underlying all four syllogistic figures, is best exemplified in the First Figure, as can be seen from the subjoined inference:

All men have power of speech;
The pygmies of Africa are men;
Ergo, the pygmies of Africa have power of speech.

The comprehension of the attribute 'power of speech' is predicated of 'all men.' By means of an analysis of the ideas of man and 'power of speech,' the mind recognizes the fact that 'power of speech' is a necessary and universal attribute of '*man as such*,' and it expresses this fact in the necessary and universal law that 'All men have power of speech.' Then, in virtue of the axiom of the Dictum, the mind perceives the evident truth of the relation of identity between the 'logical whole' ('all men') and the 'logical part' ('the pygmies of Africa'): since the attribute of power of speech' belongs to 'all men,' it must also. belong to 'the pygmies of Africa.' Hence the conclusion.

Now, then, can the mind make valid inferences which follow this general pattern of the categorical syllogistic figures, but are based on the evident truth of an *axiom different from that of the Dictum*? If so, then we have extra-syllogistic inferences. There is no real reason why the mind could not base its inferences on some other evident relation existing between ideas besides that of identity and non-identity. As a matter of fact, the conditional (hypothetical) syllogism is based on the axiom of the antecedent and consequent ('if — then'); and the disjunctive syllogism is

based on the axiom of exclusive alternatives ('either — or'). Of course, these two types are not categorical, but *hypothetical* syllogisms, and they cannot, therefore, be taken as instances of extra-syllogistic *categorical* inferences; but they do show conclusively that the mind can and does make valid inferences based on an axiom different from that of the *Dictum*. There are, however, certain types of inference which follow the general pattern of the categorical syllogism and yet are not deductions based on the relation of identity and diversity as we find it in the syllogistic figures. Here is an example:

Germany is larger than France;
Russia is larger than Germany;
Ergo, Russia is larger than France.

This is undoubtedly a valid argumentation, and it follows the pattern of the categorical syllogism; but it does not conform to the rules of the syllogism, because it contains four terms. 'Germany' is one term; 'larger than France' is another; 'Russia' is the third; and 'larger than Germany' is the fourth. Furthermore, neither the major nor the minor premise contains a necessary and universal law or principle resembling a 'logical whole..'. There is, though, a universal and necessary principle underneath this inference, based on the self-evident relation of *comparative magnitude*. This relation, however, does not express an identity or diversity of attributes between the major and minor term in the conclusion, as we ordinarily find it in the categorical syllogism. Here is a similar example:

7 + 5 equals 12;
20 - 8 equals 12,
Ergo, 7 + 5 equals 20 - 8.

The necessary and universal truth or law, which furnishes the mind with an intuitive insight into the relations existing between the numerical operations mentioned above, is the mathematical axiom which states that 'things which are equal to the same thing are equal to each other.'

Similar relations exist between things which equal, or differ from, each other in *degrees of quality*. These relations of qualitative degrees lend themselves also to extra-syllogistic inferences, as we see in the following illustrations:

Ice is colder than water;
Liquid air is colder than ice;
Ergo, liquid air is colder than water.

An elephant is less powerful than a locomotive;
Man is less powerful than an elephant;
Ergo, man is less powerful than a locomotive.

Mercury is lighter than radium;
Hydrogen is lighter than mercury;
Ergo, hydrogen is lighter than radium.

The relations of time and space can also be utilized as the basis of inferences of this kind. For instance:

Adam was older than Abel;
Methusalem was older than Adam;
Ergo, Methusalem was older than Abel.

H. Hoover was president after C. Coolidge;
F. Roosevelt was president after Hoover;
Ergo, F. Roosevelt was president after C. Coolidge.

New York is east of Toledo;
Chicago is west of Toledo;
Ergo, Chicago is west of New York.

The atmosphere is below the stratosphere;
The atmosphere is above the earth;
Ergo, the earth is below the stratosphere.

A different relation, though partaking of the same character as far as inferential value is concerned, is that of kinship and jurisdictional authority. For example:

Solomon was the father of Roboam;
David was the father of Solomon;
Ergo, David was the grandfather of Roboam.

Albert is the husband of Margaret;
Joseph is the brother of Albert;
Ergo, Joseph is the brother-in-law of Margaret.

The captains are inferior to the colonels;
The general is superior to the colonels;

Ergo, the general is superior to the captains.

These and similar relations form the basis of *extra-syllogistic categorical inferences*. Many logicians will not admit that these inferences of relation should be styled 'extra-syllogistic.' They point to the fact that inferences based on hypothetical propositions are also called 'syllogisms,' although these hypothetical syllogisms follow the well-known figures even to a lesser degree than the ones mentioned here. This is undoubtedly true. But it is equally true that these inferences of relation do not conform to the rules of the standard syllogistic figures; they should, then, not be considered as mere variations of these figures, but should be placed on a par with the categorical and hypothetical syllogisms and be treated with them as a special type of syllogism. After all, it is not the name that counts, but the *principle* on which they rest; and that principle is one of relation and not that of the 'logical part' as contained in the 'logical whole,' as expressed by the *Dictum de omni et nullo*.

This closes our investigation into the nature and the various types of the syllogism, considered as a specific form of reasoning. Just as the mind expresses its judgments in categorical and hypothetical propositions, so it also bases its syllogisms on categorical and hypothetical statements. In every instance the procedure is fundamentally the same: from the comparison of two ideas with a known third it passes to the judgment of the identity or non-identity of the two doubtful ideas among themselves. The conclusions it reaches are, therefore, not a leap into the dark, but a

consistent, coordinated stepping from the known to the unknown, based upon the principle that what is true of the logical whole must be true of every logical part. The syllogism is thus the standard form of one of the main reasoning methods of the mind: deduction.

The other main reasoning method is induction.

SUMMARY OF CHAPTER XVI

Due to the flexibility of the mind, it often deviates from the stereotyped form of the syllogism by the addition or omission of material. This gives rise to some variations of the syllogism.

1. The *enthymeme* is an abridged syllogism in which *one of the premises or the conclusion is omitted*. It should be reconstructed according to type and judged according to the rules of the type.

2. The *epichireme* is a syllogism in which *the proof is conjoined to one or more premises*. Such a premise with proof is really an enthymeme and should be treated like an enthymeme.

3. The *polysyllogism* is an argumentation consisting of *two or more syllogisms, logically linked together in such a way that the conclusion of the preceding syllogism becomes the premise of the one following*.

4. The *sorites* is an *abridged polysyllogism*, in which a number of premises lead to a *common conclusion*. In the *Aristotelian* sorites the predicate of the preceding premise becomes the subject of the following premise, the final conclusion being composed of the subject of the first premise and the predicate of the last. In the *Goclenian* sorites the subject of the preceding premise becomes the predicate of the one following, with the conclusion composed of the subject of the last premise and the predicate of the first premise. The rule for the Aristotelian sorites is: no premise may be negative except the last, and

no premise may be particular except the first. The rule for the Goclenian sorites is: no premise may be negative except the first, and no premise may be particular except the last.

5. The *dilemma* is an argument in which *the major premise consists of a disjunctive proposition and the minor premise consists of conditional propositions, each of which takes one member of the disjunction and from it draws a conclusion detrimental to the adversary*. Three rules must be observed: the disjunctive enumeration must be complete; the conditional statements and the general conclusion must really follow with consistency and necessity; the dilemma must not be open to a rebuttal.

6. *Extra-syllogistic inferences* follow the general pattern of the syllogistic figures, but they are based on principles different from the axiom of the *Dictum de omni et nullo*. Some are based on the *relation of comparative magnitude*; others, on the relation of *degrees of quality*; others, on the relation of *space* and *time*; others on the relation of kinship and jurisdictional authority.

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PART IV

INFERENCE AND ARGUMENTATION: INDUCTION

Chapter 17

NATURE OF INDUCTION

KNOWLEDGE IS THE GOAL OF ALL THINKING. AND THE POSSESSION of truth is knowledge. Correct thinking alone can lead us to truth and knowledge. For this reason it is necessary to know the import of ideas, judgments, and inferences. Ideas are united into judgments, and truth is formally and exclusively contained in the judgment. If a mere comparison of ideas would enable the mind to perceive their agreement or disagreement among themselves, the mind would, without any further action, express their identity or non-identity in an affirmative or negative judgment, and thus the mind would pass from truth to truth through an immediate process of thinking. The building of a science and the unification of all sciences into the higher science of philosophy would then be a simple matter. Unfortunately, this is not the case.

FORMAL AND MATERIAL TRUTH IN INFERENCE

It is easy enough for the mind to state that snow is cold and water is a liquid and iron is hard and the sun is luminous and the tree grows and the dog runs and man thinks. The

mind acquires such and similar truths through the process of immediate perception, and they are evident truths of observation. Other truths, axiomatic in character, like the **Principle of Identity**, the **Principle of Contradiction**, the **Principle of Excluded Middle**, are *laws of thought*, and a mere analysis of the ideas of such principles make their truth self-evident to the mind. A further development of these laws of thought shows the self-evident truth of some other universal and necessary principles, as 'The whole is larger than the part,' 'everything must have a sufficient reason,' 'every effect must have a cause,' the '*Dictum de omni et nullo*,' and similar axioms. But the great bulk of scientific truths needs more than immediate observation and an analysis of fundamental ideas; they demand a process of *reasoning* to establish their truth. Science, therefore, cannot be acquired except through an extensive use of the reasoning powers of the mind. This necessitates an accurate knowledge of the different forms of argumentation, in order to insure correct thinking and the avoidance of error, so that the conclusions of these arguments will be valid. These conclusions will be valid, if they are *consistently* drawn from *true* premises. A conclusion will be *consistent* when it flows with strict *logical necessity* from the premises *as given*; and the conclusion will be consistent and true, when it flows with logical necessity from true premises. Only if both these factors are present, will the mind be certain that the concluding judgment expresses truth. Consistency will be present in an argumentation, when the rules governing each type of reasoning are accurately observed. These rules have been

declared and examined and proved in the preceding chapters. They guarantee the *formal* truth of consistency.

But it is not sufficient to have consistency in an inference, in order that the conclusion be true; consistency merely makes the inference correct. No conclusion, no matter how consistently drawn, will be true, unless the premises themselves are true judgments. The two syllogisms which follow are correct according to all the rules of the syllogism and the laws of correct thinking, but one leads to a true and the other to a false conclusion.

All aquatic animals are fishes;
The whale is an aquatic animal;
Ergo, the whale is a fish.

All animals which suckle their young are mammals;
The whale is an animal which suckles its young;
Ergo, the whale is a mammal.

The first conclusion is false, the second is true. Both syllogisms are identical according to figure and rule, and both are consistently drawn from the given premises; both are, therefore, *formally* correct. Then why the difference? Both can evidently not be true at the same time. What is wrong with the first example?. The *material* truth is missing in the major premise of the first example: *it is not true that 'All aquatic animals are fishes,'* and that is why the premises led to a false conclusion. The *formal* truth of an argument consists in the correct *arrangement* of the premises, so that the conclusion must follow with logical

necessity. The material truth of an argument consists in the truth of the premises as *statement of facts*. Both elements are required, material and formal truth, in order that the conclusion be true with certainty. The strict observance of the rules of correct thinking will guarantee the *formal* truth of an inference. But what will guarantee the *material* truth of the premises as statements of facts? For instance, how are we to know whether 'All aquatic animals are fishes' and that 'The whale is an aquatic animal,' or whether 'All animals which suckle their young are mammals' and that 'The whale is an animal which suckles its young'? A mere comparison of the ideas contained in these judgments will never assure us that they are materially true; they are not self-evident truths.

The material truth of all *factual* statements, such as are found in scientific laws, can only be discovered by a close observation and *study of nature* itself. Only when the facts and laws of nature are proved to be true can we be sure that our premises are true. Nature, however, is a very complex and mysterious reality, and a superficial observation of the workings of nature will seldom suffice to wrest her secrets from the tangled web of phenomena. As a rule, the way of the scientist is tedious and laborious. There is no thumb- rule method which can be applied to discover the laws of nature. Each science, due to the peculiarity of its subject matter, has its own characteristic method of discovery and proof. The methods of the mathematician and astronomer will be of little value to the historian and the anthropologist, and the methods of the political economist and educator can hardly be used by the physicist and

chemist. Nevertheless, the laws of thought are the same for all sciences, and the fundamental principles of scientific method must be the same for all sciences, because it is the selfsame human mind which is active in the discovery and proof of truth in all of them. Logic, the science of correct thinking, is not concerned with the peculiarities of scientific method characteristic of the special sciences as such. But it is the province of logic, as the philosophy of correct thinking, to investigate the *fundamental principles of method* which all sciences must use at *all times* and in *every process* of extensive research.

SCIENTIFIC METHODS

Method is defined as *the proper arrangement of our mental processes in the discovery and proof of truth*. There are two fundamental methods: synthesis and analysis. Synthesis proceeds from the simple to the complex, from the general to the special, from the universal to the particular, from the necessary to the contingent, from the 'logical whole' to the 'logical part,' from the principle to the applications of the principle, from the general law to the individual cases, from cause to effect. Synthesis is essentially a method of *deduction*, and the sciences which employ primarily the synthetic method are called the rational or *deductive sciences*. Such is mathematics, which begins with a few fundamental ideas and axioms and, without the aid of observation and experiment, gradually builds up a most profound and complicated science of truths.

Analysis is the reverse of synthesis. It passes from the concrete to the abstract, from the complex to the simple, from the particular to the universal, from the contingent to the necessary, from the applications of a principle to the principle itself, from the phenomena to the underlying general law, from the effect to the cause. This method gives rise to the analytic, experimental, *inductive sciences*. The *physical sciences* use this method of *induction* throughout a great part of their research into the problems of nature.

It would be a serious mistake (one all too frequently made) to think that the natural sciences are *exclusively* analytic or inductive. Astronomy, for instance, uses the deductive principles of mathematics and the inductive method of physics and chemistry in about equal measure. The experimental sciences, after employing induction to discover general laws, use these laws as principles of demonstration for further experiments. On the other hand, mathematics, the most synthetic and deductive of all sciences, must first derive its fundamental ideas of lines, planes, circles, and angles from observation of concrete things. We thus see that analysis and synthesis, deduction and induction, are not opposed, but assist each other in the discovery and proof of truth. Whichever method is the most appropriate under the circumstances, is the proper one to be used. If the *natural sciences* are called inductive, it is due to the fact that their *predominant* method is *induction*.

INDUCTIVE METHOD

Induction is the legitimate inference of universal laws from individual cases. The essential character of induction is identical with the mental process of *abstraction* and *generalization*. As the mind, after contemplating individual things, forms abstract and universal *ideas* of them, so it also formulates abstract and universal laws from individual phenomena. In both cases this is due to an understanding of the *nature* of the reality under observation, not to the fact that the mind has examined every single instance of the phenomena throughout the world.

When scientists declared the general law that water at sea level freezes at +32° Fahrenheit, they did not arrive at this law by taking every bit of water in the world down to sea level and actually freezing it. But in each and every instance observed (and many thousands of experiments were made), it was found that water froze at sea level whenever the temperature dropped to +32° Fahrenheit. Hence, they rightly concluded that it is the *nature* of water to act in this fashion; and since the nature of a thing is the same everywhere, water will *at all times and in all localities* freeze under these identical circumstances: it is a law based on the nature of water as the cause of this effect. Similarly, it is a general physical law that all diamonds are combustible. It was not necessary to actually burn all diamonds in order to establish this law. Some diamonds have actually been destroyed by combustion; and when chemistry discovered the fact that these precious stones consist of nothing but carbon, they readily understood that it was the very nature of the diamonds which made them

combustible: therefore, the law that *all* diamonds are combustible.

It will now be clear how both induction and deduction enter as methods in physical science. The general law is established by means of the analytic method of induction; it is a process of abstraction and generalization, based on the nature of things. Having obtained the general law, *the law is then applied to all further cases* by the synthetic method of deduction: the water in the street and the lake in the park will also freeze, if the temperature drops to $+32^{\circ}$ F.; the diamond in this man's ring and in this lady's brooch will also burn, if exposed to sufficient heat. Both induction and deduction are necessary for truth: induction for its *discovery*, and deduction for its *proof*. The mind first argues from the effect to the cause, and then from the cause to the effect.

D. Card. Mercier gives us a concise but effective illustration of scientific method in its various stages. "Let a chemist take some *hydrogen*, a gas without color, taste, or smell; which burns with an intensely hot bluish flame; which is 14.4 times lighter than air, 22.326 litres weighing 2 grammes. Let him take another and very *different* sort of gas, chlorine; of a yellowish color and an unpleasant, suffocating smell; density 2.44, weighing 35.5 times more than hydrogen, 22.326 litres weighing 71 grammes.

"Let the chemist mix those two gases in a glass vessel, and place it in the sunlight: a violent combination will suddenly take place, disengaging 22 thermal units or calories of heat; after which the chemist finds in the vessel a new body, whose distinctive properties have acquired for

it the name of *hydrochloric acid*. This new body will attack most of the metals and combine with them to form various salts; it will combine with the aqueous vapor of the atmosphere to form a colorless, acid solution, etc.

“So far he has *observed a fact* [first step]. Next, how is it to be explained? Why did it happen? What is its cause? He *supposes* that it is due to some *law* of nature [second step]; he supposes the formation of hydrochloric acid to be due to some *property* inherent in those two gases, acting in certain conditions, still to be determined. This suspicion of his is an *hypothesis*, which he must now proceed to verify.

“For this latter purpose [third step] he will multiply and vary his experiments. For example, he will let the sunshine act on a mixture of chlorine and oxygen; supposing a priori that they too will combine; but he finds that they will not. It is not every two gases, therefore, that will combine under the action of sunlight. But, perhaps, at least any quantities whatever of hydrogen and chlorine will combine? A priori, again, the supposition is permissible; but again it is negatived by the facts. For repeated experiments establish that they will combine only in the proportion of 1 to 35.5 by weight, or — which is the same — of 1 to 1 by volume. When those proportions are brought together under the influence of sunlight — no matter how little or great the absolute quantities may be, milligrammes, centigrammes, decigrammes — the combination will take place. On the other hand, when those proportions are not maintained, the quantity of the one which is the excess of its due proportion to the total quantity of the other, will remain over, unaffected by the combination.

“Here, then, are other facts in presence of which the observer finds himself: Two definite gases, mixed in definite proportions of 1 to 1 by volume of 1 to 35.5 by weight, combine under the action of sunlight — the absolute quantities of each being indifferent to the result and indefinitely variable. Neither of these gases, mixed with any other gases, combine with the latter in the same conditions and proportions; if mixed with each other in any other proportions than those indicated, they will not combine completely, but will leave the surplus above the proportion unmolested. Further, the chemist remarks that, after the combination, one volume of hydrogen and *one* volume of chlorine, combining under definite conditions of temperature and pressure, yield *two* volumes of hydrochloric acid gas.

“Are all those facts — which recur repeatedly in similar circumstances — the result of mere chance coincidences of disconnected and indifferent causes? They are not: they cannot be. Reason will not admit that any such complex, harmonious, stable series of facts could be due to chance. They must be the expression of a law; they must find their sufficient reason in the nature of the combining bodies.

“The chemist finds this sufficient reason in what he calls the ‘affinities’ of the reacting bodies; the metaphysician, in ‘*properties* inherent in the *nature*’ of those bodies, and indicative of the energies of those natures. The language is different, but at bottom the idea is the same: *There are in the world such complex, harmonious, stable series of facts as cannot be due to chance activities, but must be the result and expression of natural laws*; and the formation of

hydrochloric acid from hydrogen and chlorine is a manifestation of such a law.

“Thus it is that, from the total complex group of circumstances in which he has witnessed the formation of hydrochloric acid, the chemist abstracts or gathers by induction the truth that hydrogen and chlorine have the *property* of combining in the proportions indicated, with a disengagement of 22 calories of heat for the formation of each molecule-gramme of hydrochloric acid. The combination being, moreover, found to be independent of the particular place and time, and of the absolute quantities of the bodies used, he can foretell with certainty that *always* and *everywhere* those gases will combine in those definite proportions to form the compound body, when submitted to the action of sunlight under the same general conditions.

“In a word, the *law* of hydrogen and chlorine is to combine, *always* and *everywhere*, under the above mentioned conditions. The chemist who has observed all the facts and extracted that law from them has made an induction.”¹

In this brief but lucid instance of induction we can observe all the steps usually taken in this scientific method. We have (1) the *observation* of the facts in the case; (2) the *hypothesis* as to the probable cause of the phenomenon; (3) the *proof* or verification of the hypothesis; (4) the *explanation* of the *law*; (5) the *application* of the law to all similar instances. The last step (6) is the final verification of the law in question and is a process of *deductive* reasoning, because from this point on the mind argues from the

general law to all further specific cases and individual experiments. We see, therefore, that deduction must always climax the inductive method, if induction is to be of value to science because only in this way will the experiment cease to be an isolated case and become a generalized principle of *necessary and universal application*. In this deductive syllogism, the law becomes the major premise of the First Figure, and the single instance under consideration becomes the minor premise. The syllogism can be formulated as follows:

Hydrogen and chlorine, mixed in the proportions of 1 to 1 by volume, will yield two volumes of hydrochloric acid, liberating 22 calories of heat for each molecule-gramme of hydrochloric acid, under the influence of sunlight.

Here in this receptacle hydrogen and chlorine are mixed in the proportion of 1 to 1 by volume and are exposed to sunlight.

Ergo, here in this receptacle these gases will yield two volumes of hydrochloric acid, liberating 22 calories of heat for each molecule-gramme of hydrochloric acid.

We notice further that the discovery of the general law here is not the result of anything like a *complete enumeration* of all possible quantities of hydrogen and chlorine in all possible combinations and circumstances. Scientists do not and could not attempt such a process. If such a complete enumeration were necessary, no general law could ever be enunciated by science because it is impossible to make such a complete enumerative induction. The general law is the result of an abstraction based on *cause and effect*, the nature of the things being the cause

and the *phenomena* observed being the effect. Observations and experiments are made in such number and under such varying conditions until the mind clearly perceives that the results obtained are the direct effects of the respective *natures* of hydrogen and chlorine. Once this is established, there is no need of multiplying the experiments; since the nature of hydrogen and chlorine remain the same in all conditions of time and place they will produce the same phenomena *always* and *everywhere*. This being certain, the general fact is expressed in a general *law*, and this law can now be applied without fail to every individual instance which may arise in the world or in the laboratory. Science has been increased by a new law, and the mind has been enriched by a new truth.

The relation of the inductive *law* to the individual *phenomena* is the same as the relation of the universal *idea* to the individual *things*. Both are the result of the abstractive power of the mind, leaving aside the individuating differences and grasping the essential *nature* common to them all. Thereby the idea and the law become *abstract, necessary, and universal*, applicable to the whole class and to every member of the class, irrespective of time and place. It is precisely this necessary and universal character of the idea and the law which makes them valuable for science and philosophy and constitutes a distinct advance of human knowledge. If the law agrees with the facts, it is true; otherwise it is false. Scientific laws are expressed in definite categorical statements; and truth, as we know, is only found in categorical judgments which are an actual representation of facts as they exist

independent of the mind. The laws of science, therefore, like the universal ideas, are not mere figments of the thinking mind, but representations of reality.

Such is the nature of induction. The instance given above of the combination of hydrogen and chlorine is merely an illustration of the method of induction as used in every department of physical science. The details will vary, of course, according to the individual problems to be solved, but the fundamental principle of procedure is the same: it is an abstraction, passing from the particular to the universal, from the effect to the cause, from the logical part to the logical whole, from the phenomena to the law.

SUMMARY OF CHAPTER XVII

A mere comparison of ideas will not always enable the mind to express their identity or non-identity.

1. Some simple facts can be known by immediate observation; axiomatic truths can be known by an analysis of ideas. But the great bulk of *scientific* truths demand a process of reasoning to establish their truth. Hence, the necessity of understanding the laws of consistency in the various forms of argumentation.

Formal truth (consistent arrangement) and *material* truth (statements of facts) are necessary in an argument, in order to be certain of a true and consistent conclusion. The material truth of premises can only be discovered by a *study of nature*, and this demands a knowledge of the proper *scientific method*.

2. *Method* is the *proper arrangement of our mental processes in the discovery and proof of truth*. The synthetic method proceeds from the universal to the particular, from the cause to the effect, from the logical whole to the logical part, from the law to the phenomena. This is *deduction*. The *analytic* method proceeds in the reverse order. This is induction or the experimental method of the physical sciences.

3. *Induction is the legitimate inference of universal laws from individual cases*. It is a process of abstraction, based on an understanding of the nature of the reality under observation, on a perception of the relation of *cause and effect*, the nature being the cause and the phenomena

being the effect. Hence, scientific laws are not the result of a complete enumeration of instances.

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¹ “Logique, p. 300 if. Apud P. Coffey. Logic, Vol. II, pp. 45 f.

Chapter 18

THE LOGICAL FOUNDATION OF INDUCTION

INDUCTION IS THE GENERAL METHOD EMPLOYED BY THE PHYSICAL sciences to ascend from the concrete, isolated, individual occurrences of nature to the generalized, universal, necessary laws which govern these phenomena. Due to induction as a method of discovering scientific truths, the experimental sciences during the last two centuries have made tremendous strides in the advancement of knowledge. The importance of induction can, therefore, hardly be overrated. Its very success proves that certain very definite *laws of thought* underlie its operations, giving it logical validity. What, then, are the logical *foundations or grounds or reasons* upon which the validity of induction is based? This is a vital question, because the answer will be the philosophic vindication of induction. And the answer is, that induction is grounded on two fundamental principles: the *Principle of Causality and the Uniformity of Nature*.

THE PRINCIPLE OF CAUSALITY

The Principle of Causality is an outgrowth of the *Principle of Sufficient Reason*, just as the latter is a development of the

Principle of Identity and of the Principle of Contradiction. These principles cannot be proved and they need not be proved; they are *self-evident* and need only be explained, in order to show their truth and validity.

In virtue of the Principle of Identity 'A thing is what it is.' Nothing can be simpler and truer. This is common sense and good philosophy. Then, in virtue of the Principle of Contradiction, 'A thing is what it is, and *it can be no other*'; if it could be another, it would not 'be what it is.' In consequence of this, the Principle of Sufficient Reason is equally self-evident: 'Everything must have a *sufficient reason* to be what it is.' If it had no sufficient reason for its existence and being, it would have no existence and it would be nothing. If a thing could exist without sufficient reason, it would exist (that is the supposition) and not exist at the same time (because it has no *sufficient* reason for its existence), and that would be in violation of the Principle of Contradiction. Therefore, if a being exists, it must have a sufficient reason *why it exists* and why it is *this particular being* rather than another.

Now, the sufficient reason for the existence and being of a thing must lie either in the *thing itself* or in some *other thing*. There is no other alternative. If a thing has the sufficient reason for its existence and being in itself, then it is *self-sufficient and un-produced*. The reason is plain. The very fact that the sufficient reason for its existence and being is said to lie in *itself* presupposes that its existence and being is not due to an other. But in that case its existence and being could never be produced. If it were ever non-existent, and the reason for its passage from non-

existence to existence would lie *in itself*, then, it would obviously have to bring itself from non-existence to existence; in other words, it would have to produce itself; it would have to make itself from *nothing into something*. But to *produce and make something is to act*, and to produce and make its own existence (while it is still non-existent) and its own being (while it is still nothing), is to act before it can act and to exist before it exists and to be something before it is a being; and that, of course, is a contradiction and therefore impossible. Hence, if a thing has the sufficient reason for its existence and being *in itself*, it must of necessity be un-produced and eternal. Such a being is God.

On the other hand, then, if a thing has the sufficient reason for its existence not in itself, but *in an other thing*, it must for that very reason be produced. This means that, whatever it has in its existence and in its being, it has because it is *produced by some other being*. Here we have the idea and *Principle of Causality*. The thing that *receives* its existence and being from some other thing is the *effect*, and the thing that *produces* the existence and being of some other thing is the *cause*. The Principle of Causality, therefore, is the outgrowth of the Principle of Sufficient Reason, and it can be stated: 'Whatever happens (occurs, changes, begins to be) has a cause'; or, 'Whatever is *contingent* (i.e., is not the self-sufficient reason of its own existence and being) has a cause for its existence and being,' or, simply, 'Every effect has a cause.' A being that is self-sufficient is also self-existent and uncaused and necessary. Reversely, then, whatever has not the sufficient

reason for its existence and being in itself, demands with *intrinsic necessity* that some other thing be the cause of its existence, to bring it about and make it happen and to give it *everything that it is*. The Principle of Causality, therefore, is a *necessary principle* for all contingent and temporal beings which undergo change, and it is precisely in this connection that the Principle of Causality forms the logical foundation of induction.

All the physical phenomena of the universe around us, starting from the atoms and ending with the stars, are in a continual state of change; they are, consequently, not necessary in their being, but contingent. It is the purpose of science to discover and prove the causes which produce these phenomena and express them in general *laws*. It will, therefore, be necessary to have a clear conception of the nature and *kinds* of causes which are active in the production of a thing.

From the above it will be apparent that a cause is the sufficient reason for the existence and being of a thing which has not this sufficient reason in itself. A *cause*, then, can be defined as *anything that contributes in some positive manner toward the production of another thing in its existence and being*. The traditional teaching, begun by Aristotle, continued by the medieval Schoolmen, and reaching into our own age, enumerates four causes: two are extrinsic to the produced thing, the *efficient* and *final* causes; and two intrinsic to the produced thing, constituting its inner nature, the *material* and *formal* causes. Although the deeper examination of the doctrine of causes belongs to the department of philosophy called

ontology or metaphysics, a brief exposition of the nature of causality and of causes will not be out of place in this connection.

Since a cause contributes in some positive manner toward the production of a new thing, it really makes this thing *to be what it is*. The *efficient* cause does this, because it is the *agent which actively produces* the thing or a new state of the thing. The *final* cause does it, because it is the *purpose or aim* which induces the efficient cause to act and directs this action throughout its operation. The material cause does it, because it is that *inner, passive part* of the produced being which is determined and changed by the action of the efficient cause. And the *formal* cause does it, because it is the *inner, active part* of the produced thing which is the determining element of the new (caused) reality in the produced thing. Examples will make these ideas clearer.

A sculptor desires to produce a statue of, let us say, George Washington. His *purpose or aim* will obviously influence the being of the statue. Shall it be a monumental piece of work for a public place or building? for a hall in a private home? as an ornament for a mantelpiece? Whatever he decides, the purpose and aim he has in view will positively influence the production of the statue from beginning to end; it is the *final* cause. The sculptor next selects his medium, for instance, marble. This he chisels and *carves*, until the figure he has in his mind is a finished product; his *active* work is the *efficient* cause of the statue. But the *marble* itself contributes a positive influence in the making of the statue. The statue would be entirely different,

if it were made of wood or clay or porcelain or bronze or granite. But the marble is only the passive, determinable medium which has to be shaped; it is, therefore, the *material* cause of the statue. Finally, the *figure* or shape of the statue, in as much as it represents George Washington, makes the statue really to be a statue, distinguishing it, for instance, from a painting or photograph of the man. Its influence, too, is positive, because it actually determines the indifferent medium of marble to be just this kind of statue rather than another; it is the *formal* cause of the statue of Washington as Washington.

Another example. When hydrogen and oxygen unite to form water, the *energies* of both substances reacting together are the *efficient* cause of the new substance, water. The masses of hydrogen and oxygen, which pass from these substances into the new compound, are the *material* cause of water. That internal principle which gives to these masses the new properties characteristic of water is the *formal* cause of water, because it constitutes water as such and distinguishes it from other physical substances. The *new compound*, water, is the *final* cause, because it is the *intended result* of this chemical action, as can be seen by the fact that hydrogen and oxygen, due to their chemical affinity, have the *innate tendency* to produce just *this* specific thing and not another.

These four kinds of causes, each in its own characteristic way, are positive factors in the production of a thing. In physical nature, of course, this 'production' is only a 'change from one kind of thing to another kind of thing,' and it presupposes the existence of a thing before it can be

so changed. Absolute production of a being from non-existence to existence would be creation, the highest type of causation; but we do not observe this kind of causation in nature. Whatever changes take place in nature occur among already existing beings, and the effectiveness of their causality is thereby limited to producing '*one kind* of thing from *another kind* of thing.' The natural sciences, of course, consider merely this type of cause, because that is the only type encountered in physical phenomena. For the same reason physicists, ordinarily speaking, are not interested in the problems of *free will* as a cause, because the province of nature which they study consists of beings that act according to the non-free forces dominating the universe and its phenomena. Hence their continuous reference to 'necessary causes in the course of their research work. This is a somewhat one-sided attitude, because man with his free will is as much a part of physical nature as the material bodies with their non-free energies of heat, light, electricity, motion, and other causal agencies. However, as long as these scientists restrict their investigations to material beings and refrain from passing judgment on problems outside their proper domain, the philosopher need not quarrel with them.

Scientists, then, consider merely the *non-free material causes* at work in the universe. Many of them, however, confuse *cause* and *condition*. There is a great difference between the two. A cause, as we have seen, is something which 'positively contributes toward the production of a thing in its existence and being.' A *condition*, on the other hand, is something *which enables the cause to produce an*

effect, without actually contributing toward the production itself. A few examples will illustrate the difference. The winding of a clock is a condition necessary for its running, but it does not actually make the mechanism go; it is the mechanism itself which does the work. Pressing the button of an electric bell is a condition for its ringing, but that merely closes an electric circuit; it is the current which operates the bell. Throwing a switch will flood the room with light, but this is only a condition, since it is the electricity heating the filament of the lamp which causes the filament to glow. Opening a bridge may be a necessary condition enabling a boat to pass through; but it will not make the boat move. Unlocking a prison door is a condition for a captive to escape, but it does not actually bring him into the open. Pressing the foot on the accelerator may be required to feed more gasoline into the cylinders of the motor; but this does not explode the gasoline, which is the motive power of the engine to drive the car with greater speed. Pulling the trigger of a gun is a necessary condition to explode the charge in the cartridge and thereby expel the bullet; but it is the expanding force of the ignited powder which is the actual cause of the speeding bullet.

This last instance, however, exhibits a peculiar characteristic. Pulling the trigger has a direct influence on *releasing* the energies necessary to producing the effect, on *originating* a chain of activities which finally bring about the agency of the cause in producing its result: the pressing of the trigger releases a spring which drives the firing pin with great force against the percussion cap, so that the percussion cap ignites the charge in the cartridge, making

the charge explode. Such an active, *originative condition* is often styled a *determining cause*, and it plays an important part in science. It was known, for instance, that a certain germ was the cause of sleeping sickness, but its originative condition or 'determining cause' was unknown, until it was discovered that the bite of the tsetse fly introduced the microbe into the system of the unfortunate victims. Similarly, pollination is the real cause of the fertilization of most types of plants, but the actual fertilization of widely separated plants was in many cases a mystery, until it was realized that certain insects were the carriers of pollen from flower to flower.

Some scientists deny *the existence of causes* entirely, and admit only *conditions* with inevitable results or *antecedents* with invariable consequents. One might consider this merely a matter of words and names, were it not for the fact that a distinct *theory of knowledge* has introduced this radical difference of viewpoint concerning the reality of causes.

It is the *Empirical School* of thought, originated by John Locke (1632—1704) and developed by David Hume (1711—1776) and John Stuart Mill (1806—1873), which reduced all knowledge to experience and sense perception, thereby practically identifying mind with matter and intellectual knowledge with the simple apprehension of phenomena, without any possibility of reasoning beyond the material facts of the occurrences in nature as they appear directly to our senses. According to this sensist theory, then, all we can perceive is a mere succession or sequence of changes, and 'a cause' is nothing but the total sum of all the positive and

negative conditions taken together (as an antecedent), so that, when these conditions are realized, the phenomenon (as a consequent) invariably follows. Of course, if we grant this theory of knowledge as true, then our entire knowledge of causation in nature can be but an 'invariable sequence' of events as they follow each other. Tuberculosis, for instance, would then be explained as follows: a germ lodges in the lung; there follows a multiplication of bacilli; lung tissue is dissolved; holes appear in the lung; a profuse hemorrhage follows; the person dies. But I cannot say that the original germ *produced* the following germs; and these germs *produced* a dissolution of tissue; and this destruction of tissue *produced* holes; and the action of the germs *produced* a lesion in the pulmonary arteries; and this lesion produced a profuse hemorrhage, which in turn *produced* death. To argue in this fashion would mean to conclude from effect to cause; but that is not permissible, because we cannot go beyond what our *senses perceive*, and our senses perceive only the *sequence of phenomena* as they follow one after the other; we perceive merely changes succeeding previous changes and nothing more: there are only 'conditions,' not 'causes,' and 'sequences,' not 'causality.'

This confusion of 'cause' and 'condition' is not the result of any particularly acute observation of the phenomena of nature, but the offshoot of a *theory of knowledge*; it stands and falls with this theory. While criteriology and psychology, and not logic, are the proper departments of philosophy which must disprove Empiricism as a theory, it will suffice here to point out that *our own experience* is witness to the

fact that we are conscious of causality in the meaning of actually *producing* effects. No amount of theorizing can remove the conscious and evident experience that we, with a perceptible expenditure of energy, propel ourselves forward and produce motion in our body when we walk or run or swim or skate or do similar things; and the difference between our own causality and the causality of other things is observed with particular keenness, when we unwittingly tumble down an embankment, or, are thrust violently aside by some other person, or are thrown headlong out of an automobile which was caught in a collision. We *feel* with pain that there is no mere sequence of phenomena here, but an actual producing of very definite impressions: these are causes and effects, not conditions and consequents.

These experiences from our daily life could be multiplied by the thousands. The consciousness of effort in producing tangible results, whether on the part of unskilled labor in digging ditches or on the part of highly trained mechanics in fashioning and operating machines or even on the part of the specializing scientists in making experiments, is an irrefutable witness of all mankind to the fact that human bodies can and do experience the workings of causality in their actions. If the theory of materialism and empiricism cannot explain these facts, then such theories must be discarded as unscientific and un-philosophic and illogical. The facts are there and cannot be disputed away by any *a priori* theory of knowledge. And just as we are conscious of the causality of our own body when our arm wields an ax and splits a log, so we must also attribute the same sort of

causality to the flash of lightning which rives the trunk of a tree to splinters; for if our own bodies can actually produce effects, we must ascribe a similar causality to other bodies, since they produce the same kind of effects. The much vaunted principle and method of *induction* forces us to the scientific conclusion that all bodies, whether living or inanimate, are causes in the strict sense of the word as 'things which contribute in some positive manner toward the production of another thing in its existence and being.' At bottom, scientists are always looking for the *causes* which will account for the production of definite phenomena, even when they speak only of 'conditions' and 'antecedents' and 'consequents' and 'invariable sequences.' Scientists, of course, who are not adherents of an empiricist and sensist philosophy, are unanimous in the admission that it is the function of scientific induction to discover and prove the *relation of causality* in the phenomena of nature. The Principle of Causality, then, is a part of the *logical foundation of the inductive method*. Without this principle induction is futile and must remain sterile of knowledge and truth.

THE UNIFORMITY OF NATURE

Taken alone and by itself, though, the Principle of Causality, as the logical basis of induction as a scientific method, is insufficient to justify the broad scope it has and the far-reaching claims it makes with regard to the discovery of truth and the advancement of permanent knowledge. The Principle of Causality merely demands that every physical

change and every natural phenomena must have a cause or sufficient reason for its presence. It accounts, therefore, only for those occurrences in nature which *actually happen*. It explains only the *individual, isolated happenings*, stating that, since these are physical effects, they must have a physical cause. But of itself the Principle of Causality will not justify the establishment of *universal laws* by scientists, because such laws are generalizations which go *beyond* the *individual* cases which have been observed. The Principle of Causality will apply to each *single* phenomenon that occurs, and that is all.

Like this: Fire destroyed a building; something caused this fire. A boiler exploded; something caused this explosion. A man died; something caused his death. An epidemic of dysentery developed at the Century of Progress Exposition in Chicago; something caused this disease. An earthquake shook San Francisco; something caused this upheaval. The sun was darkened in broad daylight; something caused this eclipse. Floods swept the country; something caused this sudden deluge. A cyclone destroyed a city; something caused this tremendous rush of air. Northlights appeared in the sky; something caused this vivid display. An oyster developed a pearl; something caused this curious growth. The mercury fell in the barometer; something caused this drop of the column. And so on, with the million and one things that occur day after day. Each single event, due to the Principle of Causality, demands some physical agency as the sufficient reason for its presence, because it is an *effect* which requires a cause as its adequate explanation.

But scientists go much further in their search for knowledge.

From a number of such instances, similar in cause and effect, they establish *general laws of universal validity for all times and for all places and under all circumstances*. At least, such is their claim for these laws. These laws of nature are supposed to have operated in the same way during the ages of the past throughout the universe; they are supposed to be valid in the same way at present; and they are supposed to remain with the same necessity of operation for all the eons of the future. For they are, according to the assumption of the scientists, *universal and necessary laws* which control all physical agencies and their phenomena. The laws of light, heat, electricity, motion, chemical affinities, and all other forces of nature, have always, and will always operate in the same manner, independent of time, place, and circumstance. It is only on the basis of this *postulate* of science that scientists can reason about physical phenomena and their development in the past and predict similar events in the future.

Now, it is obvious that scientists cannot arrive at a knowledge of such *universal* laws by means of a *complete enumeration* of all the instances in which a certain phenomenon occurred. For instance, it is impossible for scientists to investigate every single case of a falling body, in order to establish the law of falling bodies. It is impossible for them to examine all cases of the effects of gravity, so as to enable them to establish the law that all bodies throughout the universe are affected by the forces of gravitation according to the product of their masses and

inversely as the square of their distances from each other. They could not follow up every drop of water in the oceans to see whether the ebb and flow of the tides were really due to the gravitational pull of the moon. Neither could they investigate every drop of water in order to prove the law that it is composed of hydrogen and oxygen in the proportion of two to one in every case. Nor could they examine any other law of chemistry, physics, astronomy, biology, and the other sciences this way, so as to arrive at the knowledge of such laws by means of *induction* on the basis of a *complete enumeration*. The number of actual phenomena observed and studied, compared to the innumerable instances throughout the world, even in our present day, is so insignificant and ridiculously small, that no general law could ever be formulated from them, if this law had its sole foundation in the *enumeration* made in an inductive process. Nevertheless, scientists do, notwithstanding the incompleteness of their enumerative survey, claim a *necessary and universal validity* for the laws of nature which they formulate. On what logical grounds? If the necessity and universality of these laws is nothing but a purely arbitrary assumption on the part of scientists, then induction, as a logical method of scientific knowledge, might as well be cast into the dustbin of useless and discarded theories.

It must be apparent, then, that the inductive method as such and the Principle of Causality alone will not be able to give universal validity to the general laws established by scientists. Another fundamental principle is needed for that, and it is the principle of the *Uniformity of Nature*. Put into a

categorical statement, the principle of the Uniformity of Nature reads:

Nature is uniform in its causality; or, to give it a different phrasing: The same non-free causes, under the same conditions, will always produce the same results. There can be no doubt that no induction could be validly made from particular occurrences to general laws of universal value, unless nature is uniform in its causality; because, if the action of nature would not be uniform and regular and ordered, we could never be sure that what happened today also happened yesterday and will again happen tomorrow. The uniformity of nature must assuredly be *presupposed*, if these general laws are to stand. The uniformity of nature is, therefore, a necessary *postulate and assumption* for all induction.

But what right have scientists (or anyone else, for that matter) to assume that nature acts *uniformly* in the past, present, and future, on the earth, on the sun, and everywhere in the universe? True, our limited experience of phenomena shows uniformity. Every time we dissolve water we obtain hydrogen and oxygen in the proportion of two to one, and when we reunite these elements we obtain water. At sea level, whenever the temperature drops to +32° F., water freezes. Gold and platinum, insoluble in any of the common acids, are always dissolved in *aqua regia* (a mixture of one part of nitric acid and three parts of hydrochloric acid), being converted into chlorides. As often as the 'guinea and feather' experiment is made in a vacuum tube, they reach the bottom of the tube simultaneously, thus illustrating the law of falling bodies. Light, whenever and

wherever measured, always shows the same velocity. And so forth. These and similar experiences certainly suggest to our minds the principle of the Uniformity of Nature; they are the *proximate reason* why we feel justified in assuming that nature is arranged in orderly fashion and governed by uniform laws of universal application.

But this extremely limited experience of ours will hardly justify the sweeping generalization embodied in the Uniformity of Nature, embracing, as it does, the entire universe in all its immensity of time and space. Certainly, the *sensist* and *empiricist*, who acknowledges sense perception as the *only* legitimate means of knowledge and science, has no right whatever to leap from the infinitesimal data of our experience into the limitless space of the world and into the dark of the past and the future; according to his own avowed principles he cannot reach out beyond the immediate sphere of experience, and so for him the Uniformity of Nature must be an unwarranted assumption if he wishes to be consistent. The sensist and empiricist can, therefore, find no logical foundation for induction; and the general laws of science, which are the result of induction, must evaporate into thin air.

Unless, then, we can find a *logical foundation* for assuming that nature is uniform in its operations under all conditions, we have no right to assert that there are such things as *universal and necessary laws* of nature; and in that case science must collapse, like a house built on shifting sand. The whole problem of the Uniformity of Nature simmers down to this: Why must nature be uniform in its causality? Because the beings which constitute nature

are causes which operate with *necessity* and, therefore, must always operate in the same way, i.e., uniformly. But why must they operate of necessity? Because their causality is *determined* by their very *essence*, and their essence is always the same. But why is their essence determined so definitely that it must always be the same and cannot change? Here is the crux of the whole question, and there is only one possible answer: Because they were created, and the Creator, in giving them their essence, endowed them with certain *definite powers and tendencies* which they, being non-free agencies, necessarily strive to realize. In consequence of this, their causality is always uniform. All the chemical elements and all their compounds will retain the same essence and the same activities, insuring a Uniformity of Nature; because the Divine Intelligence has made the world not a hodgepodge of unrelated and unstable essences, whose activities change in their causality from hour to hour, but a magnificent 'universe,' an ordered and harmonious whole, which moves according to *uniform laws* impressed upon it by His Omnipotence and Wisdom.

Here, then, we have a logical and adequate explanation for the Uniformity of Nature, the only one which will solve the problem. In the light of this view, a number of things become apparent. It explains the orderly arrangement of the world, rising in a graduated scale from the infra-atomic construction of the elements and the biological similarity of living structures up to the stupendous co-ordination of planetary systems and star galaxies in the vast expanse of the heavens. It explains why the universe is built up of the same elements and the same forces and regulated by the

same fundamental laws, controlling everything from the core of the proton out to the uttermost fringe of creation. It explains the inherent rationality of nature, since its laws can be expressed in mathematical formulae whose precise and complicated calculations tax the intelligence of man to the highest degree. It explains the beauty in the world (so seemingly useless) as seen in the delicate filigree work of a diatom, in the tender heart of a budding rose, in the gaudy splendor of a butterfly's wings, in the brilliance of a peacock's iridescent tail, in the gorgeous effulgence of the aurora borealis, and in the awe-inspiring magnificence of the perennial stars. It explains, too, the evident *destiny* which guides all things toward the realization of their being, according to a definite, world-embracing plan, arising out of the mists of the past, carried through the present, and going toward its gradual fulfillment in the unknown ages of the future.

It is this *evident destiny* of the world, manifesting itself in every phase of nature, working according to some deeply harmonious design, *unceasingly, constantly, uniformly*, which is the only guarantee that the world will continue for an indefinite period in the future, provided the Creator Himself does not interfere and stop it in the middle of its course. This, of course, He could do at any time, just as He could change the essences of all things in the twinkling of an eye. There are, however, no reasons or indications to suppose this, as far as we can see. Nature was uniform in its causality in the past, is so at present, and will remain that way in the future, simply because it is the intelligent

handiwork of the Creator. His Wisdom and Providence are the reasons for the Uniformity of Nature.

Returning to the starting point of our discussion, we now understand the *ultimate logical foundations of induction* as a scientific method for the discovery of truth. Two principles are necessary to make induction a valid method: the *Principle of Causality* and the *Uniformity of Nature*. Science bases its universal laws, not on a complete enumerative induction of all possible phenomena, but on the *causality* inherent in the nature or essence of things; this enables it to rise from the particular to the universal and from the contingent to the necessary, even though its induction rests on an incomplete enumeration. This relation of causality is then expressed in *laws* which have a necessary and universal application to all phenomena which fall under these laws, whether in the past or present or future, due to the *Uniformity of Nature*. And this *postulate* or assumption of the Uniformity of Nature has its justification in the fact that the universe is the handiwork of the Supreme Intelligence, who has fashioned it according to a definite plan and has given it a determined destiny which, barring His own voluntary interference, must continue in the future to realize His providential designs.

In this double principle, therefore, as just explained, we have the philosophic vindication of induction as a true scientific method for the discovery of truth and the advancement of human knowledge, in as far as it pertains to the physical world.

SUMMARY OF CHAPTER XVIII

The *logical foundations* or grounds, upon which the validity of induction as a true scientific method are based, are the Principle of Causality and the Uniformity of Nature.

1. *The Principle of Identity* gives rise to the Principle of Contradiction, and this in turn gives rise to the *Principle of Sufficient Reason*: 'Everything must have a *sufficient reason* to be what it is in its existence and being.' If a being has this sufficient reason in *itself*, it must be self-sufficient and un-produced in its existence and being; but if its sufficient reason lies in *another*, it is produced by some other being, and this latter is then the cause of the former, and the former is an *effect* of the latter. The Principle of Sufficient Reason, therefore, leads logically to the Principle of Causality: 'Whatever happens (occurs, begins to be, changes) has a cause for its existence and being.'

A *cause* is anything that contributes in some *positive* manner toward the *production* of another thing in its existence and being. There are four kinds of causes: ***efficient, final, material, and formal***. A condition is something which enables a cause to produce an effect, without actually contributing toward the production itself. Empiricists deny the existence of causes and effects and admit only 'conditions' and 'antecedents' as causes and 'consequents' as effects, while causality is to them only an 'invariable sequence.'

Science, then, basing its general laws on the Principle of Causality, has in this principle a logical foundation for its

inductive method.

2. The *Principle of Causality* alone, however, would be insufficient for the validity of *universal and necessary laws*, because it merely demands that every individual effect must have an adequate cause. The *Uniformity of Nature* is a necessary *postulate* of science, in order to explain the universality and necessity of these laws, since they are supposed to be valid for all times and places and in all circumstances. The Uniformity of Nature as a principle of scientific induction is not the result of a *complete enumeration* of individual cases, because no such enumeration is possible. The principle of the Uniformity of Nature can only be assumed and logically accounted for on the basis that an Intelligent Creator has made the universe into an *orderly, uniformly acting whole*. This alone will explain the Uniformity of Nature.

Science, then, in the Principle of Causality and in the Uniformity of Nature has a logical foundation for induction as a scientific method for the discovery of truth.

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Chapter 19

INDUCTIVE METHOD

UNLIKE PALLAS ATHENA ISSUING FROM THE BRAIN OF ZEUS, scientific knowledge does not spring from the genius of man in the fullness of its being. Usually it originates in some germ-idea, develops slowly through a protracted period of growth, and gradually matures, until it is born in labor and pain. Nothing comes to man except as the result of great patience and laborious effort. Scientific achievement is as a rule the climax of accumulated work, painstaking study, concentrated attention to detail, unflagging pursuit of the elusive causes of nature, a critical mind unbiased by any pet theories, and a passionate love of truth. For this is the scientific temper, the indomitable spirit of which will survive a thousand defeats and forge its way to ultimate success.

It is the purpose of all science to discover the *causes* of the phenomena of nature and the laws according to which these causes operate: true knowledge is the knowledge of causes. But this is a most difficult thing to attain, because cause and effect do not appear in an isolated form. Nature is most complex in its operations, and a myriad forces are continually at work together, interwoven and interrelated in the most diverse fashion, producing phenomena of

kaleidoscopic variations through the interplay of many causes and effects. A storm in the springtime, with its changes of temperature, its wind velocities, its lighter and denser clouds, its sleet and rain, its thunder and lightning, presents a group of phenomena in which the relation of cause and effect is very obscure to the unscientific mind. Even as recently as two hundred years ago the exact nature of lightning was unknown to science, while today its cause is a commonplace of knowledge to the child in the elementary grades. There are a hundred problems in the appearance of a storm for which science must seek the solution. And this is only a single instance. Nature is replete with mysteries, from the fractioning of a radium atom to the star-building formation of cosmic nebulae millions of light-years away.

How does the mind attempt to solve these riddles of the universe? By *induction*. Induction is the key to the laws of nature, and observation is the chief factor in induction.

OBSERVATION

Observation consists in the close scrutiny and examination of natural occurrences. The marshaling of all the facts in their proper order and the analysis of these facts with a view to discovering the *causal connections* between certain 'antecedents' and 'consequents' which appear in 'invariable sequences' is the function of the intellect. Not all 'invariable sequences' show immediate causal relations. Night follows day and day follows night in an 'invariable sequence'; but the one is not the cause of the appearance of the other. The

seasons follow each other in an infallible rotation; but the 'antecedent' here does not *produce* the 'consequent.' A clear atmosphere at night is always followed by a greater brilliance of the stars; but the stars are not *made* to shine brighter, nor do they *actually* burn with a *greater* brilliance, because of the clearer air around the earth. Now, it is the intellect alone which can distinguish between mere 'sequence' and 'causality' in the physical connection of events. The senses, which are the instruments of observation, are only capable of noting the 'sequence'; it is the intellect which must discern the 'cause.' The intellect, therefore, relies on the accuracy of the senses to furnish it with the necessary data, in order to enable it to draw its conclusions regarding phenomena which the senses register.

The senses, marvelous though they are, have their limitations; their range of perception is fixed by definite boundary lines. Ultra-violet and infra-red light waves are imperceptible to the eye; excessive smallness or largeness of objects are impassable barriers for vision; great distances, too, hinder its effectiveness. This applies with even greater truth to the other senses. All these factors play an important part in the proper observation of nature and impede the intellect in its search for facts. Little wonder, then, that man could make but slight progress in some of the sciences until the invention of the telescope and the microscope. These two appliances alone have widened the field of vision for man to an amazing degree, enabling him to reach out into the vast distances of the interstellar regions and down into the depths of the sub-visible

universe. Many phenomena now ceased to be mysteries. Equipped with the increased vision of these mechanical eyes, man's intellect found a new world of facts for observation and penetrated into the hidden recesses of nature.

Nature has been forced to yield many of her secrets through the mere instrumentality of the telescope and the microscope. Galileo, in 1610, observed the light-phases of Venus through his primitive instrument and thereby gave valuable evidence for the truth of the Copernican theory of the heliocentric planetary system. Then Herschel, in 1781, with his improved seven-foot Newtonian telescope, made the sensational discovery of the planet Uranus. And with these successes and the subsequent improvement of the telescope there began a new era for the science of astronomy. Since the day when the astonished eyes of Antony van Leeuwenhoek (1632—1723) peered through his self-made microscope and observed for the first time in human history the protozoa that swarm in a drop of water, the march of progress for science in this direction was hardly less phenomenal than that of astronomy. An immense array of scientific facts has accumulated in this comparatively short period of time, giving almost unlimited scope to the intellect of man to interpret nature by means of induction.

EXPERIMENTATION

While a great fund of knowledge has thus been acquired by means of observation, this alone would be of little use in

discovering the causes and laws connecting these facts, were it not for the method of experimentation instituted by scientists to analyze and clarify the data of observation. An *experiment* is the *observation of phenomena under selective and controlled conditions*. Its purpose is obvious. The great number of causes and effects intermingled promiscuously in any particular occurrence makes it so extremely difficult to assign a specific cause. For any single effect, that a simplification of conditions is not only advisable but necessary. Unknown causes may always be at work in a given event, and a selective arrangement of conditions will more readily disclose the presence or absence of such causes. At the same time irrelevant facts, which might obscure the issues, are thereby eliminated, making the results more certain. By shifting the various factors which come into consideration as possible causes and arranging them in different experiments, the 'antecedents' will be gradually reduced, until one single 'antecedent' is left to account for a particular effect; and the sole cause of the phenomenon is thus discovered and proved.

The cosmic forces of nature, of course, are beyond the control of the scientist. Man cannot, for instance, interfere in any way with the movement of the stars and planets or with earthquakes, volcanic eruptions, tidal waves, and cyclones. In such cases repeated observations and the collection of cumulative data alone can lead the scientific mind to definite conclusions as to the underlying causes and effects. At times, however, exceptionally favorable circumstances may bring about a natural conjunction of

conditions which partake of the character of scientific experiment; such cases are called *nature's experiment*. Thus, a total eclipse of the sun, observed from some special vantage point, may reveal many facts which can be utilized to test a particular theory; in this manner the last solar eclipse was made the occasion of verifying certain predictions of Albert Einstein regarding the nature of light as required by his theory of relativity. Recent balloon ascensions into the stratosphere, for the purpose of determining the barometric pressure, temperature, direction and velocity of winds, cosmic rays, etc., are of a similar type. Such instances, of course, are not cases of really controlled phenomena; the scientists merely select a favorable standpoint for their observations.

Scientific experiments, in the ordinary sense, are different. Here the conditions are artificially arranged according to a definite plan and purpose. When variable quantities of chemical substances are placed together in a retort and subjected to different acids, with the temperature raised or lowered at will, then this is a scientific experiment. Similarly, when the bacteriologist inoculates a guinea pig with a certain virus, he can observe the reactions of the living system of the animal in a way which would be impossible by ordinary observation. So, too, Benjamin Franklin with his famous kite experiment furnished definite evidence that the nature of lightning is identical with the electricity produced by the electrical machine in a laboratory. Joseph Priestley, on August 1, 1774 heated mercuric oxide and observed that the 'air' or gas emanating from it aided combustion and facilitated

breathing. Antoine-Laurent Lavoisier, shortly after, showed that in producing mercuric oxide a certain portion of air was absorbed in the process and that now the air was no longer fit for respiration or combustion; from this he concluded that atmospheric air is composed of two different, and even opposite, natures, and the active portion he named 'oxygen': these experiments by Priestley and Lavoisier formed the real starting point of modern chemistry. When Louis Pasteur, in a series of experiments on lactic-acid fermentation, discovered that the souring of milk was due to a germ, he pointed the way for the proof that all fermentation, decomposition, putrefaction, and contagious diseases were the result of microbes; he thereby laid the foundation for modern bacteriology and revolutionized the treatment of diseases. In these and similar cases a selective and scientifically controlled simplification of conditions was arranged, in order to eliminate all irrelevant 'antecedents,' so that the *real cause* of the phenomenon could be discovered: it was scientific induction by means of *experimental observation*.

Two ideas dominate the whole procedure of experimentation. The one is negative and the other positive. The *negative idea* or principle, is this: *whenever a phenomenon can occur without a certain 'antecedent' being necessarily present, this 'antecedent' is in no way the cause of the phenomenon in question*. This is evident. Every effect must have an *adequate* cause, or it would be without a sufficient reason for its existence. Now, a phenomenon of nature is an effect; hence, it cannot occur, if its cause were absent. If, then, a phenomenon does occur, its *cause must*

be present. When, therefore, a certain 'antecedent' is not present, and the phenomenon occurs notwithstanding its absence, then this particular 'antecedent' can in no way contribute to the production of the phenomenon, and it is not its cause. The *positive idea* or principle is the reverse of the foregoing: *whenever a certain 'antecedent' must be present, so that the phenomenon in question will not occur without it, this 'antecedent' is the total or partial cause of this particular phenomenon.* This also is self-evident. Physical causes are necessary causes, in the sense that, when they operate, they must produce their effect. If, then, the presence of a certain 'antecedent' is so necessary for a phenomenon, that the latter cannot occur without the former, then it can only be because the 'antecedent' contributes to the production of the phenomenon in a necessary way; in other words, its presence is required as a *cause*. If this particular 'antecedent' were not a real cause of the phenomenon, there is no reason why the phenomenon should not be able to occur without it.

It will, therefore, be the aim of the scientist to vary his experiments in such a fashion, that all extraneous and nonessential factors are eliminated, leaving only those which are the actual cause. Herein, of course, lies the real difficulty of induction. A scientist may eliminate a hundred 'antecedents,' and the cause of the phenomenon may still be entirely hidden from view. From the beginning of mankind physicians have been groping in the dark for the causes of contagious diseases. They sought these causes in air and water and sky and star and evil spirits and in the nature of the animal body itself. The real cause eluded their

most diligent search, until the immortal genius of Pasteur found it in the sub-visible microbes. His discovery was not the result of endless experiments in all directions. He made no attempt, for instance, to eliminate sky and star and evil spirits; even air and water and the animal body itself never formed a direct part of his calculations and experiments. After having established the fact that bacteria were responsible for the fermentation observed in milk, beer, and wine, his imaginative genius leaped to the idea that *possibly* bacteria were also responsible for contagious diseases. With this thought in mind, he arranged *his experiments* either to prove or disprove his supposition, and his experiments resulted in the epoch- making discovery that his supposition or hypothesis was correct.

HYPOTHESIS

This brings us to another important phase of induction, the *hypothesis*. An hypothesis is the *provisional explanation of a phenomenon, based on probable arguments, until verified (or disproved) by subsequent evidence*. An hypothesis is not a mere guess or an arbitrary opinion without some foundation in fact. There must be something in the nature of the things or in the circumstances of the facts which prompts the mind to assume that a causal connection exists. An hypothesis, therefore, is a justifiable assumption which lends itself to a tentative explanation of the fact or law, so that it can be used as a guiding norm in making observations and experiments; these observations and

experiments will then either prove or disprove the assumption.

Thus, the experiments of Priestley and Lavoisier led to the hypothesis that air consists of more than one sort of gas; subsequent experiments proved that it contains oxygen, nitrogen, neon, argon, krypton, xenon, and other gases. The hypothesis that lightning is identical with electric discharges was based by Benjamin Franklin on the similarity of facts. that both give light, have the same color, proceed in an irregular direction, are swift in their motion, are conducted by metals, explode with a crackling noise, subsist in water or ice, split bodies apart, kill animals, fuse metals, ignite inflammable matter, are accompanied by a sulphurous smell. His famous kite experiment then proved that his conjecture was true. Pasteur, while studying lactic fermentation (the souring of milk) observed a cloudy deposit in the milk, which increased as fermentation progressed. Upon examination, this deposit was seen to consist of small rod-like corpuscles, which spread by fission. He thereupon *assumed* that the fermentation was caused by these microbes and made an exhaustive series of experiments to verify this hypothesis; he eventually established the fact of this cause beyond a shadow of a doubt. And when Pasteur extended this hypothesis of micro-organic causality to wound infections and contagious diseases among animals and men, proving his contention by a convincing array of factual evidence, he became the originator of modern aseptic surgery and bacteriological medicine. His discoveries thereby made him one of the greatest benefactors of humanity.

There are two *kinds of hypothesis*: the hypothesis of cause and the hypothesis of law.

The *hypothesis* of cause, as the name implies, is used to establish the causes which contribute toward the *production* of a phenomenon. The hypotheses mentioned above belong to this class. The conquest of many diseases has been made possible through the persistent experiments of scientists, following a reasonable hypothesis of cause. Pasteur's immortal work in connection with chicken pox, anthrax, rabies, and other infectious diseases was the result of such an assumption. In India alone more than a million people died yearly of malaria; its cause had been sought for centuries in the poisonous vapors of swamps. Dr. C. L. Laveran, after intensive study, became convinced that it originated in a germ and succeeded in discovering the parasite in the blood of the victims. Looking for the cause which introduced the germ into the blood stream, Sir Patrick Manson drew up the hypothesis that mosquitoes were the carriers. Sir Ronald Ross eventually traced the complete life-cycle of the malarial germ in the body of the mosquito and in man, and so the problem was solved.

One of the most startling instances of the use of an hypothesis of cause in scientific induction was the discovery of the planet Neptune. After the discovery of the planet Uranus by Herschel in 1781, its orbit was mapped out by astronomers, and the exact position of Uranus along this orbit at different periods of time was carefully estimated. But the planet insisted on being early or late in its schedule at various points of its orbit. The hypothesis finally prevailed that another unknown planet was exerting gravitational

influence on Uranus. Two mathematicians, Adams and Leverrier, calculated the exact position of this unknown planet, and on September 23, 1846, the astronomer Dr. Galle discovered it through his telescope in the exact spot which the mathematicians had predicted. The planet was given the name of Neptune.

Another interesting case is that of Pierre and Marie Curie. Up to this time thorium and uranium were the only radioactive substances known. Testing some pitchblende, Madam Curie noticed that it showed four times more radioactivity than the uranium would ordinarily produce; hence, she assumed the existence of a more powerful substance. After painstaking experiments she and her husband discovered radium.

When scientists formulate an hypothesis in an attempt to explain the *manner in which the causes of a phenomenon operate*, then such a conjectural expression is styled an *hypothesis of law*. The cause may have been previously discovered, and science now desires to know the way in which this cause operates; or, the cause may be so obscure as to defy discovery, and science is satisfied to know the law of operation, leaving the exact nature of the cause to future determination. Thus, no one knows the nature of gravitation as a cause, but Newton, basing his hypothesis of gravitation on Kepler's laws of motion, formulated the law of gravitation, stating that all bodies in the universe tend to move toward each other with an acceleration that varies directly as the product of their masses and inversely as the square of their distance. When Gregor Mendel, Abbot of Brönn, experimented for eight years on the hybridization of

garden peas and other plants, he wished to determine the laws of heredity which perpetuate certain properties from generation to generation, and the results of his experimental induction are now called the Mendelian Laws of Heredity. The active causes of heredity are still a much-disputed problem. It will be readily seen, however, that an hypothesis of law, even when it leads to the discovery of the actual laws of nature, will never be complete until an hypothesis of cause leads to the final discovery of the causes themselves whose operations constitute the physical law. The knowledge of the causes are the real scientific explanation of the phenomena; the laws are merely a formula which express their mode of operation.

Scientists often speak of a *working hypothesis*. Such an hypothesis is either one of law or of cause, as just described. There is no essential difference between this and the others; it is merely a difference of degree, in as much as a *working* hypothesis is based on very insecure grounds. It is used in cases where the known facts of a phenomenon are very few or very uncertain or very complex or very obscure. Rather than go along in observation and experiment without any guiding norm, some sort of possible or probable explanation is assumed, even though it is understood that there are few facts on hand to support this explanation. If subsequent observations and experiments increase the probability of this assumption, it becomes an hypothesis of law or cause in the strict scientific sense. Thus, ether as an all-pervading medium, filling all space, is assumed as a working hypothesis to explain the transmission of light, heat,

electricity, and gravitational force throughout the universe. No experiments have ever proved, its existence in any form, but some such medium seems a necessity as a carrier of interstellar energy. The facts of telepathy are so uncertain and obscure that their explanation by means of 'brain-waves,' 'thought- transference,' or 'emotional hypertension' is at best only a working hypothesis; the very nature of telepathy makes it difficult to subject it to the experiments of exact science. Such an hypothesis, however, has its value, because it gives the scientists a method of approach which may eventually lead to definite results. It is claimed that Kepler used no less than nineteen different working hypotheses, before he was able to explain the movements of the planets; the very fact that he discarded so many as inadequate excluded them as possible explanations and gave added proof to the Copernican Theory.

The *stages of certainty* which accompany induction are as follows: first, a phenomenon or group of related phenomena is *observed*; second, a *working hypothesis* is set up; third, as the working hypothesis explains more and more phases of the phenomena and is supported by a greater number of experiments, it becomes a *scientific hypothesis* of cause or law; fourth, when the hypothesis is considered to have reached a point where it gives a satisfactory explanation of the entire phenomenon or group of phenomena, it is a scientific theory; fifth, when the theory is positively demonstrated without any possibility of error, it becomes a *scientific fact or law*.

RULES FOR INDUCTIVE METHOD

An hypothesis must, of course, be verified. As such, it gives us only a *probable* cause and opens up a line of investigation. But the *real* cause must be determined by careful observation and, if possible, by repeated experiments. Opposing hypotheses must be proved to be false and thus eliminated as explanations. The proof of an hypothesis is in most cases a very difficult procedure, because most phenomena are an intermixture of many causes and effects, and to assign a particular effect to a particular cause is often a problem that will tax the ingenuity of the sharpest minds. The *rules of method* used in scientific induction are simple enough to state and understand, but their application to the concrete phenomena of nature is by no means an easy matter. The two *basic rules* which underlie all induction are the ones stated above: Nothing can be the cause of a phenomenon which can be absent when the phenomenon occurred; and nothing can be the cause of a phenomenon which can be present when the phenomenon did not occur. In the first case we would have an effect without an active cause, and in the second case we would have an active cause without an effect. John Stuart Mill has given this double rule a more explicit expression, and it is customary to follow Mill's Methods.

The Method of Agreement: "If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree is the cause (or effect) of the given

phenomenon.” This canon is but a different formulation of the general rule that ‘nothing can be the cause (or effect) of a phenomenon which can be absent when the phenomenon occurs.’ Mill’s rule merely emphasizes the necessity of *multiplying* the instances in order to show that their relation is really causal. His phrase ‘two or more,’ though, is not very fortunate, because it takes repeated occurrence of many instances to establish a fact or law beyond reasonable doubt. Even as stated, Mill’s canon does not necessarily give us the *real* cause; it may be *hidden* in this common circumstance, but may be different from the circumstance itself. Thus, a number of people, each of whom partook of food from the same can, suffer from ptomaine poisoning; this ‘food from the same can’ is a circumstance common to them all, but the real cause of the poisoning is not the food itself, but a germ hidden in it. This, though, is true, that the same food was a necessary link in the chain of causality. Such a common circumstance will, therefore, *either be the cause itself or lead to the cause*, if investigated further. Herein lies the value of the Method of Agreement.

The argument involved in this canon may be expressed by means of symbols. In the following arrangement the *capital* letters represent the *causes* and the *small* letters represent the *effects*. Each set of symbols stands for a separate phenomenon.

ABC — abc
DAE — dae
FGA — fga
HAIJ — haij

K L A M N — k l a m n

Here we have a group of phenomena, each with three or more causes (capital letters, A, B, C, etc.) and effects (small letters, a, b, c, etc.). Each group has one effect in common ('a'), and each has one circumstance in common ('A'); everything else is different. Therefore 'A' must be the cause of the effect 'a.' From the fact that bacteria are present in all forms of fermentation, Pasteur rightly concluded that their presence was in all probability necessarily and causally connected with this phenomenon.

The *Method of Difference*: "If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former: the circumstances in which alone the two instances differ is the effect, or the cause, or an indispensable part of the cause, of the phenomenon." This canon is an application of the general rule that 'nothing can be the cause of a phenomenon which can be present when the phenomenon did not occur.' The principle can again be illustrated by symbols as before:

ABCDE — abcde
BCDE — bcde

In this group of phenomena we notice that the effect 'a' is present when 'A' is present, and missing when 'A' is missing; all the others (B, C, D, E,) remain the same. For a scientific induction the instances would have to be repeated

through a great number of instances, before a judgment of fact or law could be considered final; but in a simple phenomenon of fact one instance may suffice. Thus, if the people who partook of a can of food suffered ptomaine poisoning, while those who abstained from that particular can of food were not ill in any way, then we observe the Method of Difference: in the one case the presence of the eating was accompanied by the presence of ptomaine poisoning, and in the other the absence of the eating was accompanied by the absence of the poisoning. The conclusion is legitimate, therefore, that the cause for this particular effect lies in the food *or in something contained in the food*. If we desire to find the *real* cause of the poisoning, we would be obliged to make a number of experiments, in order to decide whether the food itself, or some material from the container, or some germ in the food, is the actual cause. If we discovered that the poisoning food contained germs in a certain part of the food and this part caused illness, while the other *part* did not, then we would rightly attribute the evil effect to the *germs* and not to the food itself, especially if the food showed no trace of the material of which the container was made.

The Joint Method of Agreement and Difference: "If two or more instances in which the phenomenon occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common save the absence of that circumstance: the circumstance in which alone the two sets of instances differ is the effect, or cause, or an indispensable part of the cause, of the phenomenon." Quite naturally, this Joint Method

greatly enhances the probability that we have discovered the real cause, or at least that circumstance which in some way contains the real cause; otherwise it would be impossible for the effect to be always present when this circumstance is present, and absent when this circumstance is absent. The following symbolic representation illustrates the point:

Agreement

ABC — abc

DAE — dae

FGA — fga

HAIJ — haij

KLAMN — klamn

Disagreement

BE — be

CFG — cfg

DJK — djk

HMNL — hmnL

MIGK — migk

In this first group of instances we find that amid all differences 'A' and 'a' are always found together; that already is a strong argument to consider 'A' the cause of the phenomenon 'a.' In the second group, *when compared with the first group*, we notice that the phenomenon 'a' never appears in a single set, and neither does 'A' appear; hence, we rightly conclude that the presence of 'A' in the Agreement group is responsible for the appearance of 'a,'

and that the absence of 'A' in the Disagreement group is responsible for the non-appearance of 'a': consequently, 'A' is either the cause of 'a' or at least an indispensable part of the cause.

The 'guinea and feather' experiment can be used to show the Joint Method. According to the laws of gravity all bodies should fall with an equal velocity; but a feather will be slower in reaching the ground than the coin. The hypothesis is formed that the *resistance of the air* upon the larger surface of the feather is the cause of its slowness. Placing both coin and feather in a tube filled with air, we observe that the fall of both is unequal in velocity; and this repeats itself as often as the experiment is made. So far we have the Method of Agreement. Next we exhaust the air from the tube, and now both reach the bottom at the same moment; this also happens as often as the experiment is repeated. And the same is true of other gases. In all these cases it is the presence of the air (or other gases) which causes the difference of velocity, and the only recognizable reason would appear to be the resistance exerted upon the larger surface of the feather. Hence, by the Joint Method we conclude that the *resistance of the gas* is the cause of this phenomenon of the difference in velocity between the guinea and the feather.

Method of Residues: "Subduct from any phenomenon such part as is known by previous inductions to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents." Strictly speaking, this canon would merely prove that there is *some cause* still to be sought, in order to explain a certain

phenomenon; it would not necessarily help us to designate a *specific* cause, unless this particular cause is *the only one left*. In most cases the phenomena of nature are not so simplified in character as to permit such a definite conclusion; it would, however, spur the scientist on to renewed investigation. The canon may be expressed in the following symbols:

$$BCX — bca$$

If we know that 'B' is the cause of the phenomenon 'b,' and 'C' is the cause of the phenomenon 'c,' then it naturally follows the 'X' must be the cause of 'a'; then 'X' would be 'A,' and the formula would become 'B C A — b c a.'

The discovery of Neptune by Adams and Leverrier is a case in point. The exact position of Uranus at any given time along its orbit was definitely calculated. The fact that the planet was sometimes ahead and sometimes behind its schedule was a residual effect. This phenomenon did not, of course, reveal the *specific* cause of this effect, but it led to the definite *assumption* that another planet was exerting gravitational attraction upon Uranus; acting on this assumption, Adams and Leverrier calculated the position of the new planet (Neptune) and so it was discovered. Similarly, Lord Rayleigh and Professor Ramsay had observed that nitrogen obtained from various chemical compounds had a weight of 2.2990 grams, while 'atmospheric' nitrogen had a weight of 2.3102 grams. This residual phenomenon of the discrepancy in weight led eventually to the hypothesis that some other element was

united to nitrogen derived from the air. Extensive experiments finally revealed a new chemical element, argon, as the cause; the difference of weight belonged to argon.

Method of Concomitant Variations: “Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenomenon, or is connected with it through some fact of causation.” This means that nothing can be the cause of a certain phenomenon when it remains constant while the phenomenon varies, or varies while the phenomenon is constant, or varies in an entirely different manner from the phenomenon; but if both, factor and phenomenon, are always constant together, and always vary together, and the degree of variation between them is the same, *no matter whether the other factors in the case vary or remain the same*, then there exists a causal relation between these two. Symbolically the principle can be expressed as follows:

$$A_1 \ B \ C \text{ — } a_1 \ b \ c$$

$$A_2 \ B \ C \text{ — } a_2 \ b \ c$$

$$A_3 \ B \ C \text{ — } a_3 \ b \ c$$

Since ‘B C’ and ‘b c’ remain the same and ‘A’ and ‘a’ vary in the same manner throughout, ‘A’ must be the cause of ‘a.’ The variations of the tides coincide exactly with the variations of the moon; hence, it is concluded that the gravitational attraction of the moon is responsible for the tides. The periodic variations of the tides had been

connected for many centuries in the minds of observers with the periodic variations of the moon, but that did not explain in what way the moon was responsible for the tides. Newton's Laws of Gravitation gave an explanation of the fact; but no one knows the precise nature of gravitational force, and so the real cause of the moon's influence on the tides is still a mystery.

AN EXAMPLE OF INDUCTIVE METHOD

At bottom there are but two methods of induction: the Method of Agreement and the Method of Difference. The others are variations of these two. The basic principle of reasoning underlying all inductive methods is the *proper disjunctive hypothetical syllogism*:

The cause of this phenomenon is either A or
B or C or D or E — or X or Y or Z;
But it is not B or C or D or E — or X or Y or Z.
Ergo, the cause is A.

The crucial difficulty in any inductive process of reasoning consists in establishing 'A' as the real cause and eliminating 'B and C, etc.,' as possible causes. It is in this connection that Mill's Methods have value, because they help the investigator to establish one factor as the cause and to eliminate the rest. But no amount of theoretical rules of method will enable a scientist to gather the facts in a problem or show him which explanation to assume as an hypothesis or tell him what experiments to make; his

sagacity and inventive genius alone can help him here. As an example of scientific induction in its different phases we append Louis Pasteur's classic experiments to solve the problem of spontaneous generation.

The question had agitated the minds of philosophers and scientists for many centuries. Most of them considered it a fact *that life could originate* from putrescent matter *without parentage*; frogs, fishes, maggots, and germs were thus thought to derive their origin spontaneously from ambient organic matter. While this was more or less definitely disproved with regard to the frogs, fishes, and maggots, even eminent scientists were convinced that germs originated by *spontaneous* generation, without parentage from other germs. Pouchet, Musset, and Joly, in Pasteur's day, claimed to have made experiments which proved the spontaneous generation of living organisms. Pasteur was not convinced; his studies in fermentation inclined him toward the view that a germ could only originate from an existing germ. With this hypothesis in mind he began his experiments in 1860.

He placed quantities of organic substances in glass vessels. Each vessel had a long neck which extended into a curved tube. He sterilized these substances with heat, thereby expelling all air from the vessels. When the vessels cooled, the air again flowed into them, thus coming in contact with the infusion; but whatever matter was contained in the air dropped to the bottom of the curved tube and did *not reach the infusion in the flasks*. No putrefaction set in. (Method of Difference.) As soon, however, as the flasks were tilted to such a degree that

some of the sterilized substance touched this matter deposited by the air in the curved tube, life began and putrefaction set in. This proved that neither the air, nor the putrescible substance, nor the sunlight, were responsible for the observed germ-life in the flask, but *something contained in the air*. (Method of Agreement.)

He now strongly suspected that living germs were in the air. To test this hypothesis, he filtered air through guncotton and then dissolved this guncotton in alcohol and ether; his examination of this showed specimens of various organisms. His conviction grew that these germs were caught in the guncotton when the air was filtered through it. Testing his hypothesis from this angle, he sealed the neck of a flask, containing sterile broth, with a plug of guncotton; no life developed as long as the flask remained this way, but as soon as the flask was tilted, so that the broth came in contact with the cotton, it began to decay in a very short time. To show that the vegetable nature of the cotton had nothing to do with the result, he used plugs of asbestos; the result was the same.

But the *boiling* of the broth might possibly have influenced the substance in some unknown way. He now set about to determine this. Taking blood from the veins of healthy animals, he enclosed it with sterilized air in a flask: nothing happened. But as soon as this blood came in contact with ordinary air, it immediately began to decompose through the action of germs. This, of course, confirmed his hypothesis with fresh evidence. (Joint Method of Agreement and Difference.)

Pouchet objected to Pasteur's findings on the score that, if putrefaction were not due to spontaneous generation but to organisms floating in the air, the entire atmosphere must of necessity be saturated with germs. The point was well taken, because the development of life in such susceptible liquids seemed to take place anywhere and everywhere. Pasteur recognized the value of this objection and proposed to meet it. If spontaneous generation were a fact, he argued, it should occur invariably in the same putrefiable liquid, no matter where it was exposed to the air; but if the life of these organisms were dependent on other germs in the atmosphere, then *the purity or impurity of the air should make a difference*, because certain localities should be more favorable to germ-life than others. If he could prove this, his hypothesis would be strengthened. He boiled a highly susceptible broth in flasks and sealed them while they still steamed. The necks were broken in different localities, so that the broth came in contact with air, and then were immediately resealed. Of ten flasks opened in a cellar, where there was no free circulation of air, only one developed life, while of the eleven flasks opened above ground all began to putrefy. He thereupon prepared more flasks. Opening twenty of these in the town of Arbois in the country, eight became contaminated. At Salins, he opened twenty more on Mount. Poupet, over 800 meters above sea level; only five became contaminated. On the Mer de Glace, in the Alps, he used another twenty flasks; only one developed germs. His experiments showed conclusively that the purity or impurity of the air, and not the air as such, had a great deal to do with the origin of life in the broth. Hence,

he again concluded, it is not the air as such, but *the germs in the air* which are responsible. (Concomitant Variations.) Pouchet, however, would not be conquered. He made tests, similar to Pasteur's, on the sea, on the lowlands of Sicily, and on Mount Etna; upon exposure to the air, all his flasks developed life. Later on, Pouchet and his colleagues made similar experiments at the base of one of the Maladetta glaciers, about 1000 meters higher than the elevation at which Pasteur had made his. They had used four flasks, filled with a decoction of hay, and each, after having been exposed to the air and resealed, showed abundant germ-life after a short time. Pouchet's experiments offset Pasteur's, and the solution of the problem was again at a standstill. The controversy gripped the minds of the entire scientific world. Gradually, however, scientists swung over to Pasteur's side, because his hypothesis had the benefit of the Methods of Agreement, of Difference, and of Concomitant Variations, while Pouchet had merely the Method of Agreement in his favor and could not disprove the positive and negative results of Pasteur's experiments.

But how did it happen that Pouchet's flasks all developed life, no matter where and in what altitude these flasks were exposed to the atmosphere? The scientific knowledge of bacteria was still in its infancy at the time, and hardly anything beyond their mere existence was known. Thus, scientists were ignorant of the fact that certain bacteria can withstand a considerable amount of heat and still live. This happened to be the case in Pouchet's experiments. He had used an infusion of hay, a substance very difficult to sterilize, and the bacteria in this decoction happened to be

of a nature which could survive boiling. Hence, *Pouchet's infusions were never sterile in the flasks at any time*; life would develop, therefore, in every instance, no matter where and when the flasks were exposed to the air, because the germs would develop as soon as they obtained oxygen. The germs had lived in the infusion all the while. When this fact was definitely established, the question was settled; because, once this infusion of hay was really sterilized, it acted in every way like the putrescible substances which Pasteur had used in his experiments. (Method of Residues.) Pasteur had successfully settled the age-old problem.: *Nature knows no spontaneous generation; life originates from life, and a germ originates from an existing germ.* The establishment of this fact and law is one of the greatest triumphs of scientific induction.

This extended example of the process of induction, as employed by Pasteur, illustrates very clearly the application of Mill's Methods in the solution of a problem. Inductions like these are indeed the glory of science. But we also see that *induction must be climaxed by deduction.* Pasteur's studies in fermentation, in contagious diseases, and in spontaneous generation, naturally lead to the *universal law* that *life can only originate from life.* All further experiments along these lines substantiate this law. And this law now becomes a far-reaching principle of *deductive inference*, a veritable *Dictum de omni et nullo*, which is the basis of the deductive syllogism. How far-reaching this principle is, can be seen by the fact that it absolutely demands a *living* cause for all forms of plant and animal life on earth. Since, however, the earth, having been a mass of fiery liquid in the

ages gone by, was at one time sterile and devoid of life, it could no more have developed life of its own accord than could the sterilized flasks of Pasteur. A creation of life by the Living First Cause was necessary.

Thus it is that scientific induction and philosophic deduction meet in harmony to solve the riddles of the universe.

SUMMARY OF CHAPTER XIX

It is the purpose of science to discover the causes and laws of natural phenomena. This is done by induction. There are various elements that belong to induction.

1. *Observation*. It is the close *scrutiny and examination of natural occurrences*, in order to determine their causes and effects. Observation is made by the mind through the senses, assisted by mechanical instruments like the microscope and telescope.

2. Observation must be supplemented by experiment, which is the *observation of phenomena under selective and controlled conditions*. Experiments simplify conditions by eliminating all irrelevant factors, until the sole determining cause of a particular effect is found. The cosmic forces of nature cannot be controlled; but when a phenomenon of this sort is observed under exceptionally favorable circumstances, it is called *nature's experiment*. *Scientific experiments* are artificially arranged according to a definite plan.

A *negative* and *positive* principle dominates the procedure of experimentation. The negative principle is: Whenever a phenomenon can occur without a certain 'antecedent' being necessarily present, this 'antecedent' is in no way the cause of this phenomenon. The positive principle is: Whenever a certain antecedent' must be present, so that the phenomenon in question will not occur without it, this 'antecedent' is the total or partial cause of this phenomenon.

3. Another important phase of induction is the *hypothesis*: it is a *provisional explanation of a phenomenon*, based on probable arguments, until verified (or disproved) by subsequent evidence. It is the guiding norm in experimentation. There is an hypothesis of *cause*, which seeks to establish the causes of a phenomenon; and an hypothesis of law, which seeks to explain the manner in which the causes operate. A *working hypothesis* is one of cause or law, but based on insecure grounds.

4. The *rules of Method* used in induction can be formulated as follows (Mill's Methods):

Method of Agreement: If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree is the cause (or effect) of the given phenomenon.

Method of Difference: If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former: the circumstance in which alone the two instances differ is the effect, or the cause, or an indispensable part of the cause, of the phenomenon.

The Joint Method of Agreement and Difference: If two or more instances in which the phenomenon occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common save the absence of that circumstance: the circumstance in which alone the two sets of instances differ is the effect, or the

cause, or an indispensable part of the cause, of the phenomenon.

Method of Residues: Subduct from any phenomenon such part as is known by previous inductions to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents.

Method of Concomitant Variations: Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenomenon, or is connected with it through some fact of causation.

5. Pasteur's experiments regarding spontaneous generation are a classic example of induction.

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Chapter 20

PROBABILITY

THE GOAL OF SCIENCE AND PHILOSOPHY IS THE KNOWLEDGE OF truth with certitude. In the line of knowledge the two extreme attitudes of the mind are complete ignorance and full certitude. The field between these extremes is probability. Ignorance is the absence of knowledge in a being capable of possessing it. Certitude is that state of the mind in which the mind gives a firm assent to a judgment without fear of the possibility of error, due to recognized valid reasons. *Probability*, considered *subjectively*, is that state of the mind in which it decides for the truth of a judgment, but with fear of the possibility of error. Considered *objectively*, probability is that condition or quality of things and facts, when present to the mind, which enables the mind to decide for the truth of a judgment concerning these things and facts, but with the fear of the possibility of error.

It is impossible for us to know all things with certitude. About most things our knowledge amounts to nothing more than probability. There are, of course, degrees of probability, depending upon the extensiveness and reliability of our knowledge of things and facts. Nature is so

complex and the methods of research are frequently so difficult, that science must be satisfied with *approximations* to truth and certitude. It may happen that the evidence for a law or generalization is favorable, but insufficient; or it may happen that the evidence is so conflicting that all reasonable doubt cannot be eliminated. We then have probable truth.

In its search for truth, science makes use of various forms of argumentation and method which lead to results which are probably true. Such are: *analogy, statistics, averages, testimony, circumstantial evidence*. Their scientific value depends on a number of factors.

ANALOGY

By *analogy* we here mean that reasoning process whereby the mind concludes from the known characteristics of one thing or a group of things to the unknown characteristics of another thing or group of things because of a recognized resemblance existing between them. Mill expresses the *principle of inference* in analogy in these words: "Two things resemble each other in one or more respects; a certain proposition is true of the one, therefore it is true of the other."¹ In symbolic form the principle reads as follows: A is similar to B in many of its characteristics; A has the characteristic X; therefore, B also has the characteristic X.

For example: The Earth and Mars resemble each other in many respects. Both are planets in the same solar system; their distances relative to the sun are approximately the same; they have similar atmosphere,

seasons, temperature, and diurnal revolution. From these resemblances scientists are inclined to conclude that Mars, like the earth, is inhabited. Light, like sound, travels in all directions from a common center; both can be reflected, and the angle of reflection is equal to the angle of incidence. Sound, however, travels in waves. By analogy it was then inferred that light is also undulatory in character. From the falling of an apple through space to the ground, Newton concluded by analogy to the universal law of gravitation governing the movements of the heavenly bodies. From the variations found among plants and animals, due to the intentional selection of skillful breeders, Darwin was led to the conclusion that 'natural selection' through the struggle for existence could account for the origin and perpetuation of new species.

It should be fairly obvious that an inference of this kind can only lead to a conclusion which is probable, and not certain. If the things or facts compared were known to be perfectly alike, the conclusion would be certain. But no two things or facts are perfectly alike in all details; there are always *differences* together with resemblances. Hence, there will always be the danger of concluding to a difference rather than to a resemblance. And this danger increases with the complexity and obscurity of the things or facts compared, because in such cases the number of differences may be far greater than the number of resemblances. Hasty generalizations must be avoided.

Again, not all resemblances are important, and consequently no safe conclusions can be drawn from them. Only *significant resemblances* have value. By 'significant

resemblances we mean those which are essential or closely connected with the essence. In such instances the inference of analogy has greater force, because in all probability a causal connection exists between such resemblances, resulting in a relevancy between them. That a hundred men have a weight of one hundred and fifty pounds, does not entitle us to conclude by analogy that they have the same age or that they are equally educated. But when one hundred men graduate from the same department of a university with approximately the same scholastic standing, the inference is legitimately made that they are of approximately equal talents. In the first case, weight is not a significant resemblance, while in the second case their scholastic standing is; weight has no necessary connection with age or education, but scholastic achievement is necessarily dependent on intelligence as an effect on its cause. But even in this second case the conclusion is only probably true, because one student might put more effort into his work than another, thereby overcoming the difference of talents existing between them.

Naturally, a large number of significant resemblances will secure a greater amount of probability and bring the conclusion closer to certainty, since in that case the presence of a *similar essential connection* in the things or facts is more probable. Thus the Earth, Mercury, Venus, Mars, Jupiter, and Saturn are planets revolving around the sun in elliptic orbits, have nearly the same shape, etc. Now, the Earth, Mars, Jupiter, and Saturn possess the characteristic of rotating around an axis. This rotation is a significant resemblance together with many others. Hence,

it is inferred by analogy that Mercury and Venus also possess this characteristic of rotation around an axis. Ordinarily, one would consider the fish shape of a whale and its living in water to be significant resemblances to a fish and judge it to be a fish. But the facts that the whale breathes through lungs, brings forth its young alive and suckles them, are significant resemblances which definitely classify the whale with the mammals and not with the fish.

To distinguish between significant and insignificant resemblances will always remain the greatest difficulty in an analogical inference. A deep and extensive knowledge of scientific facts and their relative value is a practical requirement to safeguard the mind against error in an inference based on analogy.

STATISTICS

By *statistics* we understand the classification and evaluation of group phenomena by an analysis of data supplied by enumeration and measurement. The method of statistics is valuable in fields of research where a multitude of numerical units of a variable character are involved or where phenomena are the result of many independently varying factors. In instances of this kind it is extremely difficult to detect directly the laws which govern the workings of the relations existing between such units or factors. Nevertheless, a close examination of the available data, especially when the tabulation is quite complete, will reveal certain definite trends and frequencies which approximate laws.

In the natural sciences it is necessary to use *instruments of measurement*, in order to eliminate as much as possible the personal equation of the individual observers. The most refined and delicate instruments, however, are subject to changes in accuracy, due to the material of which they are constructed and to the variations of temperature, vibration, mechanical handling, etc. Absolutely exact measurements are thus impossible of attainment. Besides, the personal element of the observer and the peculiarities of his sense organs and sense reactions can never be eliminated completely, so that differences of results on the part of the observers is practically inevitable. Because of these facts, statistical averages are used to correct as far as possible the errors of instrumentation and observation. In the *biological, psychological, and social sciences* the factors responsible for events are so variable and complicated, that statistical tabulations are often the only reliable means of arriving at any definite knowledge of the origin and nature of these events. Wherever human actions with their motives and counter-motives have their play on a large scale, as in national and international movements and affairs, no individual or small group of individuals is capable of making an adequate survey of the entire field; the field must be parceled out among a large number of investigators, and their findings must be tabulated in such a manner that they can be viewed and examined with little difficulty.

The *value of statistics*, properly made, is great. They enable us to obtain a concise and comprehensive knowledge of an unwieldy mass of isolated facts by correlating them along definite lines and expressing them

in more or less exact figures. This is a simplification of material akin to the controlled selection of conditions in a laboratory experiment. The influence of personal prejudices and preconceived notions in the single investigators is thereby reduced to a minimum, thus allowing the mind to obtain more accurate and unbiased results in its analysis of the data. Then, too, statistics are often used as the foundation for predictions regarding the future course of events. Frequency tables may show that certain occurrences appear in cycles and last for fixed periods of time; this enables the scientist to forecast events with a reasonable amount of probability. Finally, statistics may disclose many relations between seemingly disparate factors. Uniformities and variations between statistical tables and figures thus reveal causal connections where ordinarily none would be suspected. In this manner important information has been obtained concerning heredity and environment, sanitation and health, food supply and population, wealth and war, poverty and crime, wage conditions and social unrest, and a host of other far-reaching problems.

The *principle of inference* in the statistical method is the inductive principle of concluding from the characteristics of a large number of parts to those of the whole. As a strictly logical procedure it is, of course, impossible to argue from the part to the whole with logical necessity what is true of some need not be true of all. But when the enumeration is practically complete, or when it can be fairly well determined that the characteristics in question are fundamental, such a conclusion carries with it a very high

degree of probability. This form of argument is based mainly on the Method of Concomitant Variations. Such concomitant variations presuppose a uniformly varying causal connection between events and the factors underlying them.

As for the *method of making statistics*, the following steps are necessary. First, the problem must be defined with precision, so that only those investigations will be made which are germane to the specific problem in question. Then the material must be collected according to the requirements of this problem and chosen from as wide a field as possible, so that the facts are truly representative of the class. When the collection of the material is completed, the data must be tabulated in a manner which coincides with the purpose of the chosen problem. Next, a summary must be given of the significant features of the tabulated material in a clear, concise, intelligible survey; to facilitate matters, charts, graphs, diagrams, and similar devices are often used. Finally, the statistician must present a critical analysis of the data, showing what conclusions follow necessarily from the facts and figures obtained.

The last point is most important: data must be *correctly interpreted* in order to be of any value for science. Mere enumeration and tabulation do not suffice. It is the purpose of all statistics to discover determining factors and their relations hidden beneath the cold figures of tables, so as to enable the mind to formulate generalizations and laws. Figures do not explain themselves, and they are often misleading. On the basis of statistical figures alone one might be inclined to conclude that juvenile delinquency is

greatly on the increase, because more youths find their way into the courts now than twenty-five years ago. This conclusion, however, would be hasty. Formerly, the policeman on the beat handled youthful delinquency in a sort of unofficial capacity, because few juvenile courts were in existence at the time and it was deemed inadvisable to hale such delinquents before the criminal courts. Juvenile courts were instituted more for the prevention than for the punishment of youthful misdemeanors, and this might account for the greater number of delinquents now brought before the judge. Similarly, the fact that the vital statistics of a town reveal a large increase in the death of school-age children during a certain year would not necessarily warrant the conclusion that sanitary conditions must have been poor. This increase in deaths might be the result of an earthquake or an explosion. Only if the data are correctly understood and interpreted will they lead to reliable results.

The *dangers of the statistical* method are many. Chief among them are the following: Looseness in the definition delimiting the problem may vitiate the entire investigation. If the various statisticians understand the nature of the problem in different ways, it is obvious that they will view the material from diverse standpoints, and the collected data will not present a true picture of the problem they desire to solve. The selection of data from a field which has been arbitrarily restricted is another danger, because then the data will not cover the real problem in its entirety. There is danger also in drawing conclusions from poorly or incompletely selected data; in this case the data would not

be truly representative of all phases of the problem, especially if the problem be extensive and complicated, and the generalizations deduced from the data might be faulty and misleading. Finally, there is always grave danger that the pre-conceived notions and the desires of the investigators may unduly influence their choice and interpretation of the data. If they set out with the explicit or implicit purpose of proving some pet theory, their purpose will probably bring about a manipulation of the material so as to make the results coincide with their views. There may be no deliberate intention of corrupting the evidence and deceiving others, but the investigators themselves may be deceived into placing a construction upon the data which the data do not inherently warrant.

When, however, these dangers are avoided and the material is relatively complete and representative, statistics are a powerful instrument of knowledge in coordinating and understanding large masses of group phenomena.

AVERAGES

Closely allied to statistics is the *method of averages*. By an average' we understand the mean proportion, medial sum or quantity, made out of unequal sums or quantities. Since statistical operations are based on sums and quantities, it is obvious that averages play an important part in statistical calculations. A knowledge of the methods of computing averages will be, therefore, a valuable aid for science in arriving at probable results.

The *purpose* of averages should be plain from their very nature and use. Being a mean proportion, medial sum or quantity, they 'give us a synoptic representation of a group or mass of unequal sums or quantities, thereby making the problem more intelligible. They enable us to carry out extensive comparisons between one group and another, so that generalizations can be made more easily and more quickly. By reducing group figures to compact units, they simplify lengthy calculations.

Depending upon the kind of problem to be solved, various *kinds of averages* are used. The simplest is the *arithmetical average*, by which term we designate the sum of the particular items divided by their number. Let us suppose that the single grades on a student's report card for the first semester are 75, 83, 84, 86, 90, 92, and 92. The sum of all items is 602, and the number of items is 7; by dividing 602 by 7 we obtain the average of 86. Averages of an arithmetical nature may lead to important scientific results. We have an instance of this in the experiments of Rayleigh and Ramsay, while making measurements of the weight of nitrogen obtained from chemical compounds and from the atmosphere (see p. 311). The average weights obtained from the two sources varied so consistently and uniformly, that they eventually led to the discovery of argon.

Sometimes *weighted averages* are used. When the term 'weighted' average is used, we mean thereby an average whose particular items have been multiplied by certain weights before their addition, and this sum is divided by the sum of the weights instead of by the number of items. Weighted averages appear in two types: in the one kind the

averages of separate groups with unequal numbers of items have already been taken, and then an arithmetical average is taken of the combined groups; in the other kind the averages are weighted in proportion to their relative value and importance, and then an arithmetical average is taken of them all. An example of each will make the matter clearer.

A certain factory has three departments. One employs 20 men at an average of \$20 a week; the second employs 15 men at an average of \$25 a week; the third employs 100 men at an average of \$22 a week. The simple arithmetical average of these three averages (\$20, \$25, and \$22, divided by 3) would be \$22.33. It is felt, however, that this average does not give a true picture of the wage average, because unequal numbers of men are employed in the different departments. The averages are therefore 'weighted' by the total number of employees: 20 men at \$20 earn \$400 a week; 15 men at \$25 earn \$375 a week; 100 men at \$22 earn \$2,200 a week, making a total of \$2,975 a week for all workers. This sum, divided by the total number of workers, makes an average of \$22.04 for each man. This is an example of the first type of weighting an average.

In the second type, as stated above, weights are added corresponding to the relative importance of the various items listed. Let us suppose that we desire to estimate the change in the cost of living in 1936 as compared to the year 1926. The price per item or unit in 1926 will be taken as par or 100. In proportion, then, the relative prices per item in 1936 (let us assume) are as follows: beef 95, flour 120,

cotton 60, silk 150, jewelry 50 Adding these figures and dividing the sum by 5, we obtain the arithmetical average or mean of 95; to all appearances the cost of living has gone down in 1936. This, however, hardly seems a reasonable way of viewing the problem, because the importance of these various items for daily life is unequal. Hence, 'index numbers' are attached to these figures, representing the estimated relative value of each to the other, so that (let us again assume) beef is estimated at value 8, flour at 12, cotton at 6, silk at 2, and jewelry at 1. We now obtain the following results:

Beef....	.95	x 8	=	760
Flour	120	x12	=	1440
Cotton	60	x 6	=	360
Silk..	150	x 2	=	300
Jewelry	50	x <u>1</u>	=	<u>50</u>
.....	29			<u>2910</u>

If we now divide the sum of 2,910 by 29, we obtain the weighted average of 100.3 and thus it will be seen that the general cost of living is nearly the same in both years. The difficulty, and also the danger, of this type of weighted averages lies in the assignment of proper index numbers; if carefully handled, however, such averages can be of great assistance in solving economical, social, psychological, and educational problems.

Another type of average is the *mode*. By this we understand the quantity or item which appears with greatest frequency in a group. The mode represents the

general type or 'run' of a group. When we speak of the 'average man,' the 'average mother,' the 'average student,' the 'average politician,' the 'average shoe,' the 'average girth measurement,' the 'average hat size,' etc., we mention the 'mode' of each class. This sort of average is important, when it is merely a question of the most frequent size of item in an unequal series. A clothier may know, for example, that of 100 middle-aged men who apply for a ready-made suit of clothes usually 2 have a girth measurement of 32, 6 of 34, 12 of 36, 20 of 38, 45 of 40, 6 of 42, 4 of 44, 4 of 46, and 1 of 50. In this series the item of 40 occurs 45 times: this is the 'mode' of the group, and the clothier will naturally order the greatest number of suits of this particular size rather than an arithmetical average of all sizes. Frequently, but not always, the mode and the arithmetical average will coincide.

Finally, there is the type of average called the *median*. It is the middle quantity or item in a series arranged according to magnitude. In the case of odd numbers, one number will obviously occupy the central position and can easily be detected. Thus, among seven students whose grades are arranged as 50, 60, 75, 82, 86, 90, and 94, the fourth number, or 82, will be the median of the series. In the case of even numbers, the median will be the average of the two which are the middle quantities. Among eight students whose grades are 50, 60, 75, 82, 86, 90, 94, and 95, the average of 82 and 86 will be the median item, and that is 84. This type of average is frequently used in grading mental capability, because any other sort of measurement of group mentality is inaccurate.

TESTIMONY

It is the endeavor of every scientist to establish all his knowledge by means of direct and irrefutable observation. But this is an ideal which no scientist can realize; the field of knowledge is so vast that the short span of his life makes such a personal investigation and verification impossible. He must rely on the observation and the testimony of others for much of his knowledge and for the proofs which make his knowledge certain. *Testimony* or testimonial evidence is the information or evidence obtained from competent and reliable witnesses. These witnesses, therefore, have observed the facts in question, are competent mentally and physically to judge of the true state of the facts observed, and are reliable in giving a trustworthy and truthful account of their observations. Under such conditions testimonial evidence will lead to certitude, or at least to a high degree of probability.

Unfortunately, the evidence supplied by direct witnesses is not always without flaws. Such evidence is based on *perception, memory, and narration*. The frequency of error in perception is notorious. Many persons are witnesses to the same fact; but they react differently to the situation encountered, and in many cases their judgment is colored by emotion and associated ideas. Memory, too, is faulty. Unless a report is fixed in writing during the process of observation or immediately after, details fade, and foreign elements soon become mixed with the observed data to such an extent that the evidence of the witness must be received with critical reservations. Courts of law and

experiments along these lines prove this beyond dispute. The element of language involved in narration presents added difficulties. Not all persons are capable of adequately expressing their observations in correct language so as to exclude all ambiguity and inexactitude; and oftentimes language lacks the proper words to describe the thing or event observed. Hence, testimonial evidence must be weighed and sifted carefully before it can be accepted in its entirety.

All testimony, even of truthful witnesses, must be submitted to a number of *logical tests*. First, the testimony of a witness must be self-consistent. By this is meant that no part of the testimony is allowed to contradict another part. Facts and things cannot contradict themselves; they simply are what they are. Hence, a report concerning them must also be self-consistent or non-contradictory. A contradiction in the testimony, therefore, shows that either the observation of the witness was inaccurate or that his memory played him false. In either case the testimony becomes more or less unreliable, depending upon the nature and magnitude of the discrepancy. Again, the testimony must be in agreement with other established facts, otherwise a contradiction would exist in the very facts themselves; facts, however, just because they are facts, are necessarily true. It stands to reason, therefore, that the evidence of a large number of independent and mutually unacquainted witnesses will greatly strengthen the evidence of the testimony of each; on the other hand, contradictory testimony on the part of a number of reliable witnesses casts a doubt on the entire evidence. Finally, the

testimony must be in accordance with the known laws of the intrinsic possibilities of the event. Something intrinsically impossible cannot happen; hence, no amount of testimony can establish such an event. It is possible, of course, that the physical laws of nature be suspended through divine interference, and it is also possible that such events be adequately observed.

The farther, however, such events recede from the ordinary course of nature, the more competent the witnesses must be.

If the evidence supplied by the witnesses survives these tests, it may be accepted as true. A critical attitude, however, must always be maintained.

CIRCUMSTANTIAL EVIDENCE

It is not always possible to obtain direct observation or direct testimony. In many instances, however, *circumstantial evidence* may point the way to the solution of a problem of fact. By circumstantial evidence we understand those relevant circumstances or facts which enable us to draw legitimate inferences to some principal fact, which fact then explains the existence and presence of these relevant circumstances or facts.

The main occasion for the use of circumstantial evidence is found in the criminal courts. Criminals are usually not desirous of having eyewitnesses present to observe the commission of a crime. They hope to escape detection by the absence of witnesses who may give direct evidence against them in a court of law. It is in the absence of

witnesses that circumstantial evidence may prove to be the means of convicting the criminal. In some instances circumstantial evidence may be of even greater value than the testimony of direct witnesses. The commission of the crime may be done so quickly, that the event is past before the witnesses have a fair opportunity to observe what has occurred; errors of observation or impression may occur which lead to distorted judgments. Contrariwise, circumstances may be detected which permit of thorough and prolonged study in the light of cold reason, fixing the identity of the criminal beyond reasonable doubt.

Circumstantial evidence is in the *nature of a hypothesis*: a crime was committed, and there must be a criminal or criminals who committed it. Various possibilities are present as to the identity of the criminal or criminals, but only one of these possibilities can be actually true. The logical procedure, therefore, is to eliminate all suspects (possible causes) except the guilty party or parties (the true cause), by showing that the relevant circumstances of the case cannot be accounted for under any other supposition. The sole cause of the crime is thus inferred from the circumstantial evidence surrounding the occurrence of the crime.

As a rule, a number of significant and relevant circumstances must unite in order to furnish *convergent evidence*. The greater their number and the more varied their character, the higher is the degree of probability that they contain the correct solution of the problem. Let us assume that a murder was committed during a bank robbery. As the robber is about to leave with the money, the

cashier attacks him and is shot. In the shuffle the robber drops his eyeglasses. He escapes, but neglects to pick up his eyeglasses. The police find them, trace them to the oculist who prescribed them, and thus discover the owner. When apprehended, the man is observed to be without the eyeglasses he is known to use. The money of the bank is also found, hidden in his room. Ballistic experts then prove that the bullet which killed the cashier was fired from the gun carried by the accused on his person at the time of his apprehension. Any one of these relevant circumstances points unmistakably to this man as the robber and murderer, but the convergence of evidence places his guilt almost beyond the possibility of doubt.

At times, however, a *single relevant circumstance* may suffice to settle the problem. A man, for example, is found murdered, with a knife in his heart. Upon examination, a complete set of distinct fingerprints is found on the haft of the knife, and these fingerprints are those of a known criminal. Since it has been established that fingerprints are distinctly individual, it is clear that this known criminal must have been the last one to have handled this knife. He is, therefore, the murderer, and a conviction should follow.

Obviously, a degree of probability amounting to practical certainty will be reached when strong circumstantial evidence is linked with the evidence of reliable direct testimony. In such a case the chances of error are reduced almost to the vanishing point. That circumstantial evidence is exposed to the serious danger of abuse and misinterpretation, need hardly be mentioned. Its strength

lies mainly in the *cumulative force* of a number of convergent facts all pointing directly to one source.

Such, then, are the methods of reasoning employed by scientists and logicians in acquiring probable knowledge. Where strict demonstration is impossible of attainment, the methods of analogy, statistics, averages, testimony, and circumstantial evidence will be found to supply valuable information of a more or less probable character. All these methods are forms of scientific induction.

SUMMARY OF CHAPTER XX

Much of our knowledge is only probable, not certain. The methods employed to obtain probable truth are analogy, statistics, averages, testimony, and circumstantial evidence.

1. *Analogy*. By this is meant the reasoning process whereby the mind concludes from the known characteristics of one thing or group of things to the unknown characteristics of another thing or group of things because of a recognized resemblance existing between them. Only significant resemblances have value.

2. *Statistics*. Statistics are the classification and evaluation of group phenomena by an analysis of data supplied by enumeration and measurement. The principle of inference is the inductive principle of concluding from the characteristics of a large number of parts to those of the whole. To be of real value, the data must be correctly analyzed and interpreted.

3. *Averages*. By an 'average' we understand the mean proportion, medial sum or quantity, made out of unequal sums or quantities. There are various kinds of averages: arithmetical average, weighted averages, the mode, and the median.

4. *Testimony*. Testimony or testimonial evidence is the information or evidence obtained from competent and reliable witnesses. Since testimony is based on perception, memory, and narration, the personal equation of the witness frequently involves error. Such evidence, to be acceptable, must be self-consistent, must be in agreement

with other established facts, and must be in accordance with the known laws of the intrinsic possibilities of the event.

5. *Circumstantial evidence*. It consists of those relevant circumstances or facts which enable us to draw legitimate inferences to some principal fact, Which fact then explains the existence and presence of these relevant circumstances or facts. As a rule, a number of significant and relevant circumstances must unite in order to furnish convergent evidence.

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1 *Logic*, Bk. III, Oh. XX, § 2.

Chapter 21

FALLACIES

THE ANTITHESIS OF TRUTH IS ERROR. TRUTH IS THE AIM AND GOAL of science and philosophy, and truth can be attained only by correct thinking. It is the particular purpose of logic to supply the mind with the knowledge of the laws of thought and the rules of correct thinking, so that it can proceed with safety and certainty in its pursuit of truth. These laws and rules have now been examined and established; familiarity with their technique should help the mind to avoid the more glaring errors which result from a violation of the fundamental forms in which the mind casts its thoughts in the formulation of arguments. *Formal* error should occur, therefore, far less frequently in the case of a mind instructed in logic. *Material* error is more insidious in character.

A material error may be due to the simple ignorance or the plain misapprehension of facts. Misapprehension was the reason of the belief, prevalent for thousands of years, that the sun rotated around the earth. Ignorance of the existence of microbes was responsible for the false notions about the origin and nature of many diseases. Many mistakes in everyday life are due to hasty conclusions based

on incomplete or faulty knowledge. There is no remedy for such errors except a careful study of the nature and circumstances of things. No rules of logic can hinder the mind from falling into errors of this type. Other errors, though, are *errors of argumentation*, based on the use of words or ideas which have a *deceptive resemblance to truth* and thereby lead to avoidable false conclusions. When such deceptive words and ideas are used with the purpose of misleading, the argumentation is called a *sophism*; but when this is done *unintentionally*, through inadvertence as the result of a mental slip, it is styled a simple material *fallacy*. Errors of this type are particularly dangerous in any form of argumentation, and a thorough knowledge of the various kinds of sophisms and fallacies should be of great assistance in avoiding them in our own inferences and in detecting them in the arguments of our opponents. Since logic is the science of correct thinking, it is within the province of logic to point out and explain the sources of such errors which involve a violation of some logical principle while possessing a deceptive appearance of validity.

Various attempts at a complete classification of fallacies have been made in the course of time, but Aristotle, as in most problems pertaining to logic, has made a division that serves all practical purposes. He classifies them as *Fallacies in the Language and Fallacies in the Matter*. The former rest upon the lack of preciseness in the words used to express thoughts; the latter are the result of confusion in the thing stated. Both classes have a number of subdivisions.

FALLACIES IN LANGUAGE

They are six in number: Equivocation, Amphiboly, Composition, Division, Accent, and Figure of Speech.

In the case of *Equivocation* the fallacy consists in using a *word in different meanings*. In syllogisms it amounts to a four-term construction. Here is an example: 'Spirits are immaterial substances; but whiskey and liqueurs are spirits; ergo, they are immaterial substances.' The equivocation here lies in the double meaning of the word 'spirits.' Or take this: 'All persons without baptism will be lost forever; Jews, Mohammedans, and heathens are without baptism; ergo, they will be lost forever.' Now, the word 'baptism' in the major premise means 'baptism of *water*,' and that is a fallacy, because Jews, Mohammedans, and heathens may have either a baptism of 'desire' or of 'blood' or both. The word 'baptism' is ambiguous in the major premise. When the Origenists stated that they believed in 'the resurrection of the body,' they were guilty of a sophism, because they did not mean a body of flesh but a body of aerial matter; they gave a totally different meaning to the word 'body' than the one usually implied by the term.

AMPHIBOLY IS THE AMBIGUOUS USE NOT OF A SINGLE WORD, BUT OF a *phrase or of a complete sentence*. For instance: 'This man his father killed.' One cannot tell from this sentence whether 'this man killed his father' or whether 'this man was killed by his father.' When Macbeth went to consult the

witches, they conjured various apparitions before his eyes. One said to Macbeth:

‘Be bloody, bold, and resolute; laugh to scorn
The power of man, for none of woman born
Shall harm Macbeth.’

There was a ghastly deception in the phrase ‘none of woman born shall harm Macbeth’; because, when he faced Macduff and invoked the words of the apparition, Macduff countered with the statement:

.... Macduff was from his mother’s womb
Untimely ripped.’

A similar instance is found in Shakespeare’s *Henry VI*, where the witch prophesies: ‘The duke yet lives that Henry shall depose.’ It is not at all clear whether ‘Henry shall depose the duke’ or whether ‘the duke shall depose Henry.’ It would be necessary to substitute ‘who’ or ‘whom’ for the word ‘that,’ in order to make the meaning clear; the failure to do this makes the entire sentence ambiguous.

A PROLIFIC SOURCE OF ERROR IS THE FALLACY OF *COMPOSITION* and *Division*. The fallacy of Composition consists in taking *jointly what should be taken separately*; and the fallacy of Division consists in *taking separately what should be taken jointly*. Consider the following argument: ‘Two and three are less than four; but two and three are five; ergo, five is

less than four.' The minor premise and the conclusion take 'two and three' conjointly, while the major premise takes them separately; this is therefore a fallacy of 'composition.' Because it is true that 'a man who is lying down can stand up' (in a divided sense, successively), it would be a fallacy to conclude that 'a man can therefore lie down and stand up at the same time'; this would also be a fallacy of 'composition.' Here is another instance of 'composition': 'All the angles of a triangle are less than two right angles (i.e., taken singly and separately, each for itself); but the three angles of a triangle are all the angles of a triangle (i.e., taken collectively, all together); ergo, the three angles of a triangle are less than two right angles.'

The fallacy of 'division' is the reverse: it takes singly and separately what ought to be taken collectively and conjunctively. We see this plainly in the following syllogism: 'All soldiers are an army; but General Pershing was a soldier; ergo, General Pershing was an army.' In the major premise the term 'all soldiers' is taken collectively, as a body and an aggregate; the minor premise and the conclusion then take the term 'soldier' in a distributive sense, applying it separately and singly. The same is true, in the minor premise, of the following argumentation: 'Sixteen is divisible by four; but nine and seven are sixteen; ergo, nine and seven are divisible by four.' Here is the picture presented by the prosecution to the jury: 'Blank, the accused, had threatened to kill X; an hour later he was found beside the body of the murdered X, immediately after the shot was fired, with his own revolver, still smoking, in his hand.' The jury acquits Blank on the following grounds:

Many people threaten to kill, but never do. it; the revolver may have gone off accidentally, as it often happens; the actual murderer may have stolen the gun from Blank and dropped it alongside the body after the shooting, and Blank, hearing the shot, may have hurried to the side of the murdered man and picked up the gun, which was still smoking; ergo, the evidence is not conclusive. Here the single instances, that sometimes occur separately, are considered as an explanation for a series of circumstantial evidences which must be considered collectively: it is the fallacy of 'division.' The problem of 'one straw breaking a camel's back' is a fallacy, or rather a sophism, of this kind. 'Will one straw break a camel's back?' 'No.' 'Will the second straw do it?' 'No.' 'Will the hundredth straw do it?' 'No.' 'Will the thousandth straw do it?' The numbers are thus increased. 'Will the two-millionth straw do it?' 'I don't know; I suppose so. Well and good; the two-millionth straw will, therefore, break the camel's back; but the two-millionth straw is a single straw; ergo, a single straw can break a camel's back.' Put in this form, it is a fallacy of 'division.' If each straw is placed on the camel's back and then removed, to give place to each succeeding one, then the two-millionth straw will not break the camel's back either. But if all the preceding straws are left there, then one straw, *conjointly with all the others*, will break the camel's back. But the way the argument is put, the supposition is that one single straw, taken alone, is capable of breaking the camel's back. Here a thing is taken separately which must be taken collectively: The last straw, in conjunction with, and as a part of, the whole aggregate of straws, will produce the

effect, but not as a mere unit by itself. The same argument is used to show that the pulling out of a single hair (after, perhaps, ten thousand others have been pulled out) can make a man bald.

THE FALLACY OF *ACCENT* OR *PROSODY* IS AN AMBIGUITY WHICH arises from a *false accent or false emphasis in speech*. Supposing a senator on the floor accuses a colleague of being 'an unmitigated liar.' He is asked to retract this statement as being opposed to the amenities of senatorial etiquette. He thereupon rises and says: 'I called him an unmitigated liar: it is true: and I am sorry for it.' Evidently, this is a dubious apology, and everything will depend upon the inflection of the voice in speaking the sentence. The part containing the apology can be interpreted in two ways. It may mean: 'It is true (that I called him a liar); and I am sorry for it (i.e., that I called him a liar).' But it may also mean: 'It is true (that he is a liar); and I am sorry for it (i.e., that he is a liar).' The faintest tinge of contempt in the voice will be a restatement of the original slur; but an expression of regret in the voice will make it a true apology; an indifferent enunciation will permit anyone to place either interpretation upon the words. When Cardinal Wolsey was dying, he said to Sir William Kingston: 'Had I but served my God with as much zeal as I have served my king, He (he?) would not have given me over in my old age to my enemies.' Since these words were spoken and not written, it is not at all certain whether 'he' refers to the king or to God. When the following syllogism is spoken (not written), it contains

a fallacy of 'accent': 'All who knead bread are bakers; all the poor need bread; ergo, all the poor are bakers.'

THE FALLACY OF *FIGURES OF SPEECH* IS MADE, WHEN A conclusion of *identity or similarity in meaning* is drawn between one diction and another, due to their similarity of construction. This fallacy, as can be seen by the definition, has nothing to do with tropes or 'figures of speech' in a rhetorical sense. Whoever mixes direct and logical universals is guilty of this fallacy. For instance: 'Relation is a category; but a brother-in-law is a relation; ergo, a brother-in-law is a category.' Similarly, to confuse the grammatical and real meanings of a term is an instance of this fallacy: 'Poet is a noun; but Dante was a poet; ergo, Dante was a noun.' This fallacy is also committed when one judges from the form of one word to the form of another word: 'Since the meaning of "insecure" is the opposite of "secure," the meaning of "invaluable" must be the opposite of "valuable" for the same reason.' Simply because a 'model' may be 'something made in an imitation of the real thing in life' is no reason for considering a 'model husband' nothing but 'an imitation of a real husband.' So, too, it would be wrong to argue that there must be a similarity in meaning between 'sacred' and 'sacral,' since both have the same etymological derivation. If anyone were to consider the equivocal use of a metaphor in its figurative and literal meaning as belonging to the fallacy discussed in this paragraph, because a metaphor is a 'figure of speech,' he would be guilty of this fallacy of 'figures of speech.'

FALLACIES IN THE MATTER

These fallacies do not rest upon an improper and specious use of words, but upon a *confusion of ideas and things*. They are: Fallacy of Accident; Absolute and Qualified Statements; Ignoring the Issue; Begging the Question; Consequent; False Cause.

The *Fallacy of Accident* consists in the confusion of the *accidental and essential characteristics* of a thing, so that what is affirmed of something which is adventitious to a thing is also applied to the subject itself. Not all logicians interpret this fallacy in the same way. Some give it a rather strictly *logical* meaning, in as much as the predicate of a judgment is considered to be something accidental to the subject, provided the predicate is *not the definition* of the subject. An affirmative judgment expresses an identity between subject and predicate. But this may be deceptive (and therein lies the danger of fallacy), because this identity will not be a complete identity in every respect, except when the predicate is the definition of the subject or vice versa. If the definition is used, the subject and predicate can be *interchanged*, as 'Man is a rational animal' and 'A rational animal is man'; in this case, whatever is true of the one is also true of the other. Ordinarily, however, the identity of 'S is P' refers to the individual who is the 'subject' and to whom the attribute of the 'predicate' is applied; but the comprehension of 'subject' and 'predicate' (except in the case of a definition) will be only partly identified. Thus, in the judgment 'Man is an animal,' the identity between the two is not complete, because the ideas

are not interchangeable; hence, while it is true that 'Every man is an animal,' it is not true that 'Every animal is a man.' Sometimes the predicate is synonymous with the subject, as when I say that 'A lance is a spear'; sometimes, the ideas of subject and predicate are totally different (though both are found together in this individual), as in the statement that 'This dog is black'; sometimes subject and predicate are partly the same and partly different, e.g., 'Man is an animal'; and sometimes they are identical in all respects, as in a definition, e.g., 'Man is a rational animal.' Except, then, in the case of synonymous ideas or definitions, one cannot consider the subject and predicate as completely identified, so that, what is applicable to the one, must also be applicable to the other, unless the statement is made precisely of that element or those *elements which they have in common*; to act otherwise would mean to be guilty of the 'fallacy of accident.'

Aristotle gives the following example to illustrate the point. The sophist asks: 'Do you know this man with his face muffled?' 'No.' 'Do you know Coriscus?' 'Yes.' 'But the man with his face muffled is Coriscus; you have both asserted and denied that you know Coriscus.' Of course, it is true enough that 'Coriscus' and 'this man with his face muffled' are identical as far as the *individual* is concerned; but 'to have his face muffled' is only accidental to 'Coriscus,' and one can know the one without knowing the other. Here is another instance: 'Man has intelligence; but intelligence is a Divine Attribute; ergo, man has a Divine Attribute.' It is correct that 'man has intelligence'; but the two ideas ('man' and 'intelligence') are not identical to such an extent that

everything which can be affirmed of 'intelligence' must also apply to 'man.' Again: 'Animal is a genus; man is an animal; ergo, man is a genus. Other logicians interpret the Fallacy of Accident more according to the meaning of 'accident' in the *real order* and place the fallacy in the confusion of the accidental and essential qualities of an object. For instance: 'White is a color; this man is white; ergo, this man is a color.' 'All bovines have two horns; this calf has no horns; ergo, it is no bovine.' 'Men and apes are morphologically alike; ergo, they are substantially the same. August Forel, in *Der Hypnotismus* (1911, p. 8), is guilty of this fallacy when he writes: "The anatomy, physiology and pathology of human and animal brains have brought forth the incontestable proof that the characters of the mind depend on the quality, quantity and integrity of the living brain, and are therefore identical with it. A living brain without a mind can no more exist than can a mind without a brain, and every normal or pathological change of the activity of the mind corresponds to a normal or pathological change of the activity of the neurokymes of the brain, i.e., of its nerve elements. What we recognize introspectively in our consciousness are synthetized activities of the brain. We can therefore accept the theory of the identity regarding the relations of pure psychology (introspection) to the physiology of the brain (the observation of the activity of the brain from without) as long as the facts are consistent." From the accidental and extrinsic dependence of man's mind on his brain, Forel argues to the identity of the two, so that what is true of the one is necessarily true of the other. How fallacious this line of reasoning is, can be seen by

employing the same argument to show that, since 'man's life depends on the quality, quantity and integrity of the living lungs and liver, it is therefore identical with them.'

ONE OF THE MOST DANGEROUS FALLACIES IS THE *FALLACY OF Absolute and Qualified Statements*. It consists in arguing from a statement which is *generally true* (absolute statement, *dictum simpliciter*) to a *specific case*; or from a statement which is true in a *special instance* (qualified statement, *dictum secundum quid*) to the *general class*. The general statement here is a moral universal which is true in a widely accepted sense, but admits of exceptions. A moral universal is valid under ordinary and normal conditions and circumstances, so that one is justified in making a general rule, with the understanding, however, that there may be *limitations to its application*. The fallacy lurks in the exceptions to such a rule. Thus, as a general rule, it is legitimate to state that 'Parents love their children (i.e., ordinarily speaking)'; 'it is wrong to kill a person (i.e., without sufficient reason)'; 'property rights must be respected (i.e., except in the case of necessity)'; 'liquor is harmful (i.e., in many instances)'; 'man is mortal (i.e., in as far as he is a compound of body and soul)'; 'human beings can hear and see (i.e., if they are normal)'; 'children must obey their parents (i.e., as a rule)'; 'the Germans are industrious,' 'the French are vivacious,' 'the Italians are artistic,' 'the Americans are inventive,' 'the Indians are stoical,' 'the Japanese are aggressive,' 'the English are good colonizers (i.e., as a class with national traits).' Each of

these statements is true, but with a qualifying limitation; the limitation is not mentioned, but it is understood and must be taken into account. To argue, then, from an absolute to a qualified statement (*a dicto simpliciter ad dictum secundum quid*) or from a qualified to an absolute statement (*a dicto secundum quid ad dictum simpliciter*) would be fallacious.

We cannot legitimately conclude from what is true or good under certain circumstances of time, place, or condition to the truth or goodness of this same thing under all circumstances; that would involve the fallacy of jumping from a qualified to an absolute statement. For instance, because a representative form of government is good for Americans, we are not entitled to infer that it would be good for the Filipinos or for other nations in general. Because some capitalists are unjust to labor, that does not mean that capitalism as such is unjust. Because some people get drunk, is no reason for forcing prohibition on an entire nation. Because Galileo was restrained, is no argument that the Church is against science. Because a man is the head of a large industry or is a great scientist, that of itself makes him no authority in matters of philosophy, religion, or statecraft. To judge in this fashion is to commit the fallacy of passing from a qualified statement to an absolute statement. All snap-judgments, where we make hasty generalizations from a limited experience, belong to this class.

The fallacy which concludes from a statement of general truth to a particular instance, irrespective of limiting and qualifying conditions and circumstances, is an equally

dangerous procedure. It is the fallacy of passing *a dicto simpliciter ad dictum secundum quid*, from an absolute to a qualified statement. 'It is not permissible to kill one's fellow man'; but on that account one cannot condemn a man for killing another in self-defense or in a just war. 'It is wrong to indulge in narcotics'; but we must not conclude that it is wrong for a physician to prescribe a narcotic for a patient whose physical welfare requires the drug. 'The Church is holy'; but this does not demand that there be no sinners in the Church. 'Punishment for crime is necessary'; but that does not condone mob-rule and lynching. 'Picketing during strikes and lockouts are just measures of self-protection on the part of labor unions'; but that does not justify sabotage and violence. To extend any such general principle to every special case without exception, ignoring the individual character of the case, means to be guilty of this fallacy. Narrow-minded people, bigots, and propagandists usually fall into this error.

IGNORING THE ISSUE IS ANOTHER ABUNDANT SOURCE OF fallacies. Logicians, following Aristotle, call it *ignoratio elenchi*, 'ignoring the disproof' (namely, of the adversary); it received this name because of the fact that it is usually committed by not actually disproving an opponent's conclusion. It is also called 'mistaking the question,' 'irrelevant conclusion,' 'arguing beside the point,' 'evading the issue.' The meaning of all these expressions is the same: One either proves what is not in question to be proved, or does not prove what is supposed to be proved, or disproves

what has not been asserted; one either proves too much, or not enough, or something beside the question. In other words, one does not prove (or disprove) the point at issue.

Participants in a political campaign, in a religious controversy, in a scientific debate, in the legal proceedings of a criminal case, frequently fall into this error. Personal abuse, instead of reasons, never proves a fact or establishes a principle or refutes an argument. Those who deny the immortality of the soul on the grounds that 'No dead man ever came back' are arguing beside the point; so, too, are they who claim that a man could not have committed a certain crime, because, 'He went to church every Sunday.' It is the same sort of fallacy to judge the worth of a religion by the material progress of the nations who profess it. To decry the political ability of a man by stating that 'He was born on the farm and can therefore know nothing of the big questions of government,' is to evade the issue. To propagandize the people against a presidential candidate on the grounds of his religious affiliation, is a form of mistaking the question.

This fallacy appears in numerous guises. It is called an *appeal to the people* (*argumentum ad populum*), when no solid reasons are advanced for a certain principle or measure, but merely an appeal to the prejudices and passions of the populace. This is the usual method of the soap-box orator of the communistic type, who works up the feelings of his hearers by a harrowing picture of poverty-stricken workers and starving women and children. He attacks the abuses of wealth and capitalistic oppression in vitriolic language, but he does not prove thereby that

communism is an economically sound system. The same form of argument is used by those who inflame the religious prejudices of well-meaning Protestants by claiming that the election of a Catholic president would make the whole country subject to a foreign potentate.

The *appeal to might* (*argumentum ad baculum*) is the threat of dire consequences to those who will not follow a certain course or dare to oppose a certain policy. This play upon fear is an unworthy attempt to substitute penal measures for arguments which are either weak or entirely lacking. It is not wrong for parents to threaten punishment for disobedience. But if a powerful industry threatens reduction in wages or loss of employment to its workers, if they form a labor union, then that is an 'appeal to might.'

In the *appeal to shame or modesty* (*argumentum ad verecundiam*) one does not argue a question on its intrinsic merits, but strives to convince a person by pointing out the *dignity* of those who adhere to a certain view. There is, naturally, a legitimate place for the citation of authorities in a question, provided their arguments are given, in order to support one's own view; but a mere array of prominent names should not be used to cow an opponent. The opinion of men who are experts in their own line deserves respect and recognition *in their particular field*, but the greatness of their fame should not be used as an argument regarding questions *outside their field*; that would be a fallacy. Edison was a genius in electricity; but his views on the nature of the soul or the hereafter carry no weight, because these problems lie outside the province of his specialty.

The *appeal to pity* (*argumentum ad misericordiam*), as the name indicates, leaves reasons aside and pleads for *mercy*. When a lawyer in a criminal case plays on the heart-strings of the jury on the grounds of the youth of the criminal or the pain that will be inflicted on the parents, instead of proving the innocence of the accused, he is arguing beside the point and is guilty of this fallacy; this is particularly the case, when the accused is not a first offender, but a hardened criminal.

In the *appeal to ignorance* (*argumentum ad ignorantiam*) one relies on the *lack of knowledge* on the part of the hearers to hinder them from seeing through the speciousness of one's arguments. Statistics are thus often used and abused by orators) knowing that the audience is not acquainted with the facts or with the proper interpretation of the figures. Speaking to an uneducated mass meeting, the speaker will frequently sway his audience with the fire of his enthusiasm and the grandiloquence of his language, convinced that the play of his words will do more than any amount of cogent reasoning.

The *appeal to the individual* (*argumentum ad hominem*) shows that the character or the previous views of an opponent are such that he is *not the proper person* to uphold the statements he is making. When a Democrat argues that his Republican opponent was himself formerly a Democrat, then he is weakening the authority of his opponent; in as much, however, as the Democrat is not disproving his opponent's arguments as such, he is guilty of this fallacy, because it is not a question of personality but of

principle. When, however, an attorney shows to the court that the witness has a criminal record, he has the perfect right to bring this fact to the attention of the court, because the criminality of the witness has a direct bearing on his credibility. A common form of this fallacy is to heap abuse or ridicule upon an opponent, instead of meeting his arguments with counter-arguments.

From all this it will readily be seen that the *ignoratio elenchi* or 'ignoring the issue' is a dangerous weapon of sophistic reasoning, one whose prevalence and insidious use works incalculable harm in the minds of men.

ANOTHER IMPORTANT FALLACY IS THAT OF *BEGGING THE QUESTION* (*petitia principii*). It is an argumentation in which the very *conclusion* (question) to be proved is, in some form or other, *assumed to be true*; or, when the conclusion is proved by a principle whose truth *depends on the truth of the conclusion itself*.

In the first type some *synonymous* term is usually employed to cover the fallacy. Such would be the case, if we explained 'heart failure' by saying it was due to a 'paralysis of the cardiac contractile muscles'; or, that morphine 'induces sleep' because it has a 'soporific effect'; or, that Roosevelt's method of ending the depression is a 'dictatorship' because he is a 'virtual Mussolini.' This last instance ('Roosevelt-Mussolini') is also a case of *question-begging epithet*, which consists in using some phrase or term to explain or prove something by implication, although the question to be explained or proved is *presupposed* in

the epithet itself; the epithet is taken as proof while it needs proof itself. Such would be the reasoning of a criminal who contends that he was justified in killing a policeman, because he acted in self-defense' against the policeman. Whoever contends that all wars are nothing but 'uncivilized slaughter,' because every war is 'an atrocious piece of barbarity,' is guilty of this fallacy; he presupposes the very thing he is to prove.

The second type is committed when some *principle*, wider than the conclusion, is used as proof for the conclusion and its *truth assumed without independent proof*. If the conclusion needs proving, being an instance involved in this wider principle, then this wider principle needs proving all the more; to assume the truth of this principle is then a 'begging of the principle or question.' When materialists attempt to prove that the world was not created, by saying that 'matter is eternal, and therefore the world is eternal,' they presuppose the truth of the principle that 'matter is eternal' and thereby beg the question, because this principle is the very thing they ought to prove. To assert that 'communism is the best form of government, because it alone takes care of the interests of the common people,' is to be guilty of the same fallacy. Galileo ascribed the following argument to Aristotle, wherein the major premise begs the question: 'The nature of heavy things is to tend *toward the center of the universe*, and of light things to fly from it; experience proves that heavy things tend toward the center of the *earth*, and that light things fly from it; therefore the center of the earth is the center of the universe.'

When a conclusion is proved by a principle used as a premise in an argument, and later on this same principle is proved by this conclusion used as a premise in a different argument, we have a vicious circle: In the one case the 'first' is proved by the 'second,' and later on this 'second' is proved by the 'first.' It would be a 'vicious circle,' for instance, to prove the 'freedom of the will' from the fact of 'personal responsibility,' and then later on prove the fact of 'personal responsibility' from the principle of the 'freedom of the will.' So, too, one would be guilty of 'arguing in a circle,' if one attempted to prove the 'immortality' of the soul from its 'spirituality,' and then at a later stage attempted to prove its 'spirituality' from the fact of its 'immortality.'

THE *FALLACY OF THE CONSEQUENT* IS COMMITTED, WHEN WE USE a conditional syllogism and argue from the falsity of the antecedent to the falsity of the consequent, or from the truth of the consequent to the truth of the antecedent. The rules of a legitimate argumentation, based on a conditional statement, are, as we have seen when treating of this type of syllogism, the reverse of this fallacy. 'If it is A, then it is B; it is A; ergo, it is B.' 'If it is A, then it is B; it is not B; ergo, it is not A.' It is only when positing A, that we are allowed to posit B; and it is only when sublating B, that we are allowed to sublate A. To turn this inferential process around is to commit the Fallacy of the Consequent.

This fallacy is of daily occurrence. Here are some examples: 'If he is lazy, he will flunk; he flunked; ergo, he

was lazy.' This does not necessarily follow; he may have been sick, thereby missing many classes, Or the other way: 'He was not lazy; ergo, he did not flunk.' He may have very weak talents, so that, even though he studied well, he was not able to pass. The same is true of the following argument: 'If the Soviet is a good form of government, it will survive; it survives; ergo, it is a good form of government.' Here one argues from the truth of the consequent to the truth of the antecedent, and that is fallacious reasoning; the Soviet might survive, not because it is a good form of government, but because of the brutal force with which the officials of the Soviet suppress every attempt on the part of the people to put a sane government in its place. Pseudo-scientists (and even real scientists) frequently are guilty of this fallacy, when they argue in the following fashion regarding evolution: 'If evolution took place, there must be a gradual succession of living forms, ranging from the most primitive to the most specialized; there exists such a gradual succession of living forms; ergo, evolution took place.' One simply cannot make a legitimate inference from the truth of the consequent to the truth of the antecedent, *unless there is no other alternative*; in this case, however, there is still creation as an alternative. Such a conclusion may be true, but it need not be.

IN THE *FALLACY OF FALSE CAUSE* WE ASSIGN A WRONG CAUSE TO A certain effect. Superstitions are based on this fallacy. An accident happens on a Friday; ergo, it was the 'unlucky' day which caused it. An aviator carries a 'luck piece' with him

on his *flight*; the plane plunges to the earth, but he is not killed; it was his 'luck piece' that saved him. A man's business fails, because he went golfing too much and did not give proper attention to his affairs; he blames 'the crooked methods' of his competitors for his bankruptcy.

To this type we must also refer the fallacy of '*after this, ergo on account of this*' (*post hoc, ergo propter hoc*). Simply because one event follows another event is no evidence that the former is caused by the latter. Here are some typical arguments of this kind. 'Man follows the ape in the succession of primates; ergo, man is descended from the ape.' 'The Roman Empire declined and fell after the appearance of Christianity; ergo, Christianity is the cause of the decline and fall of the Roman Empire.' 'The Catholic countries have declined in their temporal progress and prosperity, since they were converted to the Catholic Church; ergo, the Catholic Church is responsible for their lack of progress and prosperity.' Because malarial fever is prevalent in swampy regions, it was commonly thought that the fever was due to the poisonous vapors emanating from the swamps.

The Fallacy of False Cause is of frequent occurrence in the *inductive sciences*. The danger there is indeed very great. In consequence of the uninterrupted flux and intermingling of concrete causes and effects many factors may be overlooked or misinterpreted in explaining a phenomenon. The purpose of experiments is to isolate these factors and simplify their study. This is done by shunting out the unessential and irrelevant elements, so as to retain only those which actually contribute to the production of a

particular effect. Experimentation is, therefore, a *selective* process, depending for its effectiveness and validity on the knowledge and mental acumen of the individual scientist. But therein also lies its danger. The investigator is always guided in his experiments by some *hypothesis* of cause or law, and his desire to establish this hypothesis may lead him astray. He may overlook some very important factors and over-stress others; he may unconsciously retain only such elements as favor his hypothesis, excluding those which would tend to disprove or modify it. His interpretation of facts may be faulty. As a result he may designate something as a cause which is only a concomitant circumstance or condition. His generalizations may be too hasty, so that they amount to nothing more than sweeping statements.' This is especially the case when, in his anxiety to establish a law, he does not take the time to examine enough instances, being content with a very incomplete induction. Oftentimes this lack of thoroughness is due to the lack of the necessary means of observation. Thus, Dalton's Atomic Theory, which considered the atom as the ultimate indivisible 'element in nature, was universally accepted as true; now, however, improved methods of observations have quite definitely established the fact that the breaking up of the atom, or 'atomic disintegration,' goes on continually. So, too, Einstein's Theory of Relativity bids fair to revolutionize many accepted generalizations of astrophysical phenomena. Science is not at all so sure of many of its so-called 'laws' as some popularizers would have us believe. Nature is very deep and mysterious in its operations and contains many unsounded depths. The pitfall of False 'Cause

is always near at hand, ready to swallow the unwary and the presumptuous.

Truth and fallacy form a strange mixture in our minds. Truth comes piecemeal to us, the result of observation, study, experimentation, endless analysis, and synthesis. Truth lies concealed in the husks of concrete sense-data, in the multiplicity of physical phenomena and mental reactions, and slowly, laboriously, patiently the mind must pare away all extraneous matter by a process of abstraction and generalization, so as to grasp the kernel within. That man's knowledge will frequently consist of only part of the real truth, or that errors will cling to the pure kernel of the truth acquired, is but a natural consequence of the limited power of the mind and the vastness of the field from which truth must be drawn. But it is the glory of man to be endowed with reason. It makes him akin to God. It lifts him above the brute things of a physical world and enables him to follow the trail of the Divine Intellect fashioning the universe according to plan and measure.

It is the high privilege of man's mind to seek for truth and knowledge, but it is a difficult task. Ideas and judgments and argumentations, induction and deduction — these are the paths along which the intellect must travel in its search for truth. There are pitfalls of error along the route; but logic, the science of correct thinking, will guide our steps, so that we can reach the sublime heights of Truth.

SUMMARY OF CHAPTER XXI

Formal errors are violations of the rules which govern the fundamental forms of reasoning. *Material errors* are errors of facts or faulty use of ideas and words. If these latter have a *deceptive resemblance* to truth and are used with a purpose of misleading, they are sophisms; but if their use is unintentional, they are *fallacies*. There are *Fallacies in Language* and also *Fallacies in Matter*.

1. The following are Fallacies in *Language*:

Equivocation, using a word in different meanings. *Amphiboly*, using phrases or entire sentences ambiguously. *Composition*, taking conjointly what should be taken separately. *Division*, taking separately what should be taken conjointly. *Accent* or *Prosody*, ambiguity due to false accent or false emphasis. *Figures of Speech*, when a conclusion of identity or similarity of meaning is drawn between one diction and another, due to their similarity of construction.

2. The following are Fallacies in *Matter*:

Accident, the confusion of accidental and essential characteristics of a thing. *Absolute and Qualified Statements*, arguing from a generally true statement to a specific case, or from a special case to the general class. *Ignoring the Issue*, proving what is not to be proved, not proving what is to be proved, disproving what has not been asserted. *Begging the Question*, assuming as true the very thing to be proved. *Consequent*, arguing from the falsity of the antecedent to the falsity of the consequent, or from the

truth of the consequent to the truth of the antecedent.
False Cause, assigning a wrong cause to a certain effect.

READINGS

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B., Ch. XXVII; Robinson, D. S., Ch. XIV; Sellars, R. W., Ch.
XIV.

GLOSSARY

AMPHIBOLY (Gr., *amphibolos*, equivocal). The Fallacy of Amphiboly consists in the ambiguous use of a phrase or of a complete sentence.

ANALOGOUS (Gr., *analogia*, ratio, proportion). An analogous term is one which applies to unlike, but related, things.

ANALOGY. That reasoning process whereby the mind concludes from the known characteristics of one thing or group of things to the unknown characteristics of another thing or group of things because of a recognized resemblance existing between them.

ANALYSIS (Gr., *ana*, backwards, and *lyein*, to loosen, resolve). The scientific method which passes from the concrete to the abstract, from the complex to the simple, from the particular to the universal, from the application of a principle to the principle itself, from the phenomena to the underlying general law, from the effects to the cause. Synonym: *A posteriori* method.

ANALYTIC PROPOSITION. One in which either the predicate is contained in the comprehension of the subject,

or the subject is contained in the comprehension of the predicate. Synonyms: Necessary, essential, *a priori*.

APPLICATION. With reference to ideas, same as extension. See Extension.

A POSTERIORI (Lat., *posterior*, after). Argument drawn from effects, consequents, or facts.

A PRIORI (Lat., *prior*, before). Argument drawn from definitions formed or principles assumed, or which infers effects from causes previously known.

ARGUMENTATION. The verbal expression of a mediate inference.

ASSERTORIC PROPOSITION (Lat., *asserere*, to maintain, assert). Same as categorical proposition.

AVERAGE. The mean proportion, medial sum or quantity, made out of unequal sums or quantities.

AVERAGE, ARITHMETICAL. The sum of the particular items divided by their number.

AVERAGE, WEIGHTED. An average whose particular items have been multiplied by certain weights before their addition, and this sum is then divided by the sum of the weights instead of by the number of items.

BEGGING THE QUESTION. It is a fallacy in which the very conclusion (question) to be proved is, in some form or other, assumed to be true; or, when the conclusion is proved by a principle whose truth depends on the truth of the conclusion itself. Synonym: *Petitio principii*.

CATEGORICAL PROPOSITION. One that makes a direct assertion of agreement or disagreement between subject

and predicate.

CATEGORICAL SYLLOGISM. A syllogism whose premises are categorical propositions.

CATEGORY (Gr., *kategorein*, accuse, predicate). A supreme and ultimate class of direct universals. Synonym: *Predicament*.

CAUSAL DEFINITION. The explanation of a thing by means of its efficient or final causes.

CAUSAL PROPOSITION. One that combines two statements in such a way that the one is given as the reason or cause of the other.

CAUSALITY, Principle of. It is the principle which states that 'whatever happens (occurs, changes, begins to be) has a cause'; or, 'whatever is contingent (i.e., is not the self-sufficient reason of its own existence and being) has a cause for its existence and being'; or, 'every effect has a cause.'

CAUSE. Anything that contributes in some positive manner toward the production of another thing in its existence and being.

CIRCULAR DEFINITION. One in which a first idea is defined by a second, and later the second is defined by the first.

CLEAR IDEA. One which represents an object in such a way that we can distinguish it from any other object.

COLLECTIVE IDEA. One that applies to all the individuals as a class, but not to the single members of the class.

COMPARATIVE PROPOSITION. One that compares the relation between a subject and predicate with the same relation between another subject and predicate, and

expresses the degree of this relationship as being either less or equal or greater.

COMPATIBLE IDEAS. Ideas in which the attributes of the comprehension of both can be united into another (third) idea.

COMPLEX PROPOSITION. It is a composite sentence in which both the subject and the predicate or either one is a complex term.

COMPLEX TERM. See Compound term.

COMPOSITE PROPOSITION. One in which a qualification or composition enters into the subject or predicate or copula of a simple sentence.

COMPOSITION, Fallacy of. A fallacy in which something is taken conjointly which should, be taken separately.

COMPOUND TERM. One that consists of more than one word.

COMPREHENSION. The comprehension of an idea is the sum total of all the attributes or thought-elements which constitute the idea in its representation of a thing. Synonyms: Implication; connotation; intent; intension.

CONCEPT. See Idea.

CONCRETE IDEAS. Those which express a nature or determining attribute as inherent in a subject.

CONDITION. Something which enables a cause to produce its effect, without actually contributing toward the production itself.

CONDITIONAL PROPOSITION. One that expresses a relation in virtue of which one proposition necessarily flows from the other.

CONDITIONAL SYLLOGISM. A syllogism which contains a conditional proposition as the major premise.

CONFUSED IDEA. An idea which, though it enables the intellect to distinguish the represented object from other objects, does not enable it to enumerate the various attributes which make up the comprehension of the object.

CONJUNCTIVE PROPOSITION. A statement asserting that two alternatives are not or cannot be true simultaneously.

CONNEX IDEAS. Ideas which necessarily include or exclude each other.

CONNEX PROPOSITION. Same as conditional proposition.

CONNOTATION. See Comprehension.

CONSEQUENT, Fallacy of. An argument in which we use a conditional syllogism and argue from the falsity of the antecedent to the falsity of the consequent, or from the truth of the consequent to the truth of the antecedent.

CONTRADICTION, Principle of. The principle which states that 'it is impossible for the same thing both to be and not to be at the same time.'

CONTRADICTION, Relation of. It is the logical opposition existing between a universal affirmative and a particular negative proposition, and between a universal negative and a particular affirmative proposition.

CONTRADICTORY IDEAS. They are ideas of which the one simply denies the comprehension of the other.

CONTRAPOSITION. A form of eduction in which the subject of the inferred proposition is the contradictory of the predicate of the original proposition.

CONTRARIETY. A form of logical opposition existing between a universal affirmative and a universal negative.

CONTRARY IDEAS. Those which represent the two extremes among object of a series belonging to the same class.

CONVERSION. A form of eduction in which the inferred judgment takes the subject of the original proposition for its predicate, and the predicate of the original proposition for its subject.

COVERTLY MULTIPLE PROPOSITIONS. They are propositions which have the appearance of single propositions, although they are really multiple.

DEDUCTION (Lat., *deducere*, to draw from). It is the process of reasoning in which we conclude from the general law or principle to a particular instance falling under the general law or principle.

DEFINITION (Lat., *definire*, to set the limits). It is a statement which explains what a thing is.

DENOTATION. See Extension.

DESCRIPTIVE DEFINITION. A statement which explains what a thing is in itself by enumerating the positive, but nonessential, elements of its nature.

DESITIVE PROPOSITION (Lat., *desistere*, to cease). A statement including a declaration of time when something ends.

DETERMINING CAUSE. An active, originative condition enabling a cause to act.

DICTUM DE OMNI ET NULLO. An axiom underlying the syllogism which states: 'What is affirmed of a logical whole

may be affirmed of a logical part of that whole; and what is denied of a logical whole may be denied of a logical part of that whole.'

DIFFERENTIA (Lat., for difference). A universal idea or predicable which expresses a part of the essence of its subject, that part which distinguishes one species from another under the same genus.

DILEMMA (Gr., *dis*, double, and lemma, gain, assumption). It is an argument in which the major premise consists of a disjunctive proposition and the minor premise consists of conditional propositions, each of which takes one member of the disjunction and from it draws a conclusion detrimental to the adversary.

DIRECT UNIVERSAL. It is a universal idea which expresses the nature or essence of a thing as it is in itself, without relation to other things or ideas. Synonyms: Real; immediate; metaphysical; of the first intention.

DISCRETIVE PROPOSITION. See Adversative.

DISJUNCTIVE PROPOSITION (Lat., *disjungere*, to separate). An 'either — or' statement, indicating that the implied judgments cannot be true together nor false together, but one must be true and the others (or other) false.

DISJUNCTIVE SYLLOGISM. A syllogism whose major or minor premise consists of a disjunctive proposition.

DISPARATE (Lat., *dispar*, unequal, unlike). Ideas are disparate when they neither necessarily include nor necessarily exclude each other.

DISTINCT IDEAS. Ideas which not only enable the intellect to distinguish the represented object from other

objects, but also enable the intellect to enumerate the various attributes which make up the comprehension of the object.

DISTINCTIVE DEFINITION. One which explains a thing by its properties.

DISTRIBUTIVE SUPPOSITION (Lat., *distribuere*, to give or divide). The use of a term so that it applies to all the individuals taken singly and all together as a class; the use of a term as a universal.

DIVERSE IDEAS (Lat., *diversus*, different). Ideas whose comprehension is different from each other. DIVISION. That mental operation which resolves a whole into its parts.

DIVISION, Fallacy of. The fallacy in which that is taken separately which should be taken conjointly.

EDUCTION (Lat., *educere*, to draw forth, extract). It is a process of immediate inference whereby, from any proposition taken as true, we derive others implied in it, though differing from the first in subject, predicate, or both.

EFFICIENT CAUSE. It is the agent which actively produces a thing or a new state in a thing.

ENTHYMEME (Gr., *en*, in, and *thymos*, soul, mind). An abridged syllogism, in which one of the premises or the conclusion is omitted.

EPICHIREME (Gr., *epi*, upon, and *cheir*, hand). A syllogism in which the proof is conjoined to one of the premises.

EQUIPOLLENCE (Lat., *aequus*, equal, and *pollere*, to have value). See Obversion.

EQUIVOCAL TERM (Lat., *aequus*, like, *vox*, voice, sound). A term that is used in entirely different meanings.

EQUIVOCATION, Fallacy of. A fallacy which consists in using a word in different meanings.

ESSENTIAL (Lat., *esse*, being). Belonging to the essence or nature of a thing.

ESSENTIAL DEFINITION. A statement which explains the essence or nature of a thing. Synonym: *Quidditative*.

ESSENTIAL PROPOSITION. See Analytic proposition.

EVIDENCE, CIRCUMSTANTIAL. Those relevant circumstances or facts which enable us to draw legitimate inferences to some principal fact, which fact then explains the existence and presence of these relevant circumstances or facts.

EXCEPTIVE (Lat., *ex*, out, 'from, and *cape re*, to take). An exceptive proposition is one which contains a particle of speech like 'except' or 'save,' to indicate that a portion of the extension of the predicate does not apply to the subject, or Vice versa.

EXCLUDED MIDDLE, Principle of. A principle which states that 'a thing either is or is not,' 'any attribute must be either affirmed or denied of any given subject,' 'two contradictories cannot be false together,' 'one of two contradictories must be true,' 'between affirmation and denial there is no middle course,' 'between two contradictories a middle is excluded.'

EXCLUSIVE PROPOSITION. A statement which indicates the exclusion of any other predicate from this subject or any other subject from this predicate.

EXISTENTIAL IMPORT. The implication of existence contained in a judgment.

EXPERIMENT. The observation of phenomena under selective and controlled conditions.

EXTENSION. The sum total of all the individuals and groups to which any idea can be applied. Synonyms: Denotation, application.

EXTRA-SYLOGISTIC INFERENCE. Certain forms of mediate inference which follow the general line of thought characteristic of the syllogistic figures, but do not seem to conform to the basic idea of these figures.

FALLACIES IN LANGUAGE. These are fallacies which rest upon the lack of preciseness in the words used to express thoughts.

FALLACIES IN THE MATTER. These are fallacies which are the result of confusion in the matter or things stated.

FALLACY (Lat., *fallere*, to deceive). An error or argumentation, based on the use of words or ideas which have a deceptive resemblance to truth and thereby lead to avoidable false conclusions.

FALSE CAUSE, Fallacy of. A fallacy which assigns a wrong cause to a certain effect.

FIGURE, Syllogistic. The disposition or arrangement of the middle term with respect to the major and minor terms in the premises of a syllogism.

FIGURES OF SPEECH, Fallacy of. A fallacy in which a conclusion of identity or similarity in meaning is drawn between one diction and another, due to their similarity of construction.

FINAL CAUSE (Lat., *finis*, purpose, end). The purpose or aim which induces the efficient cause to act and directs this action throughout its operation.

FIRST INTENTION, Universal of the. See Direct universal.

Fixed TERMS. Those whose signification remains the same.

FORMAL CAUSE (Lat., *form a*, form, mold, pattern, model). The inner, active part of the produced thing which is the determining element of the new (caused) reality in the produced thing.

FORMAL SUPPOSITION. The use of a term according to its signification.

GENETIC DEFINITION (Gr., *gennao*, to beget). A statement which explains a thing by its process of origin or production.

GENUS (Gr., *genos*, race, kind). A predicable or universal idea which expresses a part of the essence of its subject, that part which the subject has in common with other species in this same class.

HABITUS (Lat., *habitus*, from *habere*, to have, hold). A category or universal idea expressing clothing, equipment, physical adjuncts; or a state, as expressed by the reflexive verb.

HYPOTHESIS (Gr., *hypotith emi*, to place under; a foundation, assumption). The provisional explanation of a phenomenon, based on probable arguments, until verified (or disproved) by subsequent events.

HYPOTHESIS OF CAUSE. A hypothesis which is used to establish the cause or causes which contribute toward the

production of a phenomenon.

HYPOTHESIS OF LAW. A hypothesis which is used in an attempt to explain the manner in which the causes of a phenomenon operate.

HYPOTHETICAL PROPOSITION. One that expresses the dependence of one affirmation or denial on another affirmation or denial. Sometimes it is applied to the conditional proposition alone.

HYPOTHETICAL SYLLOGISM. A syllogism in which a hypothetical proposition occurs as the major premise.

IDEA (Gr., *eidos*, that which is seen, image). The intellectual image or representation of a thing. Synonyms: Concept; notion.

IDENTICAL IDEAS (Lat., *idem*, same, and *ens*, being). Those ideas whose comprehension is the same.

IDENTITY, Principle of. The principle which states that 'whatever is, is,' 'everything is what it is,' 'a thing is what it is.'

IGNORATIO ELENCHI (Lat., *ignorare*, to lack knowledge; Gr., *elegchos*, disproof, refutation). A fallacy in which one either proves what is not in question to be proved, or does not prove what is supposed to be proved, or disproves what has not been asserted.

IGNORING THE ISSUE, Fallacy of. Same as *Ignoratio Elenchi*.

ILLICIT MAJOR. An illicit argumentation in which the major term of a syllogism is taken wider in the conclusion than in the premise.

ILLICIT MINOR. An illicit argumentation in which the minor term of a syllogism is taken wider in the conclusion than in the premise.

ILLICIT PROCESS. An illicit argumentation in which either the major or the minor term is given wider meaning in the conclusion than in the premises.

IMMEDIATE IN'FERENCE (Lat., *in*, in, and *ferre*, to bear, produce). The method of concluding from the truth or falsity of one statement to the truth or falsity of another statement without the aid of another judgment.

IMMEDIATE UNIVERSAL. See Direct universal.

IMPLICATION. See Comprehension.

INCEPTIVE PROPOSITION (Lat., *incipere*, to begin). One that includes a declaration of time when something begins.

INCOMPATIBLE IDEAS. When the comprehension of one idea excludes the attributes of the other.

INCOMPLEX TERMS. Simple terms.

INDUCTION (Lat., *inducere*, to lead into). It is that process of reasoning in which we conclude from the individual cases to the existence of general laws or principles.

INTENSION. See Comprehension.

INTENT. See Comprehension.

INTUITIVE IDEAS (Lat., *intueri*, to see, behold). Those which are formed as the result of direct perception of things. Synonym: Immediate ideas.

INVERSION (Lat., *in*, in, and *vertere*, to turn). A method of eduction in which the mind, by means of obversion and conversion, finally arrives at a judgment in which the subject is the contradictory of the original subject.

JUDGMENT (Lat., *judicare*, to judge, pass a verdict). A judgment is an act of the mind pronouncing the agreement or disagreement of ideas among themselves.

LOGIC (Gr., *logos*, word, discourse). Logic is the science of those principles, laws, and methods which the mind of man in its thinking must follow for the accurate and secure attainment of truth.

LOGICAL DIVISION. It is the resolving of a universal idea into the members which constitute its extension.

LOGICAL OPPOSITION. The relation which exists between propositions having the same subject and the same predicate.

LOGICAL UNIVERSAL. It is a universal idea which expresses a nature common to many, precisely in so far as it is applicable to many. Synonyms: Reflex universal, universal of second intention.

MATERIAL CAUSE. It is that inner, passive part of the produced being which is determined and changed by the action of the efficient cause.

MATERIAL SUPPOSITION. The use of a word merely as a word, without regard to its inherent meaning.

MEDIAN. The middle quantity or item in a series arranged according to magnitude.

MEDIATE IDEAS. See Abstractive.

MEDIATE INFERENCE. The process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them.

METAPHYSICAL UNIVERSAL (Gr., *meta*, beyond, and *physis*, nature). See Direct universal.

METHOD (Gr., *methodos*, system). The proper arrangement of our mental processes in the discovery and proof of truth.

MODAL PROPOSITION (Lat., *modus*, manner, qualification). A composite single sentence in which the copula is so modified as to express the manner (mode) in which the predicate belongs to the subject.

MODE. The quantity or item which appears with greatest frequency in a group.

MOODS (MODES), Syllogistic. The arrangement of the premises according to quantity (universality or particularity) and quality (affirmation or negation).

MULTIPLE CATEGORICALS. Propositions which contain two or more categorical sentences in their very construction.

NECESSARY PROPOSITIONS. See Analytic propositions.

NEGATIVE TERMS Those which signify the absence of a thing.

NOMINAL DEFINITION (Lat., *nomen*, name). One that explains what a word means.

NOTION (Lat., *notio*, from *noscere*, to know). Same as Idea.

OBSCURE IDEAS (Lat., *obscurus*, dark). Ideas which represent things in such a manner that we cannot distinguish them clearly from every other object.

OBSERVATION (Lat., *observare*, to behold). The close scrutiny and examination of natural occurrences.

OBVERSION (Lat., *ob*, before, toward, and *vertere*, to turn). A process of eduction in which the inferred judgment, while retaining the original subject, has for its predicate the contradictory of the original predicate. Synonym: Equipollence.

OPPOSITION, Logical. See Logical opposition.

OVERTLY MULTIPLE CATEGORICALS. Categorical propositions which are plainly composed of two or more sentences.

PARTICULAR IDEAS. Universals taken partly and indeterminately.

PASSION (Lat., *pati*, to suffer, bear, endure). As a category it is a universal signifying the reception of an effect from another.

PERSONAL SUPPOSITION. The use of a term to signify both the nature and the bearers of this common nature.

PETITIO PRINCIPLE. See Begging the question.

PHILOSOPHY (Gr, *philein*, to love, and *sophia*, wisdom). Philosophy is the Science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone.

PLACE. As a category it is a universal idea signifying position in space.

POLYSYLLOGISM (Gr., *polys*, many). An argumentation consisting of two or more syllogisms, logically connected together in such a way that the conclusion of the preceding syllogism becomes the premise of the one following.

POSITIVE IDEAS Those which signify a real, actual thing.

POSTURE A category signifying immanent or intransitive action expressed by an intransitive verb; disposition of parts among themselves, in the sense of 'attitude.'

PREDICABLES (Lat., *predicare*, to announce). The different modes or ways in which a universal can be predicated of its subject.

PREDICAMENTS. Same as Categories.

PRIVATIVE IDEAS (Lat., *private*, to rob, take away). Those where one signifies a perfection and the other denies a perfection in a subject which naturally ought to possess it.

PROBABILITY, OBJECTIVE. That condition or quality of things and facts, when present to the mind, which enables the mind to decide for the truth of a judgment concerning these things and facts, but with the fear of the possibility of error.

PROPERTY. A predicable or universal idea which expresses something which necessarily flows from the essence, though not of the essence itself.

PROPOSITION. A judgment expressed in a sentence.

PROSODY, Fallacy of (Gr., *prosodia*, tone or accent of a syllable). See Accent.

QUALIFIED STATEMENTS, Fallacy of. The fallacy which argues from a statement which is true in a special instance (qualified statement) to the general class.

QUALITY. As a category it is a universal idea signifying a modification of the formal (determining) element in a being.

QUALITY of propositions. The modification of the copula in a sentence, making it either affirmative or negative.

QUANTITY. As a category it is a universal idea signifying a modification of the material (determinable) element in a being; extension, number.

QUANTITY of propositions. The number of individuals to whom the judgment or proposition applies.

QUIDDITATIVE (Lat., *quid*, what). Same as Essential.

REAL DEFINITION. A statement explaining what a thing is in itself.

REAL DIVISION. The resolution of a thing into the natural parts which it has independent of the mind.

REAL SUPPOSITION. The use of a term for a thing in its natural being or existence.

REAL UNIVERSAL. See Direct universal.

REASONING. See Mediate inference.

REDUPLICATIVE PROPOSITION (Lat., *reduplicare*, to double, repeat). One which contains an expression which duplicates the subject or predicate and implies the reason or cause for the connection between subject and predicate.

REFLEX UNIVERSAL (Lat., *re*, back, again, and *flectere*, to bend). See Logical universal.

RELATION (Lat., *relatia*, bearing). AS a category it is a universal idea which signifies the reference or bearing of one being to another.

RELATIVE IDEAS. Two incompatible ideas united in such a way that the one cannot be understood without the other.

RELATIVE PROPOSITION. One which expresses a relationship of time or place between two statements.

SECOND INTENTION, Universal of. See Logical universal.

SIMPLE CATEGORICALS. Propositions which are single and without any qualification or composition.

SIMPLE IDEAS. Those whose comprehension consists of one single attribute or element.

SIMPLE TERMS. One consisting of a single word.

SINGLE CATEGORICALS. Propositions consisting of but a single sentence in their construction, namely one subject, one predicate, and the copula.

SINGULAR IDEAS. Those which represent a single object only.

SOPHISM (Gr., *sophisma*, artifice, quibble). The use of deceptive words and ideas with the purpose of misleading and deceiving.

SORITES (Gr., *soros*, heap, pile). An abridged polysyllogism consisting of three or more premises in such a way that the predicate of the preceding premise becomes the subject of the following premise, the final conclusion being composed of the subject of the first premise and the predicate of the last; or, inversely, one in which the subject of the preceding premise becomes the predicate of the following premise, with the conclusion composed of the subject of the last premise and the predicate of the first premise.

SPECIES (Lat., *species*, form, figure, from *specere*, to see). A predicable or universal idea which expresses the whole essence of a thing.

SPECIFICATIVE PROPOSITION. One which contains an expression which duplicates the subject or predicate and implies the time element or condition of this connection.

STATISTICS. The classification and evaluation of group phenomena by an analysis of data supplied by enumeration and measurement.

SUBALTERNATION. The logical Opposition existing between a universal and particular affirmative, and between a universal and particular negative.

SUBCONTRARIETY. The logical opposition existing between a particular affirmative and a particular negative.

SUBSTANCE (Lat., *sub*, under, and *stare*, to stand). A category or universal idea which expresses a being existing in and for itself, needing no other as a subject in which to exist.

SUFFICIENT REASON, Principle of. The principle which states that 'every thing must have a sufficient reason to be what it is.'

SYLLOGISM (Gr., *sylogismos*, a reckoning all together, a collecting from premises, reasoning). An argumentation in which, from two judgments that contain a common idea and one at least of which is universal, a third judgment, distinct from either of the former, follows with necessity.

SYNTHESIS (Gr., *synthesis*, from *syntithemi*, a putting together, composition). The scientific method in which the mind proceeds from the simple to the complex, from the general to the special, from the universal to the particular, from the necessary to the contingent, from the 'logical whole' to the 'logical part,' from the principle to the applications of the principle, from the general law to the individual cases, from cause to effect.

SYNTHETIC PROPOSITION. One in which neither the subject nor the predicate is contained in the comprehension

of the other. Synonyms: Contingent; accidental; a posteriori.

SUPPOSITION (Lat., *sub*, under, and *ponere*, to put, place). The use of a term or word for the thing which it signifies.

TERM (Lat., *terminus*, limit, boundary). A term is a sensible conventional sign, expressive of an idea.

TESTIMONY. The information or evidence obtained from competent and reliable witnesses.

TIME As a category it is a universal idea which expresses duration of movement.

TRANSCENDENTAL IDEAS (Lat., *trans*, over, beyond, and *scendere*, to rise, climb). Supreme and fundamental ideas which admit of no strict definition because of their extreme simplicity.

UNIFORMITY OF NATURE, Principle of. The principle which states that 'Nature is uniform in its causality'; or, 'the same non-free causes, under the same conditions, will always produce the same results.'

UNIVERSAL IDEAS. They are those ideas which represent some common nature or attribute which can be applied to a class as a whole and to each individual of that class.

UNIVERSAL PROPOSITIONS. Those in which the subject is a universal term used distributively to each and all of the class.

UNIVERSAL TERM. One which expresses a universal idea and can be applied to each individual of a class and to

the class itself.

UNIVOCAL TERM (Lat., *unus*, one, and *vox*, voice, sound). A term used constantly in an identical sense.

VAGUE TERMS. Terms which are subject to shades and degrees of meaning, according to the viewpoint and use of the individual persons.

REALITY AND THE MIND

EPISTEMOLOGY

PREFACE

The validity, or truth-value, of human knowledge is the crucial problem in modern philosophy. It has agitated the minds of philosophers for three centuries, and the effects of their discussions are felt in every department of science. Naturally so. Since it lies in the very nature of epistemology to question the capability of man's mind to contact reality and to know what things are in themselves, the validity of all knowledge, and consequently also of science, is at stake. The foundations of human knowledge are challenged, examined, and frequently attacked. An acquaintance with this problem and its possible solution will be, therefore, a matter of prime importance for every seeker of truth and for every student of philosophy.

The present book is intended for those who have no previous acquaintance with the subject. In accordance with this purpose, the author has endeavored to place the problem in its proper historical setting, showing its origin and development, without confusing the issue with a large amount of historical detail. For the same reason, the subject is treated in a constructive manner, seeking a positive solution of the epistemological problem rather than giving

an extensive criticism and refutation of the individual opposing systems of thought. The language, so far as consistent with the matter under discussion, is plain and simple, avoiding what Hugh S. Elliot styles "sesquipedalian verbiage." Much of our modern philosophical jargon is so well-nigh incomprehensible as to make the underlying ideas opaque: unintelligibility is not necessarily depth. Obscurities, of course, remain, because the nature of knowledge itself is obscure; no amount of words will ever be able to clarify completely the mystery of the mind.

As for the plan of the book, the first part treats of the possibility of valid knowledge in general. The second part then takes the sources of knowledge (experience and intellection) and examines them in their individual manifestations — consciousness, sense-perception, ideas, judgments, reasoning. The investigation arrives at the conclusion that our sources of knowledge are essentially valid and trustworthy.

It is the hope of the author that this book, like his *Science of Correct Thinking*, will be of value as general reading, as supplementary to classwork, and as a textbook for students. The problem is vital and deserves concentrated study.

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PART I

**THE POSSIBILITY OF VALID
KNOWLEDGE**

Chapter 1

STATEMENT OF THE PROBLEM

KNOWLEDGE IS AT ONCE THE SIMPLEST AND THE PROFOUNDEST OF human experiences.

Nothing seems more plain to the ordinary man, and more beyond the possibility of any doubt, than the everyday facts of his knowledge. He is utterly convinced of the truth and certainty of the happenings in and around him. It never enters his mind to question the validity of his convictions concerning the knowledge of his experience. We may imagine him sitting in his lounging chair before a window and communing with his thoughts:

“It is certainly pleasant to sit here in comfort and watch the world go by. People are hurrying home from their business, chatting noisily with one another as they walk along the street. The sun appears flatter, larger, and redder every minute, as it slowly sinks in the west, and little by little the blue of the sky seems to turn into fire and gold. Soon the darkness will be here, and I shall see the distant stars. I did not think the wind was so very strong, but I see that it broke a branch from the tree in the square opposite. It is much colder than it was yesterday; I believe that will cause a frost tonight. The air is very raw outside. I ought

not have gone without a topcoat this morning. I believe I have caught a cold; I felt miserable all afternoon, I had a headache, the old pipe didn't taste, and my mind was so foggy that I couldn't control my thoughts properly, and I made a number of errors. I am not myself now. I must see my physician tomorrow; he knows my body almost as well as I know my soul."

All this seems so simple and matter-of-fact, and the knowledge contained in these statements seems so obvious and transparent, that we should scarcely consider it worthy of second thought. Much less should we think that philosophers could discover any deep and mysterious problems hidden in the desultory musings of an old gentleman seeking comfort in his easy-chair. Such, however, is precisely the case.

FACTS AND KNOWLEDGE

Many things are directly mentioned as existing, and a spontaneous conviction is expressed regarding 'facts' and 'knowledge,' in the self-communing quoted above. He 'watches the world go by.' So he is sure that there is a real world of substance, an existing universe of tremendous magnitude, consisting of earth and sun and stars. He may have no conception of the exact dimensions of this universe, nor of the distance and volume and nature of the stars; but he is sure that they are really there and that he does not merely imagine them. He speaks of *space* and *space-relations*: for people are walking 'along the street,' there is a 'square opposite,' the sun is 'sinking in the west'; he

notices a 'here' and 'there,' an 'outside' and 'inside.' He mentions *time* and *time-relations*: 'yesterday,' 'tonight,' 'tomorrow,' 'soon'; and the elements of succession in time are designated by the phrase 'every minute.' *Mathematical quantities* are affirmed: 'square,' 'larger,' 'flatter.' And also *numerical quantities* appear: 'people,' 'stars,' 'tree.' He notices the relation of part to whole in the 'branch' that is broken off the 'tree.' There are *qualities*, like 'blue,' 'strong,' 'cold'; *actions*, like 'walking,' 'sinking,' 'broke off'; *reactions*, like 'caught a cold,' the branch 'broken' by the wind; *posture*, like 'sitting in comfort'; habit us, like 'being clothed with a topcoat.'

Facts of *sense-experience* are enumerated: he 'sees' the things about him on the earth and in the sky; he 'hears' people chatting; he 'tastes' his pipe; he 'feels' sick; he is 'conscious' of his body. And so, too, facts of *intellectual experience* are noted: consciousness of the Ego or 'self,' 'thoughts,' 'knowledge,' 'soul'; states of mind, like 'belief,' 'errors'; states of will, like 'I must,' 'I ought not.'

He is aware of the great distinction between his self and things-other-than-his-self; between mind and matter; between living and inanimate things; between the subjective and objective; between the ideal and the real; between substantial and accidental being; between appearance and reality; between knowledge and opinion; between truth and error; between certainty and probability.

And many other things are contained in the data of his musings by *implication*. He is convinced that his senses, by and large, give him a true picture of the world about him and that he can trust them in their function of bringing the

world into contact with his mind by means of the sense-organs of his body. He is also convinced that his intellect, through judgment and thought, can acquire a knowledge of the world and of himself which is true and valid and certain. He realizes that his mind can make 'errors' and that appearances may deceive (as when the sun 'appears' flatter, bigger, and redder, and when the sky 'seems' to turn into fire and gold); but he also realizes that his mind can detect errors and correct deceiving impressions, finally arriving at truth. Furthermore, he knows that truth is objective, that his mind does not fabricate truth but merely discovers it, and that his mind will possess *truth* only when it agrees in its judgments with the things *as they are in themselves*.

SPONTANEOUS CONVICTIONS

Facts of everyday experience, such as those mentioned above, could be multiplied indefinitely. The ordinary man has a *spontaneous and unshakable conviction* that they are genuinely true. No amount of argument could convince him that his knowledge is not valid. He may not be very clear in his own mind about the scientific and philosophic grounds and proofs for this conviction, but of the reality of the world and of the truth of the facts he entertains not the slightest doubt. His common sense tells him that he is right. Every moment of his life, from the cradle to the grave, confirms his convictions that the world outside and around him is as he experiences it to be and that his knowledge of it is a correct insight into its reality. The whole substance of these

convictions can be summed up in this: ' *the world is objectively real and man has a genuine knowledge of it as it is.*

They are not forced convictions, accepted by the mind against its better judgment; rather, they are spontaneous for the very reason that they are the *natural* and *obvious* interpretations of the things and happenings in which man lives, and all together they form a system of knowledge which agrees with the demands of his rational nature. Man lives with and by and in these convictions, and these convictions are found by daily experience to be in accord with the facts as he knows them. Hence, he never questions their truth and validity; to him they are self-understood and self-demonstrative, and he feels perfectly safe in their possession.

This, of course, is strong *presumptive evidence* in their favor. If man's whole life can be regulated by them, in a practical as well as in a rational manner, then it is a *prima facie* proof that he is right in his assumptions. It would, then, seem superfluous for the scientist and philosopher to investigate the grounds and reasons of these spontaneous convictions. But such is not the nature of the human mind in its insatiable desire for deeper and more extensive knowledge. Man's mind simply cannot rest satisfied with the obvious and transparent explanation of facts. The urge for knowledge prompts him to investigate the *foundations*, the *ultimate grounds and reasons*, the 'how' and 'why,' of these spontaneous convictions.

THE PROBLEM OF KNOWLEDGE

It is this urge for knowledge which accounts for the rise and development of the *sciences*. Not satisfied with the superficial appearance of things, as the ordinary man sees and knows them, chemistry searches for the component elements of bodies, their activities and energies, their nature and qualities, their workings and the laws of their combinations. Gases (e.g., air), fluids (e.g., water), and solids (e.g., stones) are now understood to be, not bodies consisting of homogeneous material, but chemical compounds of very divergent elements united in definite quantities according to definite proportions under definite laws through the expenditure of definite amounts of energy. Not satisfied with the ordinary explanations of physical happenings in nature, physics attempts to discover their underlying causes and to chart their course of action from start to finish. Not satisfied with the common view that life in all its phases and functions is an inexplicable mystery, physiology and biology and kindred sciences have probed deeply into the hidden recesses of living organs and tissues and have wrested from them many secrets hitherto unsuspected. Many things concerning life have advanced into a clearer stage of scientific knowledge: among others, cell organization and function, the origin and growth of organisms, bacterial infection with corresponding medical treatment and international disease control, aseptic surgery, the proper distribution of nutritive values in foods. Similar progress has been made in the other sciences, due

to the urge for deeper knowledge inherent in the human mind.

All of this shows that scientific investigation of such problems is not a futile occupation. In many instances age-old spontaneous convictions have been confirmed by science, and in other instances they have been disproved. Many supposedly certain truths have had to be discarded, to give place to more reliable information. Thus, to mention a case in point, the Ptolemaic geocentric system, in which the earth was considered to be at the center of the universe with the sun and moon and stars revolving around it, has been proved by science to be false and has had to make room for the Copernican heliocentric system, in which the earth was relegated to the secondary position of one among many planets revolving around the sun.

This one instance has an important bearing on the problem of spontaneous conviction and knowledge. From the standpoint of human experience, nothing appears more plain than that the sun revolves around the earth. Yet we now know that the moon does, and the sun does not; but to all appearances *both* sun and moon travel through the sky in the same way. Similarly, due to the atmospheric refraction of light, both sun and moon are seen in the east before they are above the horizon, and in the west they are seen *after* they are below the horizon. Both are seen as deep-red in color when they rise and set; and both balloon out to a number of times their normal size, with bulging sides and flattened upper and lower poles; they shrink as they ride to the zenith and grow larger as they descend. Actually, however, the sun and the moon do not increase

and decrease in bulk, and at no time are they red in color. Again, the sun never actually grows warmer in the course of the day, nor is it any hotter in summer than in winter, nor does it change its position in the sky during the seasons of the year: its position in the firmament and its temperature are always the same. But the testimony of our senses seems perfectly clear regarding these changes, and mankind for thousands of years has had a firm, spontaneous conviction of the truth of this testimony. And even though science has furnished indubitable proof that our spontaneous conviction is wrong, our sense-experience still testifies to the same phenomena as before. Of course, there is an explanation for these phenomena but the fact remains that *spontaneous convictions can be radically wrong*, even when based on apparently irreproachable evidence of the senses. This, as will be seen later, is borne out by many instances besides the case mentioned above.

From the above it will be clear that the philosopher has a right to question the validity of the spontaneous convictions of man and to investigate their claim to truth and certainty. Just as it is necessary to examine the foundations of the ordinary man's views on nature and physical phenomena, so philosophy needs to lay bare the ultimate grounds and reasons of man's knowledge and spontaneous convictions, in order to see whether they will survive the test of a critical examination in the light of reason. If they survive, then they will be so much the firmer, since they will rest upon a scientific foundation; if they are disproved, then they must be discarded as obsolete and irrational, the same as many naive and unscientific ideas of a bygone age

regarding physical phenomena and their causes. Man is a part of nature, and his knowledge is also a phenomenon of nature; as such it should be analyzed and examined in its origin, development, and truth-value, to see whether it really gives us a true interpretation of the world around us and can lead us to a well-reasoned certitude. For that is the purpose and function of philosophy: to investigate and demonstrate the ultimate grounds and reasons of things.

To the ordinary man nothing seems simpler than his knowledge; but to the philosopher the problem of knowledge is by no means so simple as it seems. The speculative mind of the philosopher discovers a multitude of knotty questions which puzzle him sorely and for which he would fain find a solution. He is not at all sure that the spontaneous convictions and beliefs of the ordinary man deserve the credence accorded them. Science has disillusioned man regarding many of his century-old notions and convictions; and science itself has gone through many battles of conflicting opinions and hypotheses, reversing its conclusions in more than one instance. It is, therefore, no idle question to ask: What can we know? How far can the mind of man reach? Is valid knowledge really attainable? Is truth objective? Can we be absolutely certain about anything?

The *inductive* sciences, such as physics, chemistry, astronomy, geology, biology, physiology, and anthropology, are all based on ideas, principles, and laws derived from the objects and operations of nature, and the knowledge acquired in and through these sciences is almost entirely the result of sense experience and experiment. Even the

deductive sciences, like arithmetic, algebra, geometry, trigonometry, and calculus, are based on the ideas of quantity derived from space and number in material nature. The sciences, therefore, depend upon the validity of sense-perceptions and intellectual concepts to guarantee the foundations upon which they rest. Science, after all, is a body of universally applicable truths, formulated by the intellect as the result and expression of innumerable inductions and deductions. The value of the sciences will, therefore, necessarily remain in doubt until philosophy has given a satisfactory account of truth, certainty, and the ultimate validity of human knowledge in general. Thus it is imperative to vindicate the validity of knowledge both from the empirical and intellectual side, because science is the combination of both these phases.

EPISTEMOLOGY, THE SCIENCE OF KNOWLEDGE

Epistemology (from the Greek, *ἐπιστήμη*, knowledge, and *λόγος*, doctrine) is *the science of the validity, or truth-value, of human knowledge*. It is a 'science'; that is, it is a definite body of truths, derived from reasoned demonstrations of causes and reduced to a system. It is the 'science of *human knowledge*.' Here we have the general subject-matter of epistemology: it is not the purpose of this department of philosophy to investigate the nature of the human mind and its faculties, but that phase of the mind's activity which we designate by the term 'knowledge.' It is the 'science of the *validity, or truth-value, of human knowledge*.' This is the special or formal subject-matter of epistemology,

distinguishing it from the other departments of philosophy and from every other science. The sciences are concerned with knowledge, because they increase our knowledge of things; but they do not treat of knowledge from the standpoint of its 'validity' or 'truth-value.' It is the purpose of epistemology to submit our knowledge to a critical examination and investigate the *rational grounds* on which it rests, so as to discover whether and why we are justified in having the spontaneous conviction that our knowledge is valid and true in its claim to be a faithful interpretation of reality.

The definition shows us in what way epistemology differs from logic and psychology — two sciences closely related to epistemology. *Logic* is the science of 'correct' thinking. It gives us the laws and methods which we must follow, if we desire to avoid error and inconsistency in our mental acts; it is concerned chiefly with the proper arrangement of our ideas, judgments, and argumentations, so that a legitimate conclusion can be drawn from given truths. *Psychology* is the science of the soul in its nature and activities. This embraces everything pertaining to the soul of man, including knowledge. But so far as knowledge is concerned, psychology endeavors to lay bare its origin and nature, rather than its validity or truth-value. *Epistemology*, as a special science, leaves aside the formal correctness, the origin and nature of the act of knowledge, and seeks to establish its 'validity' and 'truth,' in so far as it is supposed to be a knowledge *of things*. For that is a peculiarity of human knowledge: we are convinced that it actually makes us acquainted with reality and gives us a true conception of

reality as it is in itself. This conviction, however, cannot simply be assumed; it must be established beyond reasonable doubt, otherwise philosophy and science will be without secure foundation. It is plain that, because of the close relationship existing between logic, psychology, and epistemology, epistemology must at times reach over into the fields of the other two sciences, because an understanding of the laws and nature of thinking is necessary to form a proper judgment about the truth-claim of knowledge. As such, then, epistemology differs from logic and psychology.

The term 'epistemology' is of comparatively recent origin. Formerly it often went under the names of 'applied logic,' 'material logic,' 'critical logic,' or 'noetics.' Now it is customary to separate this part of philosophy from logic and treat it as a special science. The reason for this procedure lies in the fact that the problem of knowledge has become the major philosophical problem of the past three centuries. This does not mean that the validity of human knowledge had received little attention in the preceding ages. It had been discussed since the very beginnings of philosophy in ancient Greece; but it has never held the predominant position in the minds of thinkers that it occupies today. Today it is the problem of philosophy. The importance of the problem will become apparent as we advance in our investigation.

Epistemology is sometimes called *criteriology*. But there is a distinction between the two. Criteriology, as the term implies, is the science of the *criteria of truth*. The criterion of truth is the norm or test or standard which enables us to

distinguish truth from error. Any theory of knowledge, to be complete, must treat of the criterion of truth; but there are many other questions involved in the validity of knowledge. Criteriology, therefore, is only a *part* of epistemology and as such does not cover the entire field usually assigned to what is known as the problem of knowledge.' Epistemology, on the other hand, considers this wider and more fundamental problem in all its phases. Criteriology asks the question: What distinguishes truth from error? Epistemology asks the question: Is our knowledge of things objectively valid and true? Plainly, we can inquire into the existence and nature of the criterion of truth only after we have established the prior fact of the validity, or truth-value, of our knowledge in general.

This, then, is the problem which confronts us: To investigate human knowledge and seek to determine the *rational grounds* upon which the *validity* of our spontaneous convictions are based. If we can establish this validity, these convictions will be critically and philosophically justified; if we cannot, our common and scientific knowledge must be considered to be nothing better than conjectures which may give us more or less probability but never the security of philosophic certitude.

SUMMARY OF CHAPTER 1

The act of knowledge seems a very simple thing; it is, however, a rather mysterious and profound experience.

1. *Facts and Knowledge.* To the ordinary man his knowledge is without question *valid*. This refers as well to intellectual knowledge as to sense-knowledge.

2. *Spontaneous Convictions.* Man has the spontaneous conviction that the world is objectively real and that his knowledge of it is true. He possesses many convictions of this sort regarding physical, intellectual, and moral matters. The convictions are *natural*, and as such they have a strong presumptive value. The philosopher, however, feels the necessity of inquiring into the *ultimate rational grounds* of these spontaneous convictions.

3. *The Problem of Knowledge.* The natural urge for knowledge accounts for the progress of the sciences. Science has disproved many spontaneous convictions of the past, for instance, the conviction that the sun moves around the earth. The truths of science depend on the validity of sense-perception and of intellectual concepts. Hence, it is necessary to establish the validity of knowledge.

4. *Epistemology.* It is the *science of the validity, or truth-value, of human knowledge*. Epistemology is also called 'applied logic,' 'material logic,' 'critical logic,' or 'noetics.' *Criteriaology* is a part of epistemology.

READINGS

P. Coffey, *Epistemology*, 1917, Vol. I, pp. 1-24; D. Card. Mercier, *A Manual of Modern Scholastic Philosophy*, 1916, Vol. I, pp. 343, 344; J. G. Vance, *Reality and Truth*, Ch. I; J. Barron, *Elements of Epistemology*, 93, Ch. I; B. P. Bowne, *Personalism*, Ch. I; R. W. Sellars, *Critical Realism*, Ch. V

Chapter 2

IDEAS FUNDAMENTAL TO THE PROBLEM

BEFORE WE CAN UNDERTAKE THE INVESTIGATION OF THE PROBLEM of knowledge as such, it will be necessary to examine and define the ideas underlying the problem. Altogether too much confusion arises from a loose use of terms, and this obscures the issue and hampers proper thinking. In giving these nominal definitions it should be borne in mind that in no way do we intend to prejudge the fundamental validity of these ideas. Their ultimate value will have to be determined by the outcome of our investigation as a whole. But we must begin somewhere, and the ideas and terms used must have some definite meaning to start with. We, therefore, accept these ideas and terms in their obvious and current meaning. It is in this meaning that the problem has originated, and it is precisely in this meaning that the problem has significance. Ideas such as 'knowledge,' 'truth,' 'error,' 'certitude,' 'doubt,' 'subject' and 'object' have a distinct connotation in the minds of the ordinary man, and it is their ultimate validity which is at stake. Hence, the signification of such ideas must be clear before we can intelligently proceed to the problem itself.

KNOWLEDGE

When we speak of the 'problem of knowledge,' it is not a question whether man possesses 'knowledge.' That is a fact which no one denies. So we must begin with the idea of 'knowledge.'

Knowledge is a primary fact of human life and experience. Everyone understands what it means 'to know,' 'to have knowledge.' But when we attempt to explain and analyze this idea, we immediately encounter difficulties. Just because it is a *primary fact of experience*, the idea of 'knowledge' eludes every effort at an exact definition. We can point out certain *characteristics* of 'knowledge' and adduce definite *instances* of 'knowledge,' but we cannot really define it. 'To know' is on a par with 'to see,' 'to taste,' 'to touch,' 'to imagine,' 'to will.' Man is simply conscious of these states of his being and gives them a name; and thus he arrives at the idea and the term. It is useless to try to explain to a man born blind what 'color' or even 'seeing' is; just as it is useless to explain to a man born deaf what 'sound' or 'hearing' is.

We can place a man in a certain position and say to him: 'Open your eyes and tell me what you see across the park.' 'I see the Court House.' 'You are sure of it?' 'Yes, I am sure of it.' 'Then you *know* that the Court House is there.' Or we can say to him: 'Listen; do you recognize the melody?' 'It is the Funeral March of Chopin.' 'Good; then you *know* the melody.' Again, we may notice that he looks ill and ask: 'What is the matter?' 'I have a headache.' 'Well, then you

know what pain feels like.’ And so on. It is the experience of this sort which constitutes ‘knowing’ and ‘knowledge.’

Now, there are three elements which enter into knowledge: the knowing *subject*, the known *object*, and the *mental act of knowing* (cognition). The ‘subject’ is the one who knows; the ‘object’ is the thing that is known; and ‘cognition’ or ‘knowing’ is the mental act which makes this object known to the subject.

The *subject*, the knower, is man, as we notice it in the phrase: ‘This man knows his business.’ Taken individually, it is the Ego, the ‘I myself,’ who am the knowing subject, for we say: ‘I know this house, this game, this boy.’ All our activities are referred to the Ego as the subject. We become aware of this, if we reflect upon the following expressions: ‘I walked a mile; I saw an accident occur; I feel a pain in my side; I taste garlic in my food; I smell a pleasant odor in the kitchen; I thought about the depression; I know about the plans of my friend; I was conscious of the act.’ Knowledge, then, as a mental activity, belongs to the *Ego*, the *self*, as the ‘subject’ who knows. And it is in this sense that the idea of ‘subject’ must be taken in the epistemological problem of knowledge, because that is the spontaneous conviction involved in our way of thinking.

The *object* of knowledge is anything and everything that is, or becomes, or can be, known by man. According to man’s spontaneous conviction the objects of his knowledge comprise his own self, various conscious states of his self, and also realities-other-than-self. That he knows his own self, is clear from expressions like these: ‘I myself will go; I am myself and no other.’ That he knows his own conscious

mental states we have seen in the preceding paragraph. That he knows realities-other-than-self, is a plain fact which he manifests in numberless judgments of everyday life: 'The sun is shining; the wind is blowing; the meal is good; this building is tall; some roses are red.' In all such judgments the ordinary man refers his knowledge to some object, and he is sure that the object is as real as the subject. Whether his common-sense view that such 'realities-other-than-self' belong to an exterior world with an independent existence of their own outside man's mind, is precisely one of the problems to be solved. But that every act of knowledge must be a 'knowledge of *something*' and therefore refer to some 'object,' is perfectly clear and is disputed by nobody.

The 'object' becomes known to the 'subject' by the *act of knowing*. This act, of course, takes place in the subject or knower. It is a *unitive* act, in as much as it brings the object and the subject into contact with each other, thereby rendering the object 'present to' the subject and making the subject aware' of this presence of the object. Before being known, the object is merely an 'object-in-itself'; but through and in the act of knowing it now becomes an 'object-to-the-mind.' And it is by becoming an *object-to-the-mind* that a thing becomes 'known.' Somehow or other, then, an external physical object (if there be such) must become united to the mind of the subject by means of the cognitional act and be presented to the Ego as an 'object-to-the-mind,' in order that it can become 'known' by the subject; in other words, the object must become *intra-mental* and *intra-subjective*, before it can be known. A simple example may make this clearer. I see a burning

house and 'know' it to be burning. How do I get to know this fact? The house is perhaps a hundred yards from where I stand. Surely my mind does not leave my person, cross the intervening space, and physically contact the flaming building; nor does the burning house leave its foundation, travel over to me, enter my mind, and then actually burn inside my person. Nevertheless, the burning house and my mind must become united in some way, or I could not *know* that the *house* is burning. Since the house has no physical presence inside my mind, it must have a *cognitional presence* there by means of sense-perception and thought. An object, then, in order to become 'known' by the subject, must acquire an intra-mental and intra-subjective presence or existence, must become an 'object- to-the-mind,' must have a 'mental objectivity,' must become an 'ideal being.' The very act of knowledge demands this sort of presence of the object in the subject; otherwise no union would take place between subject and object, and 'knowledge' would not be possible. The question, of course, arises: Has this object (for instance, the burning house mentioned above) a real, extra-mental existence of its own outside the self and the mind, independent of the cognitional existence which it has in the mind in the act of knowledge? The ordinary man is convinced that it has an objectively real existence outside the mind; idealists on the contrary, assert that we can know nothing but what takes place subjectively in our mind, and that we therefore have no right to affirm the existence of any thing-other-than-self. And so we again are face to face with the fundamental problem of knowledge. Whatever the solution, this much is clear and recognized by all: an

‘object,’ in order to be known, must be *cognitionally present* in the ‘subject’ in the ‘act of knowing.’

The ‘subject,’ the ‘object,’ and the ‘act of knowing’ are thus the essential elements necessary for knowledge. Whatever pertains to, or proceeds from, the subject is *subjective*; and whatever pertains to, or proceeds from, the object is *objective*. The state or condition of ‘being subjective’ or ‘being objective’ is then styled ‘subjectivity’ or ‘objectivity.’ And anything that pertains to, or proceeds from, the act of knowing or cognition is termed *cognitional or intentional*. Knowledge will thus be either subjective or objective; viewed from the standpoint of the subject who knows, it is ‘subjective’; and considered as referring to the object which is known, it is ‘objective.’ So much for knowledge as it exists in the knower.

TRUTH AND ERROR

Knowledge has the quality of *truth* and *error*. The absence of knowledge in a being capable of possessing it is termed ignorance; thus, a man who does not know whether zinc is an element or a compound is in ignorance as to the nature of zinc. The absence of knowledge in a being incapable of possessing it is termed *nescience*; an animal, like a dog, does not and cannot know whether zinc is an element or a compound, and he is in a state of nescience regarding this fact.

It is only in the act of knowledge that we have truth and error. Truth and error enter into our knowledge, when this knowledge is expressed in *judgments*; that is, when we

affirm or deny something of something else. If what we affirm is really so as we affirm it to be, we have truth; but if it is not really so, we have error. And reversely, if what we deny is such that it is correctly denied, we have truth; otherwise we have error. For instance: I take a piece of metal in my hand, examine it, and state mentally, 'This is brass and not gold.' I both affirm and deny something here of the metal in my hand; I affirm it to be 'brass' and I deny it to be 'gold.' If this metal is really brass and not gold, then my double assertion (affirmation and denial) contains truth; but if it be really gold and not brass, then I am mistaken, and my double assertion contains error. As long as I merely look at the metal and form an idea of it, my knowledge is neither true nor false; but as soon as I apply an idea to the metal and mentally assert (affirm or deny) something about this metal in a judgment, then this judgment-knowledge automatically becomes true or false, depending upon whether or not my judgment and assertion corresponds to the reality-in-itself. Truth and error, therefore, are found in the judgment. This is mental or *logical truth* and it consists in the *conformity of the mind to the thing*. *Logical error* is defined as a *disconformity of the mind to the thing*. When we speak of truth as the 'conformity' of the mind to the thing, we do not mean that the 'nature' of the mind must conform to the 'nature' of the thing; we mean that the mind must conform to the thing 'cognitionally' in its judgment.

There is, however, also *truth* in the *things*. We have, for example, a very definite notion of the metal called 'silver.' This notion or idea of 'silver' involves a number of subordinate ideas regarding the color, the specific gravity,

the malleability, the hardness, the chemical constitution of silver; and this notion is a norm or standard to which a metal must conform in order to be designated 'silver.' If the metal agrees with this standard, it is true silver, otherwise it is false silver. The silver used in jewelry and that used in government coins is true 'silver'; but German silver, being an alloy of copper, zinc, and nickel, is false silver, because the real 'silver,' being a chemical element of its own, contains none of these metals. When a stenographer copies a letter, and the copy does not agree with the original, then the copy is false or erroneous; only if the copy agrees in every respect with the original is it considered a true copy. When, therefore, objects conform to a recognized mental norm or standard, they are said to possess 'truth of being' or 'ontological truth.' *Ontological truth* is thus defined as the *conformity of a thing to the mind*. Reversely, *ontological error* consists in the *disconformity of a thing to the mind*.

From the above explanation it will be clear how truth in general must be defined: it is the *conformity between mind and thing*. *Error in general is the disconformity between mind and thing*. Men universally distinguish between truth and error and consider them irreconcilable opposites. In epistemology we must deal with *logical* truth and error, because its problem is concerned with the validity of human knowledge. The fundamental question is this: Can the mind *transcend itself*, reach to reality outside itself, *conform to reality*, and thereby acquire *truth*? There can, of course, be no question whether men think they can acquire a true knowledge of reality; all men have a natural, spontaneous, universal, and unshakable conviction that their mind knows

many truths which give them a trustworthy insight into the nature and qualities of things. They are certain that their knowledge *does* conform to reality. The *fact* of this conviction concerning the possession of logical truth is acknowledged by all; whether and how far this conviction is *justified*, will have to be determined by the critical examination of all the data and facts in the case. At present we are merely interested in acquiring a clear conception of the ideas and terms involved. For that purpose it was necessary to specify the exact meaning of 'truth' and 'error' in so far as they may be found in human knowledge.

DOUBT, OPINION, CERTITUDE

Regarding many things man is certain that he possesses knowledge. He is equally certain that there are far more things of which he is totally ignorant. Again, he is conscious of the fact that he has made many errors in the past and that much of his present knowledge may be erroneous. He realizes also that he has no exhaustive and fully adequate knowledge of things, not even of himself. The consciousness of all this is reflected in his mental attitude toward the things he knows or thinks he knows. These attitudes are *doubt, opinion, and certitude*.

Doubt is that state of the mind in which a *suspended judgment* ensues, due to the mind's inability to decide whether the judgment is true or false. If the mind can discover no reasons, or practically no reasons, which enable it to come to a decision regarding the truth or error of its judgment, then the doubt is *negative*. If it has discovered

reasons, but if they are of practically equal weight for and against the truth of the judgment, thereby making a decisive judgment impossible, then the doubt is *positive*. In both cases the result is the same: the fear of error cannot be overcome, and the judgment remains suspended. For example: Dark, heavy clouds are scurrying across the sky, and it looks as if it would rain. But the wind is high, and the clouds are traveling fast. Will it rain? The appearance of the weather indicates rain; but, the high winds may drive the clouds away. It might rain, but I fear it will not, and so I suspend my judgment: I doubt. Another case: Will the Army or the Navy win this year's football game? Both have brilliant players; the one team is noted for its power, the other for its deceptive plays. The situation is such that the mind can come to no real decision: it doubts. And so there are innumerable instances where man cannot overcome his doubts.

Opinion is a state of the mind in which it *decides* for the truth of a judgment, but with *fear of the possibility of error*. The best that the mind can attain with regard to the truth of its judgment is a certain amount of probability. The reasons are good on both sides of the question; but the mind realizes that reasons for making the decision are weighty enough to justify adherence to one side of the question rather than to the other. The fear of error, however, hinders the mind from giving an unqualified assent to the judgment; there is still lack of certitude. Here is a case in point: Will the communists continue to rule for any great length of time in Russia? The fact that they have ruled so many years is a good reason to assume that they

will. But the fact that their rule is imposed by force and is fundamentally contrary to human nature, is apparently a better reason to suppose that it cannot last. If I decide for the latter side of the question, I have an 'opinion' that the communists will not continue to remain in power for any great length of time. Or, supposing all the evidence in a criminal case has been presented in court, and it is circumstantial and conflicting. I may weigh this evidence and decide that the defendant is guilty, although I realize that there is good evidence against such a judgment: I have formed an opinion on the case.

Both in doubts and opinions there is lack of certitude. In doubts I can come to no decision, but in opinions I make a decision. In neither instance, though, can I overcome the fear of the possibility of error. The mind is in a condition of hesitancy and uneasiness and remains in this attitude as long as a prudent fear of error lingers on. As soon as this fear of error is definitely overcome, hesitancy and uneasiness vanish, and the mind is at rest in a state of certitude. [*atorexia ed.*]

Certitude is the state of the mind in which it gives a firm assent to a judgment *without fear of the possibility of error, due to recognized valid reasons*. Three elements, therefore, enter into the concept of certitude: the firm assent to the judgment, the absence of fear of possible error, and the understanding of the valid reasons which exclude this fear. The absence of the fear of possible error is the negative factor which distinguishes certitude from doubt and opinion, while the consciously apprehended valid reasons for the firm assent of the mind are the *positive* factor of

conviction or certitude. This, of course, does not mean that the mind is really infallible in these convictions and that error is impossible in all these judgments. What it does mean, though, is that the mind is subjectively certain of its grounds and does not fear the possibility of error; it is convinced that it is in possession of knowledge which is true and valid. The educated man and the savage alike are convinced that the sun is an existing reality in the sky. The savage, furthermore, is convinced that the sun actually travels through the sky from east to west in the course of the day, while the educated man is certain that it does not; one of these two (subjective) certitudes must be wrong, because they are contradictory and mutually exclusive and cannot be true at the same time. While, then, subjective certitude does not exclude the possibility of error, it does always exclude the *fear* of error in the mind of him who possesses certitude.

Concerning the *motive of certitude*, which influences the mind in giving a firm assent to a judgment, there exists a difference in value; and this difference in value produces increasing degrees of certitude. We are conscious of the fact that we are not equally certain of all truths, even though all these truths are certain to our mind. There is a considerable range of 'more and less' in our certitude. Thus, I am sure beyond doubt that a country like China exists, even though I have never been there; but I am more sure of the existence of the United States than I am of China, for the simple reason that I live in the United States. So, too, I am convinced of the spirituality of my soul, because I can prove it to my mind beyond reasonable

doubt; but I am more certain of the reality of my body, because I have an immediate awareness of my body's presence. And so with many other truths.

There is *moral* certitude, *physical* certitude, and *metaphysical* certitude. *Moral* certitude is based upon a moral (not to be confounded with 'ethical') law, upon the customary natural conduct of human beings in a given environment and under given conditions. It has been observed that men under such circumstances act and react uniformly in the same way. We are, for instance, certain that 'Parents love their children.' While we realize that some parents do not conform to this law of human conduct, and that consequently we might be mistaken in individual cases, we feel certain that the law, generally speaking, expresses a truth. 'A nation, whose citizenry lives in reasonable comfort, is not prone to revolution,' is a similar truth which is morally certain. 'Youth is gay and craves excitement,' is another.

Physical certitude is based upon a physical law of nature, and the latter is considered to be uniform, necessary, and universal. Exceptions to such a law are impossible in the natural order of things. Only nature's Creator and Lawgiver could suspend the effects of a physical law. Such laws are, for example: 'Gases expand in heat'; 'water will freeze at sea level, when the temperature drops to 32° F.'; 'a body, whose specific gravity is less than that of water, will float in water'; 'two parts of hydrogen, when united to one part of oxygen, form water'; 'a magnet will attract iron.' In such and similar cases we are physically certain that our judgments are true. We have no fear that the opposite will

happen, except through a miracle. Physical certitude is far greater than moral certitude. Necessity rules in the physical laws; while in matters of customary conduct the human will can bring about individual exceptions.

Metaphysical certitude is based upon a metaphysical law, an exception to which is intrinsically impossible, because it would involve a contradiction in itself. We are utterly convinced that no power, not even the Omnipotent Himself, can change truths like the following: ' $2 + 2 = 4$ '; ' $7 + 5 = 20 - 8$ '; 'the part is smaller than the whole'; 'everything must have a sufficient reason for its existence and being'; 'every change demands an adequate cause'; 'a circle is no square.' There is an absolute necessity to these things which nothing can ever alter, and our certitude is in proportion to this recognized necessity: it is an irresistible certitude.

A mere glance at the truths contained in the judgments expressing these three classes of truths will show us that there are *increasing degrees* in our certitude regarding them. We have moral certitude concerning many things, but it does not give us the firmness of assent which we possess with respect to truths of the physical order; and the firmness of our assent in metaphysical certitude is far superior to that given to truths of the moral and physical order. All three classes of truths produce certitude in our mind; but the *motive* of certitude is greater in the one than in the other, causing a correspondingly firmer assent.

Once again, however, it must be remembered that our sole purpose here is to explain and delimit the idea of *certitude* as it is found to be present in our consciousness,

without intending to presuppose the reasonableness and justifiability of this idea. The fact is that we do possess these different types of certitude and that men in general are convinced of their validity. How far they are justified in this assumption is a question still to be answered in the course of our investigation. We may not prejudge the issue. Clarity in our ideas, however, is an essential requisite for rational discussion. We can hope to arrive at a correct solution of this difficult and important problem only when the fundamental ideas of 'knowledge,' 'truth,' 'error,' 'doubt,' 'opinion,' and 'certitude' are clearly understood in their relation to each other and to the problem at large.

These ideas are basic; they lie at the very root of knowledge; and their proper understanding should assist materially in preparing us to meet the problem of knowledge in an intelligent manner.

SUMMARY OF CHAPTER II

It is necessary to examine and define the ideas underlying the problem of knowledge.

1. *Knowledge*, being a primary fact of experience, like 'seeing,' 'hearing,' etc., is incapable of an exact definition. 'Knowing' is simply a matter of experience and consciousness. Three elements enter into knowledge: subject, object, and the act of knowing.

The *subject* is the one who knows — man, the Ego, the 'I myself.' The *object* is the thing known. Man knows his self, his conscious mental states, and realities-other-than-self. The *act of knowing* makes the object 'present to' the subject and makes the subject 'aware' of this presence of the object. In the act of knowing, an object becomes an 'object-to-the-mind,' an 'ideal being,' by means of its 'cognitional presence.'

2. Knowledge has the quality of *truth* and *error* in its judgments. *Logical* truth is the conformity of the mind to the thing; logical error is the disconformity of the mind to the thing. *Ontological* truth is the conformity of the thing to the mind; ontological error is the disconformity of the thing to the mind. *Truth in general* is the conformity between mind and thing; error in general is the disconformity between mind and thing. Men universally distinguish between truth and error and consider them irreconcilable opposites. The fundamental problem is: Can the mind *transcend itself*, *conform* to outside reality, and thereby acquire truth?

3. The attitude of the mind toward knowledge is threefold: doubt, opinion, and certitude.

Doubt is that state of the mind in which a *suspended judgment* ensues, due to the mind's inability to decide whether the judgment is true or false. It is either negative or positive.

Opinion is a state of the mind in which it *decides* for the truth of a judgment, but with fear of the possibility of error.

Certitude is a state of the mind in which it gives a firm assent to a judgment *without fear of the possibility of error*. The absence of this fear is the negative factor of certitude; the consciously apprehended reasons for the firm assent are the positive factor. There are *degrees* of certitude. If the *motive* of certitude is based on the law of customary human conduct, we have moral certitude; if it is based on a physical law, it is physical certitude; if it is based on a metaphysical law, it is *metaphysical* certitude: the firmness of the assent increases in this order.

It is the purpose of epistemology to investigate the validity of these ideas.

READINGS

P. Coffey, op. cit., pp. 25-43; 71-90; D. Card. Mercier, op. cit., pp. 346-350; John Rickaby, *The First Principles of Knowledge*, 1926, Part I, pp. 1-68.

Chapter 3

SPECIFICATION OF THE PROBLEM

THE FIRST REQUISITE FOR A RATIONAL SOLUTION OF THE PROBLEM of knowledge is a clear understanding of the ideas and terms which underlie the problem as a whole. The preceding chapter has made us acquainted with these basic ideas and terms. The next requisite will be an exposition of the general *facts* which are *given* and *granted* by all, which form the common ground upon which all stand, which constitute the undisputed basis of the problem, and which are the universal starting point of all inquiry.

Knowledge we have. No one seriously doubts that we possess what is termed 'knowledge,' considered as a subjective state of the mind. What worries the philosophers is the firm and spontaneous conviction entertained by the generality of men, educated and uneducated alike, that this knowledge is a faithful representation of reality *as it is in itself*. They are not so sure that the ordinary man's claim to 'truth' in this knowledge is justifiable beyond reasonable doubt. They feel that these Spontaneous convictions must be critically investigated before their validity can be admitted. These convictions are obvious facts. We have them, and they cannot be argued out of existence. That they

produce in us a subjective certitude is also admitted as a fact; but what philosophers desire to establish is, whether this subjective certitude is grounded on *objective reality*. That is the vital question. It will be necessary, therefore, to make a general survey of these spontaneous convictions of mankind, considered solely as facts, in order to obtain a clearer conception of the problem.

CONVICTIONS BASED ON SENSE-PERCEPTION

All epistemologists admit that we have sense-perceptions, viewed as subjective states of our mental life. The knowledge obtained thereby is derived through various bodily senses; and man has the spontaneous conviction that this knowledge acquaints him with the reality of a material world.

There is the sense of *sight*. Nothing is clearer to the ordinary man than that what he sees is actually what and where he sees it to be. His own body, buildings, trees, fields and hills, the sun and the moon and the stars — he is convinced that he sees these things simply because they are parts of the outside world around him. They are present, whether he sees them or not; they have an existence of their own, independent of his perception of them, and they will retain their reality even when he is blind or dead. So, too, color and light are objective realities for him: the sun and the stars really shine, the rose is really red, and the grass is really green. The whole matter is simply too evident to be doubted. He feels so safe in accepting this knowledge conveyed to him by the sense of sight, that he would rather

question the sanity of anyone doubting these things than entertain any misgivings concerning this knowledge itself.

Taste and *smell* confirm him in his conviction of the reality of things. Sugar is sweet, acid is sour, quinine is bitter, brine is salty. The ordinary man is certain that these objects possess these *flavors* as objective qualities. He is also convinced that objects emit real odors. Odor may be fruity, as in the peach, or spicy, as in cloves, or flowery, as in the rose, or foul, as in carrion, or scorchy, as in burned wood, or resinous, as in pine pitch. But whether agreeable or disagreeable, he always refers these flavors and odors to things which are real and independent of his own person.

Hearing, according to his conviction, perceives sounds which emanate from actual objects. The human voice in its speech, the rapturous melody of the nightingale, the roar of the lion, the crash of the thunder — they actually exist in nature as he hears them. Sound to him is real; and he simply cannot understand that, in the absence of hearing in men and animals nature would be totally devoid of sound.

The sense of *touch* also reveals various qualities which it considers to be objectively real. What is commonly called 'the sense of touch' consists of a number of distinct senses. The skin senses convey the sensations of temperature, pain, and touch proper. The kinesthetic or muscle sense is located in the muscles, tendons, and joints, and makes us aware of the movements and position of our bodily limbs and also of resistance and pressure. The organic sense has its seat in the internal organs of the body and enables us to perceive hunger, thirst, nausea, and general bodily well-being. How far these senses are fundamentally distinct is a

matter for the psychologist to decide. Whatever their nature, the ordinary man is certain that they reveal to him his own body and other bodies, together with definite qualities, which are real in the world of physical objects.¹

Besides the senses just enumerated, the human organism possesses what may be roughly designated the internal sense because they enable man to apprehend facts of a subjective character in a sensuous manner. We are not concerned here with their ultimate nature and difference, but with certain undeniable facts of internal experience in so far as they have a bearing on the problem of knowledge.

The *common* or *central sense* makes us aware of our sense-acts. It is the seat of sense-consciousness, notifying us of the presence of the perceptive acts mentioned above, of feelings, such as pleasure, grief, anger, desire, and of appetitive striving. The central sense enables us to distinguish in a concrete way between the various organs and perceptions and to locate them in the bodily system. That this is not a form of 'intellectual' knowledge, can be seen from the actions of animals. They manifest no intellectual knowledge, but they are conscious of the different kinds of sense-perceptions and of the various parts of their body. The main point here is that man is convinced of the reality of his body and of outside objects as revealed by the coordinating action of the central sense.

The *imagination* uses the material supplied by the sense-perceptions to form images of its own fashioning. Dreams are the product of the imagination. But man also uses his imagination creatively, constructing a world of fancy which exists nowhere but in his mind. Man is conscious of the

distinction between the figures of his fancy and the people of real life, between the pictured events of his dream and the actual occurrences of external happenings. During a dream he may be unable to recognize events as unreal, but upon awakening he becomes aware of their imaginary character. The essential difference between fancy and reality is perfectly clear to the ordinary man and forms one of his strongest spontaneous convictions.

Sense-memory recalls perceptions and events and recognizes them concretely as having been experienced before. It is able to 'locate' these experiences in their proper sequence of time and place. We not only remember the persons and objects we have seen before, but we also remember the time and place of seeing them. That these memory-images represent a reality distinct from these images, is another spontaneous conviction of man.

The connection of *instinct* with the problem of knowledge is slight. While instinct plays a prominent part in the life history of animals, its function in man is limited, due to the predominant part exercised by man's intellect in the ordering of his actions. It is the cognitive function which apprehends material objects as things either harmful or useful to the organism consequent upon their perception. The influence of instinct is noticed chiefly in actions which are necessary for the preservation of the individual and of the race. Whatever instinct may amount to in man, it is stimulated by external objects and events and always has a reference to external reality: such is man's natural conviction.

All senses convey knowledge of the *reality of the physical world* in some form or other. That, at least, is the view of the average person, and of this he is certain beyond doubt. How far this obvious, spontaneous conviction can be justified before the bar of critical reason, is precisely the duty of the epistemologist to examine and determine.

CONVICTIONS BASED ON INTELLECTION

We now come to *intellectual knowledge*. This is distinctly 'human' knowledge, because animals manifest no signs of it. Intellectual knowledge appears in three phases: *ideas, judgments and inferences*. We are not concerned here with the nature of the intellect as such; we are interested in its knowledge as found in these three products of mental activity. Whatever we may think of their validity and truth, we cannot seriously doubt that we have ideas and judgments and inferences. They are facts, and they lie at the very core of the problem of knowledge.

An *idea* is the intellectual representation of a thing. My idea of a thing is very different from my sense-perception of that thing. For example: As I walk along, I see a man. He is white of skin, six feet two inches in height, with black eyes and black hair, slim but muscular, and a slight limp gives him a somewhat halting gait. He wears a cap, a brown suit, a gray topcoat, blue socks, and black oxfords. This is the picture of an individual human being as he meets the eye and is perceived by the sense of sight. But my 'idea' of this man is that he is a 'bodily, living, sentient, rational substance'; in other words, this man is a 'rational animal.'

The sense perceives him in all his concrete individuality, with all the peculiar traits and characteristics which make him to be *this* man and differentiate him from every other human being. My 'idea,' however, apprehends him in those essential attributes which he has in common with all other human beings, leaving aside all the individualizing and differentiating marks peculiar to himself. Sense-perception, therefore, represents man in the *concrete*; the idea represents him in the *abstract*.

Passing on to the *judgments* of the intellect, we find that a judgment is an act of the mind affirming or denying one idea of another. Three factors are involved in the making of a judgment: two ideas which are known; the mutual comparison of these two ideas; the mental pronouncement of their agreement or disagreement. The intellect, for instance, consciously apprehends and compares the ideas 'tree' and 'plant'; it finds that they agree; then it pronounces this agreement in the judgment, 'The tree is a plant.' But on comparing the ideas 'tree' and 'animal,' the intellect perceives that they do not agree and then makes the pronouncement, 'The tree is not an animal.' If my assertion (affirmation or denial) in the judgment is correctly made, it is a true judgment; but if incorrectly made, it is false. Judgments, therefore, contain *truth or error*. It is just this characteristic of the judgment, that it contains truth or error, which makes the judgment such an important element in the problem of knowledge. Internal and external sense-perceptions present or represent things concretely, and ideas represent the essence of things abstractly; but judgments claim to express the truth about *reality as it*

actually is in itself. When I say, 'This man is an Indian,' I mean to assert that he *really* is an Indian; I certainly do not intend to convey the impression that I am merely combining the two ideas 'this man' and 'Indian' in my mind. In fact, the ordinary man never adverts to the fact that his judgment consists of a 'subject' and a 'predicate' and a 'copula'; for him his judgments simply express reality as he sees and knows it to be, and he is certain that his judgments do actually represent reality.

The same is true of *inferences*. The mind does not always perceive the agreement or disagreement between two ideas by a direct comparison of the two, so that it can make an immediate judgment about them. That 'Two plus two are four' I know from a mere analysis of these ideas, and that 'The sun is shining' I know by opening my eyes and looking at the sky; but that 'The human soul is a spirit' is something I can neither see with my eyes nor perceive by a direct comparison of these two ideas. If, however, I can bring in a third known idea with which, upon comparison, I find the two ideas to agree, then I am justified in saying that these two ideas agree with each other. This is inference or reasoning; and it is defined as the mental process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them. That man reasons and makes inferences of this kind, is a fact of everyday experience. And man is convinced that these inferences, since they consist of judgments and lead to a final judgment, are a valid form of knowledge and contain truth regarding *reality as it is*. Whenever people argue among themselves about facts and events, about

politics or religion or science or sports or anything else, it is always with the conviction that these arguments can lead them to truth and valid knowledge. The deductive reasonings of mathematics and the inductive processes of the experimental sciences are all based on this assumption.

Man possesses also *intellectual consciousness*. He is aware of the intellectual acts of apprehension (ideas), judgments and reasoning, and also of other states and acts of his being, as love, hatred, sorrow, happiness, volition. Furthermore, man is conscious of *self*, of his own *Ego*, in the acts of thinking, willing, and sense-perceiving, and he recognizes his own self as the *subject* of these acts, the agent who performs them and in whom they occur. He is also aware that these acts in their varying forms differ among themselves, while he, in whom they take place and in whom they inhere as their subject, is *one and indivisible*. These facts are expressed by him in phrases like the following: 'I think,' 'I will,' 'I see,' 'I was angry,' 'I walk,' 'I am aware of myself.' These judgments show that man realizes that he consists of a body as well as of a mind and that these are different entities belonging to the same Ego. They also show that his Ego persists as an *unchanging, permanent reality* amid all the changing acts and states which come and go within his person. Finally, man perceives that, while his body is a part of his Ego, there are *other bodies* which do not belong to his Ego; there is, therefore, a *world* or universe distinct from his Ego, with an existence and reality of its own.

Such are the undeniable spontaneous convictions of man as manifested by his conscious states and expressed in his

judgments.

CLASSES OF TRUTHS

Truth, as we know, lies in the judgment. Not all truths, of course, are of equal value to man. That my shoe squeaks, is a truth of no importance, unless, perhaps, I were a burglar or a detective; so, too, the fact that there is a solitary cloud in the sky this morning, is not a truth which will startle mankind. Such truths are commonplace and mean little. But scientific truths have far greater value. That water, for instance, consists of one part oxygen and two parts hydrogen, is a truth the discovery of which meant a distinct advancement in human knowledge and progress, because it enabled man to acquire great quantities of these two useful elements. Philosophic truths possess even greater importance than scientific truths, because the validity of science depends upon them. Thus, the Principles of Contradiction and of Sufficient Reason underlie all being and knowledge and constitute the very foundation of the sciences. It will, therefore, not be amiss to classify the different kinds of truths as found in the judgments of the intellect, since the value of man's spontaneous convictions is closely connected with his insight into these truths. The validity of man's knowledge can be established only if the validity of such truths is established, and so it is well to know these *classes of truth*.

First of all, we possess *analytical* judgments, which contain truths *directly evident to the intellect* through a comparison or analysis of the ideas of the judgment,

without the aid of any immediate sense- perception or logical reasoning. For instance: 'The whole is greater than any of its parts'; 'a plane square incloses four right angles'; 'it is impossible that a thing exist and not exist at the same time'; 'something cannot be true and false at the same time'; 'everything must have a sufficient reason.' Such judgments, called 'first principles,' are immediately evident to the intellect by merely analyzing the ideas contained in them, provided the intellect knows what these ideas mean. They need no demonstration and no direct sense-perception to verify them. If I know what a 'plane square' is and what a 'right angle' is, a mere comparison of these two ideas will make it clear to the intellect that 'A plane square incloses four right angles,' one in each corner of the figure. Again, if I know what 'whole' and 'part' mean, it is evident to me that 'The whole is greater than any of its parts.' And so with similar axioms. Such principles are at the bottom of all knowledge, and they are, as all admit, indubitably present in our spontaneous convictions. Axioms, like the Principle of Identity, the Principle of Contradiction, and the Principle of Sufficient Reason, are used, consciously or unconsciously, in every act of reasoning and are considered to be universally, necessarily, and absolutely true.

Secondly, we have *immediate* judgments containing truths which are derived from direct experience through internal and external *sense-perceptions*. Here are examples: 'That lady Walking along the street has a package under her arm.' 'That boy is running.' 'I have a pain in my tooth.' 'I am thinking and Writing.' Such judgments refer to individual concrete facts, events,

persons, and objects. We do not arrive at the truth of these judgments through a mere analysis of the ideas contained in them. Take the judgment, 'That boy is running.' On comparing the ideas 'boy' and 'running' alone by themselves, independent of experience, I cannot know whether I should unite them into a judgment, because there is no necessary connection between the ideas 'boy' and 'running'; the boy might just as well be 'standing' or 'sitting' or 'walking.' That I actually judge, 'That boy is running,' is due to my actual experience of seeing him run. Such judgments, then, are not analytical but *synthetic*; they contain empirical truths, based on direct experience. As such, therefore, they are not considered to be universal, necessary, and absolute truths; they are contingent and experiential truths which may change with changing circumstances. A comparison between this and the foregoing group of judgments will reveal at a glance that the synthetic judgments have by no means the general truth-value of the analytical judgments, so far as knowledge is concerned.

The third class of truths are those contained in *mediate* judgments deduced by *inference* (reasoning) from '*first principles*.' These mediate judgments are based on self-evident 'first principles' or 'axioms,' but they themselves are not self-evident; it takes a process of reasoning to show that they follow necessarily from these axioms. Mathematical deductions are examples of this class of judgments. That 38,400 is divisible by 2,560 fifteen times is not in itself directly clear; but if we perform the division, or multiply 2,560 by 15, we can prove the truth of the

judgment. Similarly, that the square of the hypotenuse of a right-angled triangle is equal to the sum of the squares constructed on the other two sides, is clear enough when the proof is furnished by a process of reasoning: but it is not a self-evident truth like the statement that a plane square incloses four right angles. A mere explanation or comparison of ideas will not suffice in these cases to perceive the truth of such judgments by means of immediate intuition: mediate inference is required to establish the logically necessary connection between such truths and the axioms upon which they are based. However, once this connection is demonstrated, these *deductive* judgments are as true as their 'first principles,' unless it can be proved that man's reasoning powers are essentially invalid in their operations. Man's conviction is, of course, that he can reason in a valid manner. Provided, then, that man's reasoning powers are essentially valid, these mediate judgments derived from 'first principles possess universal, necessary, absolute truth.

The fourth class of truths is contained in *mediate* judgments which are the result of an *inductive process* generalizing the individual, concrete data of direct sense-perception into laws of a universal character. The generalizations and laws of experimental science are of this type. After careful investigation and extensive experimentation the intellect perceives the *essential* elements in a series of repeated phenomena and occurrences and then expresses the true cause in a definite judgment or law. It is not necessary for science to investigate every single case of the past and present; that,

in fact, would be impossible. Since it has arrived at a knowledge of the essential elements of the phenomenon in question, the law which the intellect has formulated has a universal and necessary value and applies with equal force to each and every phenomenon of that class. An instance will make this clear. It was noticed that the boiling point of water is always + 212° F. at sea level. Taking this as a starting point, scientists made a great number of experiments of boiling water at sea level, and the result was in each case the same: water boiled at + 212° F. Thus the law was formulated by means of a generalization: 'The boiling point of water is + 212° F. at sea level.' This being an essential characteristic of water, it was not necessary to take every drop of water on the globe to sea level and boil it; scientists know that it will boil, because such is the *nature* of water. Every such law is a mediate judgment which expresses a necessary and universal truth, based upon the Principle of Sufficient Reason and the Principle of Causality.

The above brief account furnishes us with a survey of the sources and main facts of knowledge as revealed in the spontaneous convictions of men. Sense-perception, intellection, and self-consciousness, all contribute their share toward the sum total of man's knowledge. There is one trait characteristic of all these spontaneous convictions: *man's knowledge is a faithful and genuine representation of reality as it is in itself.* And this reality is twofold: Ego and non-Ego; the ideal world of thought and the material world of physical objects; man himself and a universe distinct from man. And man's mind can transcend itself,

reach out and contact this outside world, assimilate it cognitively, and thereby acquire a *valid knowledge of things*. This is the sum and substance of the facts as given in man's convictions.

THE EPISTEMOLOGICAL PROBLEM

No one questions the fact that the ordinary man, whether educated or uneducated, has these spontaneous convictions. Philosophers all admit that man has these experiences, considered as 'subjective states' of his being, and that he is 'subjectively convinced' that these experiences reveal to him an objectively existing world-other-than-his-self. There is a vast difference, though, philosophers contend, between these experiences as such and the *interpretations* man makes of them. The facts they admit; but whether the physical world as real (if there is a real world) actually corresponds to the world *as perceived*, that is a different question entirely. Of course, the ordinary man judges and is convinced that the two correspond; however, the truth of this judgment and conviction, philosophers assert, cannot be assumed to be valid, but must be vindicated on solid rational grounds, before it can be admitted as a philosophic certainty. After all, these experiences, and the spontaneous convictions based on them, are only the data, the facts, the raw materials, of the problem of knowledge; it is the duty of the epistemologist to investigate whether the ordinary man's interpretation of these facts is the one and only legitimate explanation possible.

And the philosophers are right. The matter is not as obvious as the ordinary man thinks it is. For one thing, many of man's spontaneous convictions have been *proved to be wrong*. The first chapter pointed out a few instances; and there are many others which are clearly wrong or at least of very doubtful validity. That being the case, it is but natural to ask: Are these spontaneous convictions really trustworthy? Might it not be found, on closer examination, that the whole structure of these convictions is without a solid foundation in reason? If some are false, might not the majority of them be false? Since many judgments, to which man gave the firm assent of certitude, were afterwards discovered to contain error and not truth, what test have we to enable us to distinguish between truth and error in our judgments and convictions? Apparently too much importance has been attached to spontaneous convictions.

Here is another consideration: Are these convictions justified when we consider the *nature of knowledge*? Knowledge, after all, is subjectively present in the knower. The cognitive acts are *subjective, intra-mental states* of the knowing subject or Ego. All perceptions, ideas, judgments, inferences, and self-consciousness take place *within* man as the result of his own Cognitive activities. Is not all knowledge, then, purely subjective and intra-mental? And if so, how can we feel so certain that it represents an objective, extra-mental reality at all?

Even if we assume that there exists an objective, extra-mental world which somehow contacts our mind, it would still be a fact that the *mind* of man *actively co-operates in producing knowledge*. The different sense-organs and the

intellect, each with its own proper mode of action, clearly show this. How much of our knowledge, then, is due to the influence of exterior reality and how much to our internal faculties?

Might not this influence of our internal perceptive powers be so subjectively different from the influence of the exterior reality as to completely transform our knowledge? We would have knowledge of reality, of course, but it might not correspond to reality-as-it-is-in-itself. It might thereby become an *idealized* representation of reality, with more of the 'idea' in it and less of the 'reality.' How are we to know?

Many philosophers find a practically insurmountable difficulty in the very notion of the mind knowing the physical world. Ever since René Descartes (1596—1650) injected the idea into philosophy that the essence of the mind is 'thought' and the essence of matter is 'extension' and that there exists an irreconcilable antithesis between the two, the problem of how the mind can possibly contact matter and come to a knowledge of it has been acute. It is certainly not easy to understand how an *un-extended* mind can conform itself to *extended* matter, or how the latter can make a cognitional impression on the former. And if both are such irreconcilable opposites, as Descartes claimed, then each should be a closed entity in itself, incapable of contact with the other. The logical tendency on the part of thinkers will then be to reduce all human knowledge either to a mere perception of the material world (*materialism*) or to a mere system of intellectual thought (*idealism*). And that is what has happened. Others, realizing the inadequate nature of both these extreme theories of knowledge and

desiring to give the spontaneous convictions of man their due, have endeavored seriously to discover a bridge between mind and matter, so as to safeguard the fundamental validity of human knowledge acquired through sense-perception and intellection (realism). The problem is admittedly difficult and deserves deep study.

The *general problem* of knowledge, then, is this: *Have our spontaneous convictions a rational foundation, so that they are based on impressions derived from reality and actually give us knowledge of reality as it is in itself?* Such is the problem of knowledge which we must attempt to solve.

SUMMARY OF CHAPTER III

The facts which form the basis of the problem of knowledge are the spontaneous convictions of the ordinary man, in so far as they are considered by him to convey a genuine knowledge of reality as it is in itself.

1. *Convictions Based on Sense-Perception.* The senses are: sight, taste, smell, hearing, and touch; central sense, imagination, sense-memory, and instinct. All convey knowledge of the physical world in some form or other, and the ordinary man is convinced that things really are as perceived.

2. *Convictions Based on Intellection.* Intellectual knowledge appears in three phases: ideas, judgments, inferences. By means of them, man is certain, the mind possesses a true knowledge of reality.

3. *Classes of Truths.* These are: analytical judgments, containing truths directly evident to the intellect through an analysis of the ideas involved; synthetic judgments, containing truths derived from direct experience; mediate analytical judgments, deduced by inference from first principles; inductive laws and generalizations.

The common characteristic of all spontaneous convictions is: Man's knowledge is a genuine representation of reality as it is in itself.

4. *The Epistemological Problem.* Philosophers admit these convictions as subjective facts, but they contend that these convictions, as interpretations of reality, must be validated. The main reasons are: Many such convictions

have been proved to be wrong. The nature of knowledge is such that cognitive acts are subjective; may not all knowledge be purely subjective? The active cooperation of the mind in the process of knowledge may produce an 'idealized' representation of reality.

The general problem of knowledge, then, is as follows: Have our spontaneous convictions a rational foundation, so that they are based on impressions derived from reality and actually give us knowledge of reality as it is in itself?

READINGS

P. Coffey, *op. cit.*, pp. 43-71; D. Card. Mercier, *op. Cit.*, pp. 350-; J. G. Vance, *op. cit.*, pp. 1-20; J. Barron, *op. cit.*, pp. 14-18; B. P. Bowne, *Personalism*, Ch. II; W. E. Hocking, *Types of Philosophy*, Ch. I; C. A. Strong, *Why the Mind has a Body*, Ch. VIII; R. W. Sellars, *Critical Realism*, Ch. II.

1 In the course of this book there will be occasion to speak of these senses again. For the sake of brevity and in deference to usage, the senses just mentioned will be grouped under the common term 'touch.'

Chapter 4

SKEPTICISM AND DESCARTES' DOUBT

IT IS THE PURPOSE OF EPISTEMOLOGY TO TEST THE VALIDITY OF man's spontaneous convictions and see whether they are justifiable before the bar of rational criticism. If they are vindicated after a thorough investigation of their ultimate grounds and causes, they become *reflex* and *philosophic certainties* and will rest upon a firm, scientific basis. If, however, a critical examination should show that these spontaneous convictions are blind assents of the mind or are the result of some compulsory internal mechanism of the human mind, their truth-value will either be disproved or will remain forever in doubt.

In approaching the problem, the *method* employed will be a matter of great importance. A wrong method may produce disastrous results, just as a march from a false starting point, persistently carried on, will take the traveler far away from his goal; not every route will lead to the desired destination. We must never overlook the fact that, while investigating the mind and its faculties, we are using this very mind and its faculties as the instruments of our investigation. On the face of it, this seems an unwarrantable procedure. Since the validity of the mind and its faculties is

at stake, how can their use in this investigation be legitimate? The answer is: the truth of Our whole domain of knowledge being under examination, the only legitimate procedure available is to analyze our knowledge *reflectively* and watch the operations of our mind in the formation of its spontaneous convictions, so as to see whether they are based upon truly rational grounds; there is no other way possible. The only alternative would be to approach the Problem in the *attitude of complete doubt*. The *initial state of mind* would then be to doubt absolutely everything, including the capability of the mind and its faculties to attain to any and all true knowledge. This, of course, would mean to approach the problem of human knowledge with the method of universal skepticism. At first blush, this would seem to be the logical thing to do — doubt everything from the start and then work our way upward toward certitude and truth. But this method would be fatal in its very inception.

HISTORY OF SKEPTICISM

A number of ancients and moderns have defended speculative skepticism. Among the ancients we find *Protagoras* (fifth century B.C.), *Gorgias* the Sophist (contemporary of Protagoras), *Pyrrho* (360—270 B.C.), the real founder of speculative skepticism, *Arcesilaus* (316—241 B.C.), *Carneades* (219—129 B.C.), *Aenesidemus* (first century B.C.), Agrippa (contemporary of Aenesidemus), and *Sextus Empiricus* (about second century A.D.). Agrippa and Sextus Empiricus formulated the reasons for universal

skepticism under five heads: the differences of opinions and theories among men; the necessity of an infinite regress for every demonstration; the subjective and relative character of all perception; the gratuitous assumption of all axioms and principles; the vicious circle, or begging of the question, involved in every syllogism.

Among Christian philosophers universal skepticism never made headway. But the Renaissance, with its blind adoration of everything Grecian, again brought skepticism to the fore. *Michael de Montaigne* (1533—1592) in his *Essais*¹ defended it. Others who followed Montaigne in this trend of thought were *Charron* (1541—1603), *Sanchez* (1562—1632), *Huet* (1632—1721), *Pascal* (1623—1662), *Bayle* (1647—1706), and *Jouffroy* (1796–1841). Some of these were not really skeptics in principle. They attempted to show the constitutional inability of the human mind in its natural powers to arrive at truth, in order to vindicate the necessity of faith in divine revelation. It was a case of faulty apologetics.

Modern skepticism has its most noteworthy representative in *David Hume* (1711—1776). According to Hume, knowledge consists of mere perceptions, and these are twofold in character: impressions, which are the more lively perceptions; and ideas, which are but faint images of impressions. Thought is thus reduced to sense-knowledge. All axioms and principles of science are the result of mere associations of impressions, made by the mind through force of habit; they are, therefore, purely subjective in nature and have no objective value. He considered the arguments of the skeptics to be unassailable. In an indirect

way, Hume's skepticism has exerted a powerful influence on modern thought.

It is obvious that a universal skeptic, who really and seriously doubts or denies the validity of all knowledge, cannot be convinced by any argument which may be advanced against his position: he would be forced to doubt the fact that such an argument has been advanced. He is as isolated in his skepticism as a fly buzzing in a vacuum; if, indeed, a fly can buzz in a vacuum, when both the fly and the vacuum probably are nonexistent. When we argue against skepticism, it is not our purpose to convert the skeptic himself; we intend to show non-skeptics that universal skepticism is folly. In doing so, we achieve a double result: we show directly that universal doubt is an *improper approach* to the problem of knowledge, and we demonstrate indirectly that any system which logically leads to skepticism must be *intrinsically wrong*.

Our contention is that universal skepticism cannot be the proper initial state of mind with which to approach the problem of knowledge, because it is a practical impossibility and a philosophic absurdity.

FALLACY OF UNIVERSAL SKEPTICISM

Skepticism is a *practical impossibility*.

No sane human being can live without certitude of a practical kind. Even the most confirmed skeptic,

no matter how many reasons of a theoretical and speculative nature he may have for doubting the possibility of genuine certitude, cannot lead a human life without

denying his skeptical theory all day long in his *conduct*. His life shows that he is certain of very many things: the physical world, with its seasons and changes of weather, with its periods of day and night, with its differences of time and space relations; his own body, in all its concrete reality, in its conditions of health and sickness, in its physical needs of food, drink, and sleep; the existence and knowability of other people and other minds, some of whom agree with him while others disagree, with whom he communicates by means of conversation and writing, and whom he tries to convince of the truth of universal doubt. The story is told of Pyrrho the Skeptic that, when chased one day by a rabid dog, he ran for safety without allowing his skepticism to exercise its doubt about the existence and viciousness of the brute. When the bystanders laughed at him and ridiculed him for the inconsistency of his action, he is said to have made the sage remark (completely out of keeping with his theory): "It is difficult to get away entirely from human nature." After all, he could not doubt, in an un-theoretical moment, that his body and the dog were real objects.

This discrepancy *between fact and theory*, between life and philosophic system, between practical certitude and speculative doubt, is an incontrovertible proof that universal doubt is an impossibility except as a mere formulation of the mind. When facts and theories clash and contradict each other in such transparent fashion, the sane man will not deny the facts and cling to his theories, but will realize that something is radically wrong with his views. Facts cannot be denied. To persist in universal skepticism in the face of a million contradicting facts of life bespeaks

either insanity or stubbornness of mind. When the inconsistency between life and theory cannot be harmonized, it will not do to deny life, because that would be ridiculous; the theory must be abandoned as essentially faulty. Universal skepticism, therefore, must be rejected as a practical impossibility.

Universal skepticism is also a *theoretical absurdity*.

One simply cannot doubt all things and principles, not even in a speculative way. The skeptics prove this by their own intellectual *inconsistencies*; and inconsistencies are the stigma of every false theory. Any normal person will realize the inherent contradiction of universal skepticism, if it is real and genuine, upon considering the following points.

Skeptics contend that real certitude in knowledge is impossible. so that we must always suspend our judgment because of a real doubt as to the truth of our judgment. This, in their view, is the only logical and rational thing to do. But then, they have at least arrived at this truth that we cannot be certain; and there is at least no doubt that we must doubt. Therefore, even skeptics possess certitude about something, and their fundamental tenet of universal doubt is involved in a contradiction.

Skeptics claim we must suspend our judgment regarding any question, because we might fall into error. But error is the opposite of truth. Consequently, they acknowledge that there is a difference between 'truth' and 'error,' and the two are not the same. Similarly, they must admit that 'certitude' and 'doubt' are not the same; otherwise, why should we doubt rather than be certain? Their very

insistence on this difference shows plainly that they recognize the fact that something cannot be true and erroneous, certain and doubtful, at the same time. But thereby they surreptitiously admit the certainty of the truth of the Principle of Contradiction.

Skeptics either have valid reasons for their universal doubting, or they have no valid reasons for it. If they have valid reasons, they surely know something that is valid, and they no longer are real skeptics. If they have no valid reasons, they have no reason to doubt. In the first case their position is inconsistent, and in the second case their position is irrational. Whichever way they turn, their position is untenable.

Skeptics, in defending the necessity of universal doubt, must naturally be conscious of their doubt and its necessity; for, if they were not conscious of this, they could neither be aware of their doubt nor speak of it. Consequently, they rely upon the *testimony of their consciousness* as a source of valid knowledge. But that involves certitude regarding their own existence and person and regarding the trustworthiness of consciousness. They cannot, in consistency, cast a doubt upon the testimony of consciousness, because the argument of St. Augustine, in speaking to the skeptics, would apply to them: "If I err, I exist. For one, who does not exist, cannot err; and by the very fact that I err, I exist. Since, therefore, I exist, if I err, how can I err about my existence, when it is certain that I exist if I err."² That the skeptic must admit and acknowledge the certain existence of various states of his own consciousness, has been pointed out by St. Augustine in

another passage, marked by a keen appreciation of the facts in the case: "If he doubts, he lives; if he doubts, he remembers why he doubts; if he doubts, he understands that he doubts; if he doubts, he wants to be certain; if he doubts, he thinks; if he doubts, he knows that he does not know; if he doubts, he judges that he must not give a hasty consent."³ Notwithstanding their claim to universal doubt, therefore, the skeptics by their doubting actually, though inconsistently, express certitude concerning a great number of facts and principles. Universal skepticism collapses under the weight of its own folly.

And thus we see that universal skepticism is a philosophic absurdity.

REFUTATION OF SKEPTIC ARGUMENTS

But what about the arguments of the skeptics? Do they not show that valid knowledge is impossible of attainment for the human mind? A close examination will reveal the fact that *the arguments of the skeptics are fallacious*. Some of their contentions have been answered in the preceding paragraphs, and so we will restrict ourselves to those of a more formal and logical character, since they are more pertinent to the present problem.

Conflicting and *erroneous opinions*, they contend, have been held by men on every question that has ever engaged the attention of the human mind. This complete lack of uniformity in their views and the presence of errors in these views proves conclusively that the human mind is constitutionally incapable of knowing truth with certitude.

The answer to this is simple. That many errors exist, due to careless thinking, hasty conclusions, faulty education, and lack of observation, is true enough. But this would militate against the possibility of certitude only if the mind were *congenitally* unable to detect and correct its errors of judgment. This is not the case; otherwise we could never change our views with the *consciousness that we have been in error*. The very fact that we recognize error as error (even the skeptics are constantly pointing out errors), is a sure indication that the human mind possesses a criterion or test whereby to distinguish truth from error. All that is required, then, is to be careful in our investigation and apply this test with greater accuracy. That we cannot eliminate all errors is simply due to the limitations of our intellectual powers, but not to the essential inability of our mind to discover and recognize truth. Error is thus accidental, but not essential, to the human mind.

Sextus Empiricus formulated an argument somewhat along the following lines. Whoever thinks he has acquired a knowledge about something with certitude, can have acquired it only in one of three ways: either he proves his judgment by a proof which needs another proof, and this second needs a third proof, and this third needs another, and so on, without ever arriving at a final proof; or he stops at a certain proof, which he does not prove in turn, but simply assumes to be true without proof of any kind; or he proves his statement by some principle, and then later on proves this last principle by his original statement. In the first instance he is guilty of an *infinite regress*, which cannot prove anything, because one can never come down

to the final proof; in the second instance he is guilty of a *gratuitous assumption* which leaves the final proof open to the question of truth or error, thereby settling nothing; and in the third instance he is guilty of a *vicious circle*, and a vicious circle proves nothing at all. This seems a rather formidable argument in favor of universal skepticism. Unfortunately, one other alternative was omitted and that a vital one. Some proofs do not need a subsequent proof to establish their truth and certainty. There are truths which are so self-evident to the mind, that their validity is perceived by an act of *immediate intuition* and demands no further demonstration. That 'I am writing at this moment' is a truth so obvious to me that I need not look for any deep philosophic or scientific proof to give this judgment validity: I simply experience the fact, and that is all there is to the matter; no argument of the skeptics can invalidate this fact for me, because it is self-evident. I am guilty neither of an infinite regress, nor of a gratuitous assumption, nor of a vicious circle, in making this true statement of fact. Incidentally, if the above argument of the skeptics were true, then their argument itself would be invalid for the very reasons which they adduce; and since it is a false argument (according to their own principles), it cannot prove anything in favor of skepticism. The fact, however, that skeptics consider it a true and valid argument, proves that they do consider some knowledge true and valid; and that is just one more example of their inconsistency.

The main argument of *Montaigne* was that an infinite regress would be necessary for every demonstration. He, too, overlooked the fact that first principles are self-evident

and need no demonstration. That $2 + 2 = 4$ is clear by a simple analysis of the ideas involved.

DESCARTES' METHODIC DOUBT

René Descartes (1596—1650) is responsible for the predominance of the problem of human knowledge in modern philosophy. Many of the systems of philosophy and theories of knowledge which have arisen in the last three centuries can trace their lineage directly to the influence of the questions Descartes raised and the method he employed in answering them. He promulgated the principle of 'science without presuppositions' and thereby introduced a new epoch in science and philosophy. It will, therefore, not be amiss to analyze his fundamental ideas and evaluate his method.

As his starting point Descartes begins with the contention that we rely entirely too much on traditional doctrines and spontaneous convictions, so that our supposed knowledge of truth rests mostly on unproved presuppositions. This makes it difficult for us to distinguish between truth and error, since we do not know what is true knowledge and what is unwarranted belief. Hence, he would tear down the whole edifice of knowledge and rebuild it from the foundation, and he would not begin to build until he had reached the one and ultimate truth which was the bedrock of human knowledge. Being a mathematician, he felt convinced that he could deduce all truth from a single fundamental principle. As the instrument of his search for truth he used a *universal*

methodic doubt. His own words will best reveal his line of thought.

“I. In order to seek truth, it is necessary once in the course of our life, to doubt, as far as possible, of all things.

“As we were at one time children, and as we formed various judgments regarding the objects presented to our senses, when yet we had not the entire use of our reason, numerous prejudices stand in the way of our arriving at the knowledge of truth; and of these it seems impossible for us to rid ourselves, unless we undertake, once in our lifetime, to doubt of all those things in which we may discover even the smallest suspicion of uncertainty.

“II. We ought also to consider as false all that is doubtful.

“Moreover, it will be useful likewise to esteem as false the things of which we shall be able to doubt, that we may with greater clearness discover what possesses most certainty and is easiest to know.

“III. We ought not meanwhile to make use of doubt in the conduct of life. .

“IV. Why we may doubt of sensible things.

“Accordingly, since we now only design to apply ourselves to the investigation of truth, we will doubt,

first, whether of all the things that have ever fallen under our senses, or which we have ever imagined, any one really exists; in the first place, because we know by experience that the senses sometimes err, and it would be imprudent to trust too much to what has even once deceived us; secondly, because in dreams we perpetually seem to perceive or imagine innumerable objects which have no existence. And to one who has thus resolved upon a

general doubt, there appear no marks by which he can with certainty distinguish sleep from the waking state.

“V. Why we may also doubt of mathematical demonstrations.

“We will also doubt of the other things we have before held as most certain, even of the demonstrations of mathematics, and of their principles which we have hitherto deemed self-evident; in the first place, because we have sometimes seen men fall into error in such matters, and admit as absolutely certain and self-evident what to us appeared false, but chiefly because we have learned that God who created us is all- powerful; for we do not yet know whether perhaps it was His will to create us so that we are always deceived, even in the things we know best: since this does not appear more impossible than our being occasionally deceived, which, however, as observation teaches us, is the case. And if we suppose that an all- powerful God is not the author of our being, and that we exist of ourselves or by some other means, still, the less powerful we suppose our author to be, the greater reason will we have for believing that we are not so perfect as that we may not be continually deceived.

“VII. We cannot doubt of our existence while we doubt, and this is the first knowledge we acquire when we philosophize in order.

“While we thus reject all of which we can entertain the smallest doubt, and even imagine that it is false, we easily indeed suppose that there is neither God, nor sky, nor bodies, and that we ourselves have neither hands nor feet, nor, finally, a body; but we cannot in the same way suppose

that we are not while we doubt of the truth of these things; for there is a repugnance in conceiving that what thinks does not exist at the very moment when it thinks. Accordingly, the knowledge, '*I think, therefore I am*,' is the first and most certain that occurs to one who philosophizes orderly."⁴

This is indeed a most radical procedure, a veritable revolution of method. Descartes applies the method of universal doubt to 'all things,' attempting to empty the mind completely of all traditional views, preconceived ideas, and spontaneous convictions without exception. Nothing is allowed to remain, no matter how seemingly clear and evident. Even the simplest arithmetical and geometrical problem is not permitted to stand, like ' $2 + 3 = 5$ ' and 'A square has but four sides.' As he expresses himself: "How do I know that I am not also deceived each time I add together two and three, or number the sides of a square, or form some judgment still more simple, if more simple indeed can be imagined?"⁵ Not only the whole physical world, our own body, sense-perception, and the internal states of our consciousness, are thus drawn into universal doubt,⁶ but also the *trustworthiness of our cognitive faculties* and the fundamental laws of thinking, like the Principle of Sufficient Reason and the Principle of Contradiction. This is a most important feature of his method that must not be overlooked.

Descartes' universal methodic doubt is not merely simulated for the sake of an unprejudiced search after truth; it is a real, genuine doubt. "As I desired to give my attention solely to the search after truth, I thought . . . that I

ought to reject as absolutely false all in regard to which I could suppose the least ground for doubt, in order to ascertain whether after that there remained ought in my belief that was wholly indubitable."⁷ Mark the words: "to reject as *absolutely false*." He does not intend to hold his mind in a state of suspended judgment, or merely to leave his spontaneous convictions aside for the time being, in order to investigate their possible validity, which would be *methodic doubt* as generally understood; he is convinced that he ought 'to reject them as absolutely false,' and he actually carries out his plan, so that he really rejects everything down to the one indubitable fact: '*Cogito, ergo sum* - I think, therefore I exist.' This is more than mere doubt, because a doubt presupposes a suspended judgment due to the absence of all reasons for and against a proposition (negative doubt) or reasons of more or less equal value for and against it (positive doubt). Descartes "supposes, for a time, that all these opinions are entirely false and imaginary,"⁸ and he "will continue always in this track until he shall find something that is certain, or at least, if he can do nothing more, until he shall know with certainty that there is nothing certain."⁹ He assumes the attitude that all spontaneous convictions and laws of thought are *errors*.

It makes little difference whether Descartes could and did, actually and really, doubt everything without exception; or whether he merely thought he could and did. The fact is, he did thus doubt everything in principle. He was, of course, not a skeptic, since his purpose was to arrive at the ultimate base of certainty and truth and to rebuild on this

indubitable foundation the edifice of knowledge. He compared himself to Archimedes. "Archimedes, that he might transport the entire globe from the place it occupied to another, demanded only a point that was firm and immovable; so also, I shall be entitled to entertain the highest expectations, if I am fortunate enough to discover only one thing that is certain and indubitable."¹⁰ Descartes was fortunate enough to discover his firm and immovable fulcrum: his own existence — 'I think, therefore I am.' He had now his fulcrum; what would be his lever?

It would have to be the *trustworthiness of his reasoning powers*. But how could he establish this, seeing that this also was involved in universal doubt and destroyed with all other spontaneous convictions? Descartes hit upon an ingenious idea. He would demonstrate the existence of an infinitely perfect Being, who must have given man faculties which are trustworthy and capable of discovering truth. The only thing absolutely certain so far for Descartes was his own existence; and from this fact alone he would be obliged to deduce God's existence.

Here is his line of thought. We have in our mind the idea of God as an infinitely perfect Being. But an infinitely perfect Being must have existence, otherwise it would not be infinitely perfect Ergo, God exists.¹¹ This is an *a priori or ontological argument*. [St. Anselm's *ed.*] Descartes attempts to prove God's existence a posteriori, by means of an argument from causality. We have the idea of God in our mind. Since this idea represents an infinitely perfect Being, we, as finite beings, cannot have originated such an idea in virtue of our own powers. This idea being beyond our

mental capacity, it could have originated only from a Being who possesses such infinite perfection. Ergo, God exists.’¹²

Having proved to his own satisfaction that God exists, Descartes proceeds to show that He is the creator of man.¹³ But the infinitely perfect God cannot be a deceiver; consequently, He cannot have given man deceptive powers of knowledge, and man’s faculties are thus shown to be *trustworthy*, “provided we separate what there is of clear and distinct in the knowledge from what is obscure and confused.”¹⁴ In the light of this criterion of ‘clear and distinct’ knowledge all previous doubts about the world, sense-perception, and intellection must vanish. Skepticism is defeated, and valid knowledge is possible.

FAILURE OF DESCARTES’ METHOD

Descartes’ fundamental purpose was laudable; he desired to defend human knowledge against the attacks of skeptics. Generally speaking, he was justified in demanding that the investigation into the nature and limits of knowledge exclude preconceived ideas, traditional doctrines, and unwarranted presuppositions as evidence and proof, since the validity of all spontaneous convictions was at stake. But when he proposed to approach the problem in an attitude of universal real doubt, discarding even the capability of the human mind to know truth and refusing to accept such essential principles as the Principle of Contradiction and the Principle of Sufficient Reason, he made the solution of the problem impossible for himself. Here are a few considerations which compel us to reject his system.

Descartes began his inquiry by doubting all knowledge without exception; he was even willing to accept it as 'entirely *false*.' This being the case, what about the *idea of God* as an all-perfect Being, since he admits that he discovered this idea in his own mind? According to his own principle of universal doubt, he simply *cannot know* whether this idea of God is correct or incorrect; as a matter of fact, according to this principle, he should consider it as 'entirely false,' until proved otherwise. But if his idea of God as an all-perfect Being may be incorrect, he cannot logically deduce from this idea God's existence and veracity. Since the very idea of God is doubtful, these other things must remain doubtful, and the trustworthiness of man's faculties must also remain doubtful. Descartes cannot escape his own real doubt.

Irrespective of the intrinsic value of the proofs with which Descartes attempts to demonstrate God's existence, we must not overlook the fact that he uses a *process of reasoning* to make this demonstration. Since his very reason and the process of reasoning is as yet of doubtful validity, how can he validly demonstrate God's existence and veracity? The trustworthiness of Descartes' reasoning powers is supposed to flow as a necessary *consequence* from the infinite perfection of God; and God's infinite perfection is made certain to him by means of a proof developed by these very reasoning powers, *before* he has proved that these reasoning powers are valid and trustworthy: he thereby gratuitously *assumes* the very thing *beforehand* which he intends to prove *afterwards*. He unconsciously accepts the trustworthiness of his faculties in

attempting to demonstrate the existence and infinite perfection of God, and that is an illegitimate procedure; because a doubtfully valid faculty can produce only a doubtfully valid argument, and a doubtfully valid argument can only lead to a doubtfully valid conclusion. The whole argument for God's existence and veracity is thus nullified by his doubtful reason and reasoning process; and, since he proves the reliability of his reason and reasoning process by means of God's veracity, which (according to his supposition) must be doubtful, the proof for the trustworthiness of his own powers is nullified and can never be established beyond doubt. His attempt, therefore, to vindicate the validity of human knowledge failed essentially, because, by rejecting the reliability of his own powers to discover and know truth, he made it impossible for himself to extricate himself from the net of his own universal doubt.

Moreover, there are *glaring inconsistencies* in his procedure. He claims to reject everything, even the Principle of Contradiction and the Principle of Sufficient Reason. But he does not. He surreptitiously *assumes the truth* of these principles and uses them continually. As obvious a fact as the '*Cogito, ergo sum*' is really based on the validity and truth of the Principle of Contradiction. This principle asserts that it is impossible for something to be and not to be at the same time. Descartes becomes certain of his own existence by the very fact of his 'thinking' or 'doubting.' True. But why? Because he perceives clearly that it is impossible to 'think and not think,' to 'exist and not exist' at the same time. If Descartes were consistent and really doubted the Principle of Contradiction, he would have

to affirm that *it could be possible* for a being to 'think and not think,' to 'exist and not exist' at the same time. But then, according to his own supposition, he could not be sure after all that the ultimate fact of his existence is certain, and his famous '*Cogito, ergo sum*' has no real objective value. Only by granting the validity and truth of the Principle of Contradiction beforehand, can his existence be established as an objective fact; and that is exactly, though inconsistently, what Descartes does.

The same line of reasoning applies to his *proofs for God's existence* and infinite perfection. Notwithstanding his proofs, his rejection of the Principle of Contradiction will forever invalidate his arguments, because, as long as this principle is not established and accepted, he could never be sure whether it would not be possible for God to 'exist and not exist,' to 'be infinitely perfect and not infinitely perfect' at the same time. Similarly, he would always be compelled to remain in doubt whether God could not be 'veracious and not veracious,' 'deceiving and not deceiving,' unless the Principle of Contradiction were taken as granted *before he begins to prove God's existence*. Unwittingly Descartes does accept this Principle of Contradiction throughout his demonstrations, but that is an inexcusable inconsistency.

So, too, Descartes conducts his inquiry under the supposition that he has doubted the Principle of Sufficient Reason and the Principle of Causality. But he does not hesitate to use these principles *before he has established their validity*. Consider his a posteriori argument for the existence and infinite perfection of God. He contends that the idea of God as an all-perfect Being could not have

originated in our mind, because such an idea would exceed the causality of the human mind, the latter being less perfect than the contents of the idea itself; consequently, this idea had to be produced in us by God Himself (and this proves that God exists as an infinitely perfect Being), otherwise there would be no sufficient reason for the presence of such an idea in our mind. This line of reasoning shows plainly that Descartes uses the Principles of Sufficient Reason and Causality in demonstrating God's existence, *although he doubts their validity*. Now, if he lets these principles stand as doubtful, his entire demonstration is vitiated and nullified by doubt; and if he accepts them as valid prior to establishing their validity, he acts contrary to his fundamental doubt and is inconsistent: in either case he makes the demonstration of God's existence impossible. His actual procedure in all the arguments he makes is such, however, that he presupposes the validity of these laws of thought; and that is for him a glaring inconsistency, since his universal methodic doubt will not permit him to accept their validity before he has proved the existence and veracity of God.

Finally, Descartes' universal methodic doubt *leads logically to universal skepticism*. No certitude can ever be attained in a system where the very foundations of human reason are completely destroyed. When he rejects as doubtful and even as 'absolutely false' all in regard to which he could imagine the least ground for doubt (*absolument faux tout ce en quoi je pourrais imaginer la moindre doute*), he saws off the very limb upon which he is seated. If the nature of his mind and the laws of thought are called into

real doubt (not to speak of considering them to be 'absolutely false'), then all acts and facts of consciousness, all ideas, judgments, and inferences, can no longer be trusted. But how can the mind attempt to validate its own trustworthiness except by means of these things? If Descartes mistrusts the simple judgments ' $2 + 3 = 5$ ' and 'A square has four sides,' how can he trust his faculties in making the far more complicated arguments with which he tries to prove God's existence and infinite perfections?

The effort of Descartes to find his way back to certitude by means of the roundabout detour of the existence and veracity of God, shows the desperate plight in which he had placed himself by his universal doubt. The steps he takes in retracing his way are these: his own existence; the existence and infinite perfection of God; God's absolute veracity; his creation by God; the trustworthiness of his faculties, due to the veracity of God who created him; the truth and validity of all those spontaneous convictions of his mind which are 'clear and distinct.' But we have seen that Descartes could not consistently prove God's existence, since he could only do so by means of a reasoning process which, according to his own principles, was essentially doubtful in its validity, and even 'absolutely false.' The only thing of which he could ever be certain was his own existence; and this, too, strictly speaking, Descartes should have doubted, because he had doubted the Principle of Contradiction and the testimony of his own consciousness. Our modern Archimedes had indeed found his fulcrum, namely his own existence; but now he could not move the world, because he had thrown away his lever.

Descartes, if he had been consistent, should have embraced universal skepticism, because his universal doubt left him no other choice: he had no way of retracing his course. He was like a mariner who scuttles his boat and swims to a rock in mid-ocean. The rock is the solitary fact of his own existence. True, he had found a solid point. But it is a lonely and desolate spot; and he is marooned on it forever, doomed to die of mental starvation, surrounded by an unbridgeable ocean of doubt.

The Cartesian universal methodic doubt, therefore, is not a proper approach to the problem of human knowledge. It is in reality only a variation of universal skepticism, and as such it is absurd. We will have to make our approach in a different fashion.

The necessary conclusion to be drawn from the above critical examination of universal skepticism is obvious: *Complete doubt cannot be the proper approach to the problem of human knowledge.* It would be fatal. Starting with complete doubt, we can no more reach a solution of the problem of human knowledge than a bird can fly with amputated wings.

Another important conclusion is this: *Any theory of knowledge which leads logically to universal skepticism is intrinsically false.* Nothing could be plainer. There must be an essential flaw in a theory which, if consistently carried out to its logical conclusions, ends in the absurdity of skepticism. This principle will enable us to pass a condemnatory verdict on many systems of thought, even though we may not always be capable of discovering the exact fallacy underlying the systems.

SUMMARY OF CHAPTER IV

In making a critical examination of the spontaneous convictions of man, improper methods of approach must be avoided. Such are universal skepticism and Descartes' universal methodic doubt.

1. *Skepticism a False Method.* It is a practical impossibility. No sane man can live without many practical certainties, denying his theoretical skepticism in his daily conduct. It is also a theoretical absurdity, because it is full of inconsistencies. Skeptics are 'certain' that we must doubt. They distinguish between 'truth' and 'error,' 'certitude' and 'doubt,' realizing that these opposites cannot be identical; thereby they admit the validity of the Principle of Contradiction. They give reasons for skepticism which they consider cogent and valid, contrary to their skeptic principles. They are conscious of their doubts; they thus accept consciousness as a valid source of knowledge.

2. *Refutation of Skeptic Arguments.* Erroneous opinions do not prove that certitude is impossible; errors are accidental, because we can detect and correct them. It is not true that every argument involves either an infinite regress or a gratuitous assumption or a vicious circle; self-evident truths avoid all these logical difficulties and form the ultimate basis of knowledge.

3. *Descartes' Methodic Doubt.* In his endeavor to place knowledge upon a firm basis, Descartes sought for an indubitable truth as his starting point, doubting everything in the meantime. He found this truth in the fact of his own

existence. He then deduced God's existence from his idea of God. God, being infinitely perfect, cannot deceive; consequently, He must have given man trustworthy faculties. Man's faculties having been proved to be trustworthy, man can now acquire true and valid knowledge.

4. *Failure of Descartes' Method.* Since he doubts everything, he cannot be certain that his idea of God is correct. He uses a reasoning process to demonstrate God's existence; but his reason is of doubtful value, until he proves its trustworthiness from the veracity of God. He is guilty of inconsistency, in as much as he presupposes the validity of the Principles of Contradiction, Sufficient Reason, and Causality, although their validity has not been established by him. His procedure, if consistently carried through, would lead logically to universal skepticism.

Conclusions to be drawn: complete doubt cannot be the proper approach to the problem of human knowledge; any theory of knowledge which leads logically to universal skepticism is intrinsically false.

READINGS

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The Ways of Knowing, Ch. VI; W. K. Hocking, *Types of Philosophy*, Ch. VIII.

1 'Essays, tr. by Charles Cotton, ed. by W. C. Hazlitt (London, 1923), vols..Bk. TI, Ch. XII, especially pp. 276, 277. 25

2 'De Civ. Dei, jib. II, C. 26. 4 Loc. cit.

3 *Loc. cit.*

4 *Principia Phil.*, Pars I. Translated by John Veich, LL.D., 13 ed. (Will. Blackwood and Sons, Edinburgh and London, 1902). Also *Méditations*, passim; also *Discours*, Part I

5 'Méditation: I.

6 *Loc. cit.*

7 *Discours*, IV. <<. . je pensai que... je rejetasse comme absolument faux tout ce en quoi je pourrais imaginer la moindre doute.>>

8 *Méditations* I, toward the close.

9 *Loc. cit.*, II, beginning

10 *Loc. cit.* II, beginning

11 *Princ. Phil.*, Pars I, XVIII

12 *Princ. Phil.*, Pars I, XVIII

13 *Ibid.*, Pars I, XX

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Chapter 5

THE PRIMARY TRUTHS

THE PROPER APPROACH TO THE PROBLEM OF HUMAN KNOWLEDGE IS an important matter. Since universal skepticism would produce a paralysis of our reasoning powers, any initial attitude of mind which would involve skepticism must be excluded as wrong from the beginning. For this reason Descartes' methodic doubt, because it was intended by him as a real and genuine doubt about everything without exception prior to all investigation, was doomed to failure: it could lead only to skepticism, if consistently carried out. Such attempts, however, have done this much good, that they show us certain pitfalls which must be avoided. We are now better able to understand the *proper attitude* which is required in our approach to the problem.

The proper approach must be determined by the *purpose* of the whole investigation, and the purpose of epistemology is neither more nor less than this: to inquire into the rational grounds and ultimate reasons of our spontaneous convictions by means of a critical examination, in order to see whether these spontaneous convictions are *justifiable before reason* and can thus become philosophic certainties. This entails a number of things.

INITIAL STATE OF MIND

For one thing, we must accept the *data of the problem*, at least in so far as they are subjective facts in our mental life. This includes the entire body of spontaneous convictions as outlined in previous chapters. Whatever may be the outcome of our investigation, we cannot deny that we actually have these convictions. These convictions, then, must be accepted as the raw materials upon which our reason must work in attempting to solve the problem in question.

Again, it must be borne in mind from the start that the purpose of epistemology is not to discredit and disprove our spontaneous convictions. If anything, its purpose is rather the opposite — to prove and *vindicate* them. This does not mean that the philosopher should not investigate their claims in all critical severity; that is both his right and his duty. But the fact is, as we pointed out in the first chapter, that these convictions have a strong *prima facie evidence* in their favor, since they are spontaneous and natural and are in agreement with the facts of our whole *ordinary life*. In the research work of any of the sciences this would be considered sufficient proof for a well-grounded *hypothesis*, and we should also, therefore, accept the validity of these spontaneous convictions as *hypothetically true*. As a consequence of this, only proofs and reasons of the most serious nature should compel us to recede from this position.

Furthermore, it must be obvious that we cannot take up the single spontaneous convictions present in our mind and

investigate them individually. This would be a hopeless task. They are far too numerous and detailed, comprising the whole field of knowledge contained in the various sciences and in our ordinary life. It will be more advantageous to group them into *broad classes* and submit these classes to a critical examination; the individual convictions will then stand or fall with their respective class as a whole. If, for instance, we can prove that our senses are valid sources of knowledge, then our convictions based on sense-perception will be valid as *a class*; and that would be sufficient to show that these have a rational foundation.

Finally, we cannot begin our critical inquiry by really doubting everything, since that would be universal skepticism, and skepticism, as we have seen, is irrational; consequently, *we must begin by accepting something as certain*. On the other hand, we cannot begin with unwarranted presuppositions, because, by the very fact that they are unwarranted, they would be of doubtful validity, and thus our entire investigation would rest upon a doubtful foundation. How can this initial difficulty be overcome?

There is only one way in which this can be done: We must begin with some truths which will be so transparently clear and *irresistibly evident* to our reason that a little reflection will give us *reflex* and *philosophic certitude*. In this way we will be guilty neither of skepticism nor of *unwarranted* presuppositions; the fact that they are certain excludes skepticism, and the fact that they are irresistibly evident to our reason saves them from being unwarranted presuppositions. Certitude, as we know, is the state of the

mind in which it gives a firm assent to a judgment without fear of the possibility of error, due to recognized valid reasons. If we were to give such an assent to a judgment without recognizing any valid reason for this assent, then indeed we would have an unwarranted presupposition; we would simply presuppose it to be true without knowing why, and that would be unwarranted. But if we understand the ground or reasons which exclude all reasonable fear of error, then our assent to such a judgment would be warranted and *rationally justified*. Hence, if we could find some such *basic truths*, we would have a solid footing for our inquiry and proceed from there in the investigation of our spontaneous convictions. Are there any such truths?

There are; many of them. At present, however, we are only concerned with those which are *essential to all valid knowledge* without exception. There must be some truths which form the bedrock of all knowledge, which lie at the bottom of all thinking, and which constitute the indispensable foundation of all reasoning. These truths, which must be present in every act of knowledge, we must establish and vindicate first, before we can safely investigate the various classes of spontaneous convictions. With a little thoughtful reflection we will perceive that there are *three primary truths* which are most fundamental to the human mind and absolutely necessary in all its operations:

The First Fact: my own existence — ‘I exist.’ *The First principle*: the Principle of Contradiction — ‘It is impossible for something to be and not to be at the same time.’ *The First Condition*: the essential trustworthiness of my reason — ‘My reason is capable of knowing truth’

These three primary truths are, of course, spontaneous convictions of our mind, and as such they are accepted without question and never doubted by the ordinary man. That he is convinced of his own existence goes without saying. That he is convinced of the truth and validity of the Principle of Contradiction, is equally certain. He may not be able to formulate the principle in words; but that the *meaning* of this principle well known to him and accepted in all its rigor, cannot be doubted. He shows it in all his thinking and reasoning. It is contained *implicitly* in all his statements. When he says 'I am not feeling well,' he is conscious of the fact that it is impossible to 'feel well' and 'feel ill' at the same time. And when he says 'You are wrong,' he realizes that one cannot be 'right' and 'wrong' in the same way at the same moment. And so with other judgments; they all involve the Principle of Contradiction. The same is true of the essential reliability of his reason. He is conscious, of course, that he can and does make many errors of judgment; but he is also conscious of the fact that these errors are only incidental and do not invalidate the *essential* capability of his reason to know truth and to distinguish it from error. The ordinary man, whether educated or uneducated, once he is aware of the full grounds underlying the subject in question and can say 'I understand this,' never doubts that his knowledge is true and valid. Man's daily life in all its phases is regulated by his spontaneous conviction of the validity of these primary truths.

PROOF OF THREE PRIMARY TRUTHS

This brings us face to face with the vital question: Must we then accept these primary truths without demonstration or proof? Without demonstration, yes; without proof, no. We must be clear in our own mind what we understand by 'demonstration' and 'proof.' A 'demonstration' is a *mediate inference*, a process of reasoning, by means of which, from something that is better known, we conclude to the truth of something that is less well known. A 'proof' is anything that makes the truth of a thing indubitably clear to our mind, whether this be by means of a demonstration proper or by means of an immediate insight into the truth due to the *irresistible clearness of the truth itself*. In the latter case (immediate insight based on self-evidence) a 'demonstration' will be superfluous, because the truth is clear in itself and does not need a clearer truth to demonstrate it; it is only when something is not clear in itself that a 'demonstration' becomes necessary to prove its truth. Bearing this distinction in mind, the answer to the question is as follows:

The three primary truths cannot be demonstrated; nor do they need a demonstration, because they are self-evident.

They cannot be demonstrated. The only way I could possibly demonstrate my own existence would be by deducing it from some other idea more clear to me than my existence itself. But what can be clearer to me than my own existence? The only imaginable way would be to deduce it from my thinking, my willing, or some other operation of

mine. But these operations presuppose and include my existence. Such a demonstration could not be formulated except in the following manner: 'Everyone who thinks, exists; I think; ergo, I exist.' The major premise is a general truth; well and good. The minor premise, however, expresses a fact, 'I think.' This minor premise is really nothing else than 'I am one who thinks,' and 'I am' is the same as 'I exist.' Consequently, my existence is already contained in my premise directly, and that is a begging of the question. The demonstration is invalid, because the minor premise, since it already involves my existence, is not really clearer to me than my existence, which I intend to demonstrate. Hence, I cannot demonstrate my own existence.

Nor can I demonstrate the *Principle of Contradiction*. Any demonstration which I might use to prove it, would have to consist of premises which are true and not erroneous, in order to be a valid demonstration. But to be 'true and not erroneous presupposes that I know that 'truth' and 'error' are not, and cannot, be the same. That, however, again presupposes and involves the truth of the Principle of Contradiction, namely that 'it is impossible for a thing to be and not to be at the same time.' Again, such a demonstration would have to possess consistency, in order to be valid. But that implies that 'consistency' and 'inconsistency' are opposed and cannot be the same; and that is due to the Principle of Contradiction. Hence, the truth of the Principle of Contradiction cannot be demonstrated, but must be presupposed for the validity of every demonstration.

Similarly, I cannot demonstrate the *reliability* of my own reason. I could only attempt such a demonstration by formulating an argument *with my own reason*. But this very attempt at a demonstration by means of my own reason *presupposes* that my reason is really reliable and capable of making a valid demonstration. The trustworthiness of my reason would thus already be presupposed and involved in the demonstration itself, and that would make the demonstration invalid.

Any attempt, therefore, to prove the three primary truths by means of a real demonstration can amount to nothing more than a begging of the question. Does that mean that they are *gratuitous* assumptions, *unwarranted* presuppositions? If that were the case, then our knowledge would indeed be grounded on an irrational foundation. We must remember, however, that only those truths demand a demonstration which are so obscure in themselves or so doubtful to our mind that we need another and clearer idea to manifest them to us. If they are perfectly clear and self-evident, we do not need a demonstration to make them clear, because the very purpose of a demonstration is already fulfilled. Under such circumstances, therefore, a truth would not be a gratuitous assumption nor an unwarranted presupposition. And that, precisely, is the case with the three primary truths: they need no demonstration, because *they are self-evident*.

Consider the First Fact — ‘I exist.’ The truth of my own existence is so evident to me that I am compelled by irresistible necessity to accept it, because I have a *direct insight* and an *immediate intuition* of myself as existing. I

could not doubt this fact, even if I tried. The very doubt or denial of my existence would prove my existence, since I could not 'doubt' or 'deny,' if I did not exist. Why, then, should I demand or need a demonstration of this perfectly obvious fact? It would be unreasonable to demonstrate something which is clearer to me than any demonstration.

The same applies to the First Principle; it requires no demonstration, because it is intuitively clear to the mind and certain beyond doubt and denial. No one can doubt or deny the validity of the Principle of Contradiction without asserting its validity by his very doubt or denial. If he actually denied or doubted it, he would by this fact alone affirm that 'truth' and 'error,' 'doubt' and 'certitude' are not, and cannot be, the same. And why are they not the same? Because of the validity of the very Principle of Contradiction which he doubts or denies. Since it is the Principle of Contradiction alone which guarantees the validity of every demonstration, and no demonstration can be valid without it, it is evident that no demonstration can give validity to the First Principle itself; the First Principle is so obvious and clear to the thinking mind, that the mind needs no demonstration to make it clear.

And so it is with the *First Condition*. It needs no demonstration to manifest its truth, since not only every argument in its favor presupposes the reliability of our reason, but every doubt or denial does the same. By the very fact that I would doubt or deny the trustworthiness of my reason, I would take it for granted that *my reason is reliable and trustworthy in its doubt or denial*, since I thereby affirm that I understand clearly the difference

between truth and error and also the objective value of the reasons or grounds which should govern my assent. Even the skeptic thinks that he is right in doubting everything, because of the many proofs he has discovered against certainty; but thereby he asserts indirectly that his own reason is reliable in its investigation. When, therefore, a thing is so clear and evident that I cannot doubt or deny it without affirming it by my very doubt or denial, I need no demonstration to prove its truth and validity.

After all, clearness of insight due to the *evidence of truth itself* is the basis of knowledge for our mind. When the analysis of a judgment does not make its truth clear to us, then we must have recourse to a demonstration, in order to obtain the necessary clearness of insight into its truth; if the demonstration gives our mind this insight and convinces it, it is simply because it has made *truth evident* to the mind. When, however, our mind obtains this insight into truth by a mere analysis and contemplation of the judgment, due to the irresistible evidence of the truth itself without the aid of a demonstration, then we have truth and certainty in its purest, simplest, and *most rational* form. Such is the truth and certainty of the three primary truths as just shown.

We see, then, that the three primary truths are not unwarranted assumptions and presuppositions. They are eminently rational and philosophically well grounded. Our assent to their truth is based on undeniable and unshakable evidence of the most convincing nature and not upon some blind and unaccountable compulsion of our mental constitution. This being the case, the First Fact, the First Principle, and the First Condition are no longer only the

spontaneous convictions which we share with the ordinary man, but *reflex* and *philosophic certainties* which have stood the test of our critical examination. They form the foundation of all knowledge, science, and philosophy. With these three primary truths critically established and philosophically certain, our investigation of the problem of human knowledge has been placed upon a solid basis, and we can now proceed with confidence and definite hope of success.

CRITICAL DOGMATISM

The primary truths being *rational presuppositions*, which must be accepted without positive demonstration (which, of course, they do not need, as we have shown), and which are considered prerequisites for every process of thinking and reasoning, are styled *dogmas of epistemology*. The system of epistemology which, after a critical examination of their validity, accepts these three primary truths as essentially necessary for every process of thinking and reasoning prior to the investigation of the various classes of spontaneous convictions themselves, is called *critical dogmatism*. We are, therefore, critical dogmatists. That these 'dogmas' are not to be confounded with the dogmas of theology is evident. The term is derived from the Greek word *δόγμα* and means any accepted doctrine or tenet. Here, of course, it is taken in a philosophical sense.

Critical dogmatism, then, is the only logical and rational approach to the problem of human knowledge. We must accept it, if we do not wish to be caught in the inescapable

net of universal doubt. Universal doubt, as an initial state of mind in approaching the problem, would mean the paralysis of all thought, the bankruptcy of science, the suicide of reason; it would condemn us to failure before ever we started. The only alternative is critical dogmatism.

D. Card. Mercier, together with other neo-scholastics of the Louvain School, objects strongly to the acceptance of these three primary truths or 'dogmas.' He considers this an 'exaggerated dogmatism.' Here is his attitude in the question:

"These supposed primary truths, if we except the principle of contradiction, are not so self-evident as to call for no proof. If they do not demand demonstration in the strict sense of the word, yet certainly an attentive examination is necessary to bring out their evidence. Especially does the capability of the mind to know the truth need consideration, if not actual demonstration, for is it not the very subject of this treatise? To affirm it *a priori* is to ignore the problem of certitude instead of solving it.

"We can, then, assert *a priori* neither the essential incapability of the human reason (universal doubt) nor its general *capability* to know the truth (exaggerated dogmatism). Between these two extreme theories there is room for an intermediate one which we adopt as our own, one which we shall call mitigated or rational dogmatism. It may be stated thus:

"1. As regards the capability of our *faculties* or powers of acquiring knowledge, mitigated dogmatism *deliberately abstains* from making a judgment, holding that at the beginning of the study of the problem of certitude it is

impossible either to affirm or to deny our mental capability of knowing truth. Before a judgment can be pronounced we must first study the value of the mind's acts. The first and immediate subject for our reflection is not the power as such but the acts, from which alone we come to a knowledge of the nature of the faculty that elicits them. If by dint of reflection we can discover that our mental acts, our assents, are objective, that is, conformable to things as they are in reality, then and then only shall we be able legitimately to infer that our mind is capable of attaining true knowledge. After all, this manner of procedure is a truly scientific method based upon observation: to use a homely comparison, a good digestion is the only proof of the stomach's ability to digest properly.

"2. As regards our judgments or the *acts* of the mind by which truth is attained, the initial state of the intelligence at the outset of the study of epistemology differs according as these judgments are mediately or *immediately* evident. In the case of the former, *doubt* cannot be avoided, whilst in that of the latter, which stand firm against any doubt, a state of certitude is always present."

He then goes on to show that these mediate judgments must be demonstrated, until they finally rest upon evident, indemonstrable propositions. And he concludes his exposition with the words:

"Sooner or later, then, the demonstration of mediate propositions leads us back to indemonstrable premises which we call *immediate propositions*: such are all propositions in which the identity or the nonidentity of the predicate with the subject is seen by the simple comparison

of the terms. These immediate propositions, although indemonstrable, are by no means doubtful: their very evidence makes them indemonstrable, that is to say, incapable of being referred to propositions which are more evident. And when they are reflected upon by the mind, they necessarily draw its assent, *they force their truth upon the mind*.

“In setting out to solve the problem of certitude we therefore suppose only two facts, which skeptics themselves are willing to admit, namely, the existence of necessary spontaneous assents and the power to examine these by reflection. To disallow these data would make the problem of certitude impossible, inasmuch as to suppress ‘*id de quo quaeritur*’ necessarily involves the suppression of ‘*id quod quaeritur*.’ There is, however, all the difference in the world between taking these data for granted and the *a priori* assertion that we are sure to find skepticism wrong, that the result of our investigation must be the dogmatic thesis that the mind is capable of knowing truth.”¹

Mercier here states that the initial state of mind in setting out to solve the problem of certitude consists in supposing only *two facts*, namely, “the existence of necessary spontaneous assents and the power to examine these by reflection.” But what is this ‘power to examine by reflection’? It is *reason*. Reason is the instrument of reflection. And he intends to use this reason as the instrument of his reflection in examining these necessary spontaneous assents or convictions, although, as he himself states, “we can assert *a priori* neither the essential incapability of the human reason nor its general capability

to know the truth.” But if the *essential* capability of this reason is in doubt, then the whole process of examining these convictions is a doubtful process, and the whole result of this examination (being the result of a doubtful examining faculty) must also remain in doubt: a doubtful reasoning faculty can produce only doubtful conclusions.

Again, Mercier says: “If by dint of reflection we can discover that our mental acts, our assents, are objective, that is, conformable to things as they are in reality, then and then only shall we be able legitimately to infer that our mind is capable of attaining true knowledge.” How are we “to discover that our mental acts are conformable to things as they are in reality”? He gives the answer when he says “by dint of reflection.” And with what are we to make this reflection? With our reason, of course. He, therefore, presupposes that our ‘reason can discover by reflection that our mental acts or assents (spontaneous convictions) actually conform “to things as they are in reality,” and from this “then and then only shall we be able legitimately to *infer* that our mind is capable of attaining true knowledge.” This means that we must *demonstrate* the reliability of our reason by means of a ‘legitimate inference’ from its own acts. The capability of human reason will, therefore, be the conclusion drawn by means of this inference; and this *inference* is made by this very reason whose ‘essential capability’ is in question. The whole process simply *presupposes* the capability of human reason to begin with; and if the ‘essential capability’ of human reason is doubtful, then the whole inference is doubtful, and the ‘essential capability’ of this reason is not, and never can be,

established. The entire procedure is a begging of the question.

Mercier's method can never solve the problem, if the capability of human reason is supposed to be the final outcome of the investigation. This investigation can be valid only if human reason, the instrument of this examination, is known to be valid, and this validity must be established *before* any special investigation is started. And the very fact that Mercier surreptitiously presupposes the capability of human reason in making his investigation and formulating his arguments, although this capability is *still in question*, shows plainly that it cannot really ever be doubted in seriousness without becoming involved in inconsistencies. Mercier, therefore, unwittingly accepts the First Condition, the essential capability of human reason to know truth.

And when he asserts that we must "examine these spontaneous convictions by reflection," he also accepts the dogma of the First Fact, his existence. For how could he 'examine' and 'reflect,' if he were not certain of his own existence *prior* to this examination and reflection? And how can he "by dint of reflection discover that our convictions are conformable to things as they are in reality," if the First Principle, the Principle of Contradiction, did not hold? This 'conformity to things' is, as he states rightly, 'true knowledge.' But how can he know this, unless the Principle of Contradiction be established and accepted beforehand?

Without realizing it, then, Mercier accepts the three dogmas or primary truths. His mitigated or rational dogmatism is an illusion, and he has no right to call the acceptance of the three primary truths an *exaggerated*

dogmatism. We are justified (as we have shown above) in saying of them what he says of immediate propositions: "their very evidence makes them indemonstrable, that is to say, incapable of being referred to propositions which are more evident; and when they are reflected upon by the mind, they necessarily draw its assent, *they force their truth upon the mind.*"

These three dogmas or primary truths are, therefore, *not a priori assertions*, as he contends. They are proved to be 'immediate propositions,' self-evident in their truth, based upon critical reflection; as such they are no longer merely spontaneous convictions, but *reflex and philosophic certainties*.

And thus the basis of human knowledge in its essential foundation is seen to be rational.

Is the problem of knowledge solved by the proof of these primary truths? Not at all. We have merely gained the proper starting point for our investigation of the general problem. We have indeed established the fact that we exist, that it is impossible for something to be and not to be at the same time, and that it would be unreasonable to doubt the capability of but reason to know truth. These are merely preliminary truths, necessary to conduct our investigation; the general problem still remains. We must now examine the data of consciousness, of sense-perception, of intellectual ideas, of first principles, of rational inference, and see whether the spontaneous convictions derived from these sources of knowledge are based on rational grounds and therefore philosophically certain.

SUMMARY OF CHAPTER V

The proper approach to the problem of knowledge must be determined by the purpose of epistemology: namely, to inquire into the rational grounds of our spontaneous convictions, in order to see whether they are justifiable before reason and can thus become philosophic certainties.

1. *Initial State of Mind.* We must accept the data of the problem, in so far as they are subjective facts in our mental life. Since our spontaneous convictions have a strong *prima facie* evidence in their favor, we must accept them as hypothetically true and try to vindicate them. It will be necessary to investigate these convictions as classes. Since we cannot doubt everything, we must begin our inquiry by accepting something as certain. These are the three primary truths: the First Fact, our existence; the First Principle, the Principle of Contradiction; and the First Condition, the essential capability of the mind to know truth.

2. *Proof of Primary Truths.* These primary truths cannot be proved by a positive demonstration, because they are presupposed and involved in every demonstration. But they need no demonstration, because they are so evident that any attempt to doubt or deny them would already mean their affirmation and acceptance. They are, therefore, grounded in reason.

3. *Critical Dogmatism.* These three primary truths are called the 'dogmas of epistemology,' and the system which

accepts these doctrines or principles is called critical dogmatism.

Mercier advocated a mitigated dogmatism. He accepts only two facts: the data of our spontaneous convictions and the power to examine them. Inadvertently, however, he presupposes the validity of these three primary truths. And if the essential capability of reason in its reflection is not admitted, the whole investigation must remain doubtful.

READINGS

P. Coffey, *op. cit.*, pp. 127-135; D. Card. Mercier, *op. cit.*, 357-362; J. G. Vance, *op. cit.*, Ch. III and Ch. V; J. Rickaby, *op. cit.*, Part I, Ch. X; T. Pesch, *op. cit.*, pp. 75-86; J. Balmes, *Fundamental Philosophy*, Bk. I, Ch. II.

¹ 'D. Mercier, *A Manual of Modern Scholastic Philosophy*, Vol. I, *Criteriology*, Nos. 19—22 (Kegan Paul, Trench, Trübner and Co., Ltd., London, 1916). See also his *Critéiologie Générale* (1906), Nos. 44—59

PART II

**THE VALIDITY OF HUMAN
KNOWLEDGE**

Section I. EXPERIENCE: Consciousness, Sense-
Perception

Section II. INTELLECTION: Ideas, Judgments,
Reasoning

Chapter 6

THE TRUTH-VALUE OF CONSCIOUSNESS

SECTION I EXPERIENCE: CONSCIOUSNESS, SENSE-PERCEPTION

WE ARE NOW IN A POSITION TO MAKE A CRITICAL INQUIRY INTO THE validity of the various classes of spontaneous convictions of man furnished by the different sources of our knowledge. Skepticism with its universal doubt, as we have seen, is a practical impossibility and a philosophic absurdity; certitude, as a consequence, is and must be attainable. The three primary truths — the First Fact, the First Principle, and the First Condition — have also been established as self-evident and Undeniable certainties; they form the rational starting point from which our investigation can legitimately proceed.

We will now examine the truth-value of the sources of our knowledge. By the *sources of knowledge* we understand the means or *media through which we arrive at truth and certitude*. These are the cognitive operations and faculties of man, as much as it is through them that the knowing subject is brought into contact with objects and through them that these objects become known to the subject. Knowledge, as we have pointed out before, essentially involves three factors — the subject which knows, the object which becomes known, and the cognitive process or act which makes the object known to the subject; the object must act upon the subject, the subject must react to the object by means of a mental assimilation, and is mental assimilation takes place in the process or act of knowledge.

There are *two main sources* of knowledge from which our spontaneous convictions flow: *experience and intellection*. Experience is the source of our knowledge of concrete, individual, contingent facts. It is twofold: *consciousness*, by which we become aware of our intra-mental states and acts; and *sense-perception*, which enables us to apprehend external, material objects. Consciousness is internal experience, while sense-perception is external experience. Intellection comprises three operations — *ideas, judgments, and inferences*; it is the source of our intellectual knowledge of necessary and universal truths. Taken individually and separately, these are the sources of our knowledge which we will have to submit to a critical analysis: consciousness, sense-perception, ideas, judgments, and inferences.

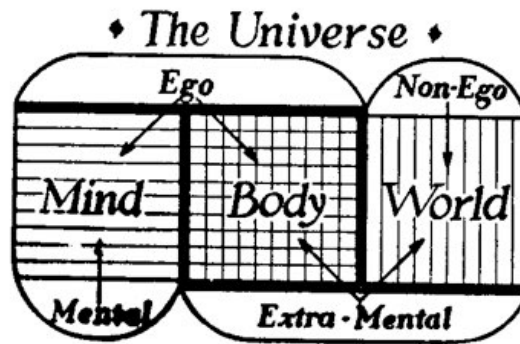
THE PROBLEM OF CONSCIOUSNESS

Since human knowledge begins in the child with external experience or sense-perception, it would seem that sense-perception should be the first source to be examined for its truth-value. We must remember, however, that it is not the validity of the child's knowledge which is at stake, but the validity of *knowledge in general* as we find it in our adult mind. Now, a thing can only become known to us, and knowledge can only become knowledge for us, in so far as we are *conscious of its presence in our mind*. No one denies that our spontaneous convictions are at least subjective facts of our consciousness; they are the acknowledged data of the whole problem. It will be best

then, to begin our inquiry by investigating the truth-value of consciousness itself as a primary source of our knowledge.

A number of important terms have become current in the modern philosophy of knowledge, and great confusion has arisen from the fact that the exact meaning of these terms has not always been recognized and kept distinct in the discussion. They are: *Ego and non-Ego, self and non-self, mental and extra-mental*. Whatever may be their ultimate validity, they have a definite signification, and we should be clear beforehand just what their signification implies. When speaking about the universe in connection with human knowledge, it has become common usage to say that the universe consists of the 'Ego' and the 'non-Ego,' the 'self' and 'non-self,' the 'mental' and 'extra-mental.' This division and designation is taken from the standpoint of man's consciousness. *Ego* is Latin, and it is identical with the English terms 'I,' 'myself,' and 'self'; *non-Ego* is identical in meaning with 'non-self.' By 'Ego' or 'self' we understand man in his whole person, consisting of body and mind together as a unit; and by 'non-Ego' or 'non-self' we understand the whole world which is distinct from man's body and mind and outside his person, as some-king 'other-than-self.' By *mental* we mean anything that belongs and pertains to man's mind, and in this discussion 'mind' is taken in the sense of the 'conscious knowing subject' which is the seat and source of all cognitive and affective states in man; and by *extra-mental* we mean everything found out side, or not pertaining to, the mind. Whether an objective reality corresponds to these terms, is something which will have to be decided later; at present we are concerned only

with the *meaning* which is attached to these words, so that we can discuss the problem of knowledge intelligently. The mutual relationship existing between these sets of terms can be seen from the subjoined diagram:



Parts marked by horizontal lines belong to the Ego. Parts marked by vertical lines belong to the extra-mental.

The most conspicuous thing noticeable in these terms is that 'Ego' and 'extra-mental' are overlapping terms, while 'non Ego' and 'mental' are mutually exclusive. The 'body' of man (if there be a 'body') is considered as an integral part of his person or Ego, together with the mind; but the 'world' (the material world as distinct from man's body, if there be such a 'world') is outside man's person or Ego entirely. At the same time, this 'body' is distinct from man's mind, and it is, therefore, not mental but 'extra-mental.' The body (provided it exists) is thus seen to be a part of the 'Ego' and also 'extra-mental'; as such it is the connecting link between the 'mind' and the material 'world' at large, occupying a middle position between these two extremes.

With these terms and ideas fixed and clear, we are now ready to turn our attention to the problem of consciousness

and its truth-value. The only scientific way to proceed is to examine critically the facts of consciousness and then draw our conclusions concerning the validity of consciousness as a source of true and certain knowledge.

Just what is 'consciousness'? It is the intuitive awareness by which we recognize something as cognitively present in the mind. Now, there is nothing more certain than that we have a 'conscious' mind.

Here are the evident *facts*.

FACTS OF CONSCIOUSNESS

Our mind is aware or conscious of the various acts of *external sense-perception*. I open my eyes and am aware that I see things: my desk, my books, the building outside, an auto turning the corner, the sun shining in the sky. I listen and am aware that I hear sounds: the heavy chugging of the motor of a truck, the conversation of two men passing my window, the scratching of my pen over the paper. I taste the pungent flavor of the piece of candy I am dissolving in my mouth, and I am aware of this sensation. I smell the fragrant odor of the tobacco I have been smoking, and I am aware of this perception. I experience the sensation of touch, and I am aware that I feel things: the hardness and smoothness of the wood of my desk, the pressure exerted by my fingers upon the pen as I write, the coldness of the air as it blows through my open window. All these sensations, as *perceptive acts*, have become *mentally present* to my mind, and I am conscious that they affect me while they are present; if I were not 'conscious' of them, I

could not be aware that I am at this moment seeing, hearing, tasting, smelling, and touching.

Again, I am conscious of the presence in my being of certain *internal sense-states*. I am aware that I feel hunger and thirst, that I have a slight headache, that I am rather fatigued just now, that I experience pleasure in leaning back in my chair and relaxing for a while, that I feel depressed in my nerves. I am also aware that my imagination is evoking images within me of the stroll I intend taking to the library, and of the books I contemplate reading, and of the luncheon I expect to have, and of the persons I plan to meet. And I am aware, too, that my memory is recalling the celebration I attended some time ago and the many friends I met on that occasion after years of separation.

All these sense processes and states are not only present in me, but I experience and feel and am *aware of their presence*: I am conscious of them as actual happenings while they last. I possess a direct and immediate awareness of them as *concrete, individual facts*.

But I am also conscious of a higher order of acts and functions in my being — those of *intellection* and *volition*. As I proceed in my work, I am conscious of forming many ideas, of combining them into manifold judgments and propositions, of linking them together into a variety of inferences and arguments, proofs and refutations; I am thus conscious that I think, judge, reason. Furthermore, I am conscious that I desire to finish a certain portion of my task, and that I decide to continue until I have reached the goal which I have previously set out to attain, and that I

make a distinct effort to overcome the obstacles which make the attainment of this goal a difficult procedure; I am conscious of appetite (conation).

Going a step farther in the introspective analysis of my consciousness, I realize that I possess a reflective power which enables me to obtain *reflex knowledge* of my conscious states and acts. I not only know, but I know that I know; I not only have knowledge, but I have a knowledge of my knowledge; I not only am conscious, but I am conscious of my consciousness. But most important of all: in these various perceptive acts and states of consciousness *I am conscious of my self, my Ego*, as the one in whom they take place and who is the subject affected by their presence. By means of this reflex act of self-consciousness I become aware that I, the thinking and conscious subject, *apprehend myself concretely* in these acts and states; for self-consciousness is the knowledge which the mind has of its acts *as its own*.

When I survey these perceptive acts of my consciousness, I notice that they possess an *objective reference*; that is to say, whenever I 'perceive,' I always perceive an 'object' distinct from the act of perception itself. Thus, when I 'see,' I am not only aware of the act of 'sight' as such, but I am also aware that I see, for instance, 'a green house'; when I press my hand upon my knee, I am not only aware of the act of 'touching' itself, but I am also aware of my 'hand' and my 'knee' as the objects which I feel. And it is my spontaneous conviction that these objects, at least in many instances, are *objectively real*, distinct from their 'mental presence' as 'objects of the mind' in cognition;

in other words, I am convinced that they are *real things* which I perceive.

Is this spontaneous conviction warranted? Have these objects an 'objective existence' aside from their 'mental existence' in the act of perception? Am I justified in passing from the 'mental order' to the 'objective order'? Does my consciousness tell me anything at all about *real, extra-mental things*? If so, what? Is my consciousness a reliable source of true and valid knowledge? These important questions will now have to be answered, and the answer will be the first step in the philosophic justification of human knowledge.

THE TRUTH-VALUE OF CONSCIOUSNESS

Consciousness is a valid source of truth in the domain of knowledge.

Nothing is more intimate and more fundamental to me than my consciousness. All knowledge of whatever kind is rooted ultimately in my consciousness, because I cannot 'know' anything unless I am 'aware' of it. Every single act of sense-perception and intellection becomes an act of 'knowledge' for me only in so far as it conveys some information about an object to me, the subject; I thereby become a knowing subject. But I will be a 'knowing' subject only when I am conscious of the mental presence of the object within my perception and my thinking. If I were unconscious of its presence, I would be totally ignorant of it even as a 'mental object' and I could know absolutely nothing about it. Knowledge must simply be 'conscious'

knowledge, in order to be 'knowledge' at all. Consciousness, therefore, is the indispensable condition of all knowledge, whether sensory or intellectual, so that, so far as I am concerned, knowledge in any form is utterly impossible without it. Consequently, if any knowledge can be true and certain and if any source of knowledge can be reliable at all, it can only be so under the condition that my consciousness is reliable and essentially free from error. If my consciousness is not essentially free from error. I cannot trust any other source of knowledge because no other source is so intimate and evident to me as my consciousness and because every other source presupposes the trustworthiness of consciousness as the basis of its own.

The matter is quite plain and simple. I see, hear, taste, smell, touch; I form ideas, make judgments, produce inferences of deduction and induction. But all these cognitive acts take place in and through my consciousness. Since these cognitive acts are the means whereby I collect and construct my knowledge, and since without them I can have no knowledge at all, it is obvious that the truth and certainty of these sources of knowledge will depend entirely upon the trustworthiness of my consciousness. The reliability of sense and reason, therefore, *presupposes* the reliability of my consciousness; as sources of knowledge they stand and fall with my consciousness. If my consciousness is not essentially free from error, then every part and parcel of knowledge, whether common or scientific or philosophic, will of necessity always remain doubtful in its validity. But that would mean the bankruptcy of all science and philosophy and the suicide of my reason.

There would then be no use in proceeding any further in my inquiry, because my investigation would be doomed beforehand to futility. The inevitable result of such a view would be universal skepticism. But universal skepticism, as was shown above, is a practical impossibility and a philosophic absurdity. If I wish, therefore, to avoid the intellectual death of universal skepticism, I must perforce accept the trustworthiness of my consciousness as capable of giving me true and certain knowledge. This is the only reasonable course for me to pursue, because my consciousness is the last court of appeal before the tribunal of reason, and its verdict is final: if there is any truth at all, the testimony of my consciousness must be true. My consciousness, therefore, is essentially free from error in the acts and facts of which it gives me direct and immediate awareness.

Moreover, if I were to doubt the reliability of my own consciousness as a source of true and certain knowledge, I would, *by my very doubt, assert its reliability*. To have a reasonable doubt, I must have reasons to doubt; otherwise I would act in an irrational fashion. But how can these reasons be valid unless I am certain of their validity? And how can I be certain of their validity, except by an act of consciousness vouching for their presence in my mind? And how can my consciousness vouch for their presence and validity, if it were unreliable? Therefore, even a valid doubt presupposes the reliability of my consciousness, and thereby its reliability is established.

There are a number of things, to which my consciousness testifies as certain facts and truths, which I

cannot possibly doubt, if I am in my right mind. I am certain, for instance, beyond the shadow of a doubt that I exist, that I think, that I perceive, that I reason; I am doing these things at this very moment as I write, so how can I doubt them? It would be sheer nonsense on my part to doubt or deny that I see, touch, hear; taste, smell, imagine, remember, think, judge, reason, considering these acts merely as subjective *facts* present in my mind. They are present as modifications of my being, and no amount of theorizing can argue them out of existence. If they were not present in my mind, and if my consciousness were not reliable in testifying to their existence, how could I know about their presence and think about them? I am *directly and immediately* aware of their existence within my Ego; and this evidence is so clear and irresistible, that I can doubt or deny this testimony of my consciousness only under penalty of renouncing my reason. True, I *cannot demonstrate* the trustworthiness of my consciousness by means of a strict inference, since an inference of this kind would really presuppose the trustworthiness of my consciousness, and that would mean a begging of the question; but such a demonstration is not needed, because all that is required is to show by introspection and analysis that I cannot doubt or deny its reliability without falling into the folly of universal skepticism. And that is clear to me from the above.

My consciousness, therefore, is a valid source of truth in its own domain of knowledge, provided its data are *self-evident*.

TRUTHS REVEALED BY CONSCIOUSNESS

We must distinguish clearly between the data of consciousness and the interpretation of these data. The data are the internal, subjective, intra-mental acts of perception and intellection, emotion and volition, which pass before my consciousness and of whose presence I become aware by the fact that they are there. My consciousness does not pass any judgment upon them but merely notices and registers their presence; and in this 'noticing' and 'registering' it cannot err, because it perceives these internal states by an act of *immediate experience* due to the evidence of its own direct intuition. It is my intellect which passes judgment upon the data of consciousness and interprets them; and here error is possible, since my intellect may mis-interpret the data and draw false conclusions from them. But when my intellect does nothing more than state explicitly what is implicitly contained in the data of consciousness, then my consciousness will also be aware that the interpretation is as true and certain as the data themselves, provided the data are intuitively evident and not vague and indistinct. What truths, then, does my consciousness reveal?

By introspection I discover that every act of knowledge involves three factors — *act of perception, object, and subject*. Directly and primarily, it is the 'act of perception' which is noticed and registered by my consciousness. Since, however, my consciousness is aware of this act of perception in its *concrete* reality, it also notices *in* this act the perceiving subject and the perceived object as concrete

parts of the concrete whole. Thus, when a sensation of 'hunger' arises in my consciousness, I am aware of the 'hunger' which is felt and of 'myself' as the one who 'feels' the 'hunger.' The three factors form a concrete whole, and I am concomitantly aware at the same time of the act of perception, the object, and the subject. I express this in the evident judgment: 'I (subject) feel (perception) hunger (object).' From this triple standpoint my consciousness reveals to me a number of important truths.

From the standpoint of the *act of knowledge*, my consciousness gives indubitable evidence that there is a great *difference* in the character of my acts. 'Hearing' is not the same as 'seeing' or 'tasting,' nor are these perceptions the same as 'touching' or 'smelling': they affect my Ego in different ways. Similarly, the experiences I undergo in the operations of the central sense, imagination, instinct, and memory are unlike each other and differ from the perceptions just mentioned. And all these acts are registered in consciousness as radically different from intellectual ideas, judgments, and inferences. I also perceive within me affective and appetitive states and acts, such as joy, grief, anger, desire, volition; they are non-perceptive states, and the difference between them and the perceptive states is even greater than the differences existing between the perceptive states as such.

Consciousness, of course, does not group these various acts and states into classes; nor does it specify in any way whether they are material or spiritual in nature: it merely 'registers' their existence and their differences in a concrete manner. It is *the intellect* which classifies them by

interpreting the data revealed by consciousness. If an error is made in this interpretation, this is due to a faulty analysis on the part of the intellect. Consciousness itself can never be mistaken in its clear testimony of the presence of an act or state within the mind.

FROM THE STANDPOINT OF THE *OBJECT OF KNOWLEDGE* MY consciousness is concretely aware of the object of perception at the same time that it is aware of the *act* of perception. I cannot 'perceive' without perceiving 'something,' an object; and I thus become aware of colors, sounds, flavors, odors, tactile objects of sensation (heat and cold, hardness and softness, muscular and motor feelings), ideas, judgments, and inferences, as the objects of the various operations of my sense and intellect. I can no more deny their presence and existence within my consciousness than I can deny the presence and existence of the perceptive acts themselves, because *act and object form one concrete whole*. At the same time I am aware of their concrete difference: sounds are not colors; muscular feelings are not flavors; odors are not heat or cold; and all these sense-objects are not ideas or judgments or inferences.

Then again, I am intuitively conscious of *extendedness* in or the other of my perceptions. Color- perception always reveals *colored surfaces*, not merely color alone for itself. There is a side-by-sideness of spatial parts in all color-objects, and extendedness in at least two dimensions — length and width. I never see 'green' alone; but I see a

'green lawn,' a 'green sea,' 'green leaves,' a 'green house.' I never see 'blue' alone; but I see a 'blue sky,' 'blue violets.' I never see 'red' alone; but I see 'red sealing-wax,' 'red roses,' 'red sunsets.' And so with the other colors: they are always extended and surfaced. Moreover, these extended surfaces are consciously perceived as having concrete *shapes*, and these shapes are recorded as having a concrete *difference* among themselves. I am intuitively aware of squares, triangles, disks, ellipses, and every kind of irregular figure in these colored surfaces. For instance, what I call an 'orange' is not merely 'yellow,' but a 'round' yellow object; the 'house' I see is a 'square' brown object; the 'moon' I perceive is a 'crescent-shaped' silvery object; the 'rose' I am looking at is an 'irregularly shaped' red object. These various configurations of shape are given directly with the color-object as an 'extended colored surface,' and my consciousness makes me immediately aware of them in the act of color-perception. *In some form*, therefore, *extension must exist*, otherwise it could not be a datum of my consciousness.

Similar to sight, but in a somewhat different manner, *touch reveals extension*. The sensation of side-by-sideness of spatial parts is even more immediately and intimately a datum of my consciousness in touch than it is in the sight of colored surfaces, because there is a *direct contact* in touch which is missing in the act of sight. When I pass my hand over a book, I *feel* the spatial extendedness of the book, and this contact-experience gives to the sensation a value which cannot be denied. Sight reveals a two-dimensional extension, but touch reveals dimension in three directions.

When I handle a book, a pen, a bottle, an apple, or when I grasp my left wrist with my right hand, or when I feel my head with both hands, I am concretely conscious of *solidity, voluminousness, triple dimension*. Besides this, my consciousness reveals the difference of a total 'otherness,' when I touch my arm or head or thigh, and when I touch a book or a table or a fruit. The former are perceived to *be a part of my being*, while the latter are foreign to myself and 'outside' my being. This will become clearer, when we analyze the 'subject' of the act of knowledge.

From the standpoint of the *subject of knowledge*, my consciousness reveals a number of most interesting and vital truths. Primarily, I am aware of the acts of sense-perception and intellection which are present within me as concrete states of knowledge; but just as these acts manifest the object perceived, so they also reveal the *perceiving subject*, and this subject is my self, my *Ego*. Nothing is clearer to my consciousness than the fact that I myself am the active and passive subject of all internal states and modifications which I recognize as coming and going within me. All perceptive acts and affective states I concretely observe to be my own; they belong to *me* and modify *me*. Analyzing the data of my consciousness, I perceive with intuitive evidence that it is I who hear, see, touch, taste, and smell; it is I who imagine and remember; it is I who think, judge, and reason; it is I who am hungry and thirsty, sad and glad, peaceful and angry, healthy and sick, in pleasure and in pain; it is I who decide and will, strive and reject. It is my *selfsame Ego* which is active throughout, whether in the domain of sense or in the domain of intellect,

and my Ego is one, single individual; there is no duality or multiplicity here, notwithstanding the radical difference between the acts and states themselves. Even my consciousness is only a modification of my self or Ego, because I am conscious of *myself as conscious* in the same way that I am conscious of myself as seeing, hearing, thinking, and willing; I express both facts in an identical manner, namely, '*I hear a sound*' and '*I am conscious myself.*'

The Ego is not consciousness; it is the *possessor* of consciousness. The Ego is not experience; it is the *experient*. And so, too, the Ego is not memory; it is the bearer of memory. The act of remembering is a present act, but it always has a reference to past persons or events. I perceive with evidence that I, the Ego, who am conscious at this very moment, am the *self identical Ego* who have had the 'past' experiences recorded my memory. I am writing at this instant; but I am also conscious through my memory that I was writing ten minutes ago, that I took a walk half an hour ago, that I consulted a physician this morning. Notwithstanding the fact that I was in a state of complete unconsciousness during my sleep last night, I am aware that 'I' am the self-identical 'Ego' who existed, worked, ate, wrote, perceived, and reasoned yesterday, a week before, a month ago, and through all the years down to my youth and childhood. These events belonged to me before; and my Ego preserved its self-identity, while they came and passed on. How could I remember them as mine, as having happened to 'me,' if my Ego were not a permanently existing reality in whom they occurred? My Ego is clearly

perceived to be the *abiding subject* of these transitory states. It is the duty of psychology to pass judgment on the nature of the Ego, but the data of my conscious states show plainly that my Ego is distinct from the conscious states themselves; the latter are only modifications of the permanent Ego, existing *in and by and through* my Ego as their agent-patient subject. So much is evident to me from an analysis of the data of memory.

Of what does my Ego consist, so far as I am informed by my consciousness? Since the Ego is the 'thinking subject,' whatever is 'mental' belongs to it; the mind, therefore, is an integral part of the Ego. But some of my perceptions also show that my Ego is an *extended reality*. When I grasp a book or a pen, I am aware that these objects are extended and that they are 'other-than-self'; however, when I grasp my arm or my head or my ankle, I am aware that they are extended and that they differ among themselves, but also that they are 'identical-with-self.' In other words, they are perceived to be *integral parts of my Ego*, they belong to my being and my person; they are 'my head,' 'my eyes,' 'my ears,' 'my hands,' 'my chest,' 'my arms,' 'my legs,' 'my toes.' Hence, if I stub the toes against a stone, I say: 'My foot hurts,' and 'I feel a pain in my foot.' Since these objects are clearly perceived by touch and sight to be extended, and since my consciousness testifies that they belong to me as integral parts of my Ego, it is obvious that my *Ego is extended with and through them*. These parts, however, taken together, form what we call the 'body,' and this body is clearly perceived to be distinct from the 'thinking subject' or mind; the body is 'extra-mental.' My Ego, therefore,

according to the indisputable evidence of my consciousness, consists of something 'mental' and 'extra-mental,' of *mind and body*. It is, then, untrue to say that the Ego consists of purely mental states; it also consists of an extra—mental body which has various extended parts side by side; and both mind and body form a unit, the one and *undivided whole* which is my Ego.

Such are the facts of consciousness regarding the *act, object, and subject* of knowledge. And it is from such evident, undeniable facts that my intellect forms such ideas as 'being, existence, sense-perception, intellection, appetition, extension and space, mind and body, mental and extra-mental, Ego and non-Ego.' They are not mere fancies and figments, but *valid ideas*, possessing objective reality, derived by the intellect from the critically observed and analyzed data of my consciousness; and, as we see, they are not the results of a blind instinct, but the conscious products of an intellectual insight based on the intuitive evidence of immediate experience which cannot be doubted or denied without falling into complete skepticism. Any 'immediate judgments' then, which my intellect forms as interpretations of these facts by means of such ideas, must be as *true, valid, and certain* as these facts themselves, because my consciousness testifies that in such instances my intellect is merely stating explicitly that which is contained implicitly in the data as mentally present. Such immediate judgments are: 'I exist; I am a being; I experience various acts of sense perception, intellection, and appetition, and there is an objective difference between them; extension is a reality; I possess an extended body; I

have a mind; my body is an extra-mental reality as certainly existing as my mind; mind and body are integral parts of my Ego; I, the Ego, am the possessor of this mind-body combination; I have perceptions of objects which I consciously apprehend as being outside my Ego and as belonging, therefore, to the 'non-Ego.' These immediate judgments are now no longer simply spontaneous convictions but scientific, *reflex, philosophic truths and certainties*, the result of a critical analysis of my conscious mind in its revealed data. It will be obvious that these ideas and truths are basic to the problem of knowledge and must be considered as partly solving the problem. The validity of the 'body' and of the external 'world' as 'objective realities' will be treated later.

Consciousness, then, is a valid source of true and certain knowledge concerning those acts and facts of which it has immediate cognition. This validity is based on the indubitable evidence of *primary experience*. To doubt the essential freedom from error on the part of consciousness is to destroy the validity of any and all other knowledge, because such knowledge has its ultimate foundation in the intuitive character of the knowledge of consciousness.

SUMMARY OF CHAPTER VI

1. The sources of knowledge are the media through which we arrive at truth, and they are twofold: experience and intellection. *Consciousness*, a form of experience, is the intuitive awareness by which we recognize something as 'mentally present.' 'Ego' and 'non-Ego,' 'self' and 'non-self,' 'mental' and 'extra—mental,' are cognate ideas whose meaning should be clearly grasped.

2. We possess a *conscious mind*. We are aware of sense-perception, intellection, and appetite. Consciousness reaches its highest expression in the knowledge of *Ego or self*; the Ego observes itself concretely as the subject and bearer of the internal acts and states of consciousness. All perceptive acts have an 'objective reference.'

3. Consciousness is *essentially free from error* in the knowledge it conveys, when the data are perceived with intuitive evidence. Otherwise no other knowledge would be valid, and certitude would be impossible, because all other forms of knowledge presuppose the validity of consciousness. To doubt the validity of consciousness is tantamount to asserting its validity, since the reasonableness of this doubt could not be established except on the supposition that consciousness is a valid source of knowledge. Some facts attested by consciousness are so obviously true, that we cannot doubt them except under penalty of renouncing our reason. If consciousness is not essentially free from error, universal skepticism must follow.

4. The act of knowledge reveals the various kinds of internal states and their differences in a concrete manner. The *object* of knowledge reveals the objects of various perceptive and non-perceptive acts and their concrete differences. In particular, sight reveals extension in two dimensions, while touch reveals it in three dimensions. Touch also shows that part of my own being is extended. The *subject* of knowledge reveals the fact that my self or Ego is the active and passive agent of all internal states, that my self or Ego possesses a mind and body as a unit.

READINGS

P. Coffey, *op. cit.*, Vol. II, Ch. XIII; D. Card. Mercier, *op. cit.*, pp. 388-391; J. Rickaby, *op. cit.*, Part II, Ch. V; T. Pesch, *op. cit.*, pp. 151-160; M. Maher, *Psychology*, Chs. III, XVII, XXII.

Chapter 7

DEVELOPMENT TO IDEALISM

THE PROBLEM OF THE VALIDITY OF SENSE-PERCEPTION IS THE crucial problem in modern epistemology. It is the dividing point of the various theories of human knowledge. Depending on their interpretation of the cognitional value of sense-perception, philosophers and scientists have devised the most divergent systems in order to explain the facts so obvious to all. The fundamental facts are admitted. All agree that sensations are real in so far as they are subjective, mental states of the knowing subject: we see colors, hear sounds, taste flavors, smell odors, and feel pressure and resistance, heat and cold, pleasure and pain, muscular and organic conditions. But as to whether the perceived *objects* are *purely intra-mental* and *intra-subjective*, or whether they are *extra-mental* and *extra-subjective*, the interpretations are as far apart as the poles. People in general have the spontaneous conviction that the world which they perceive is physically real, with a reality independent of the mind and its perception.

The problem thus arises: Is this spontaneous conviction true and valid? And this proposes further questions: Do our sense-perceptions reveal to the mind an extra-mental and

extra-subjective reality? Can the mind transcend itself and contact an external world? Can the physical world (if there be a physical world) become intra-mental through sense-perception, so that the mind can know its existence and nature? How can an extended world make an impression on an unextended mind, and how can an unextended mind conform itself to an extended world?

The problem is by no means so simple as it seems. There are grave difficulties in either view. In order to appreciate the importance of the problem, it will be necessary to review briefly its *origin* and *development* from Descartes up to the present day.

DESCARTES' ULTRA-SPIRITUALISM

Descartes' views on the nature of mind and matter and on the validity of human knowledge have been largely responsible the widespread confusion in subsequent philosophy and for the rise of numerous theories of knowledge. By means of his methodic doubt he called all accepted truths into question, discarded the validity of all human knowledge, and attempted place philosophy upon a new foundation. This attempt was futile, but the seed of doubt was sown and produced abundant fruit. It was particularly in the domain of *sense-perception* that the destructive influence of his criticism became apparent. Here is his own line of reasoning concerning the truth-value of sense-perception.

"Merely because I know with certitude that I exist, and because, in the meantime, I do not observe that aught

necessarily belongs to my nature or essence beyond my being a thinking being, I rightly conclude that my essence consists only in my being a thinking thing [or a substance whose whole essence or nature is merely thinking]. And although I may, or rather, as I shall shortly say, although I certainly do possess a body with which I am very closely conjoined; nevertheless, because, on the one hand, I have a clear and distinct idea of myself, in as far as I am only a thinking and unextended thing, and as, on the other hand, I possess a distinct idea of body, in as far as it is only an extended and unthinking thing, it is certain that I [that is, my mind, by which I am what I am], is entirely and truly distinct from my body, and may exist without it.”¹ “Extension in length, breadth, and depth, constitutes the nature of corporeal substance; and thought the nature of thinking substance. For every other thing that can be attributed to body presupposes extension and is only some mode of an extended thing; as all the properties we discover in the mind are only diverse modes of thinking. Thus, for example, we cannot conceive figure unless in something extended, nor motion unless in extended space, nor imagination, sensation, or will, unless in a thinking thing.”²

LET US PAUSE AND DIGEST THESE PRINCIPLES. THE ESSENCE OF the mind is ‘thought,’ and thought is ‘thinking.’ Descartes included in this ‘thinking’ all intellection, willing, and sense-perception; in short, the essence of ‘the mind, by which I am what I am,’ consists in the *conscious states*. The Ego,

therefore, consists solely in consciousness; the body is outside the Ego. There is, of course, a human body, to which the mind is 'closely conjoined'; but the two do *not* form an *organism* in any way, so that the mind would be a vitalizing principle or agency or soul, making the body-soul compound a living subject capable of sense-perception. All sense-perception takes place in the mind only. The mind is united to the body only in the brain (in the pineal gland, according to Descartes), and all nerve-tremors concentrate in the brain; since, however, the essence of matter is 'extension' and the essence of mind is 'thought,' there can be *no cognitional communication between mind and body*, because the disparity between them is too great. What really happens is that certain 'corporeal movements' of the body reach the brain, and at the *occasion of their presence the mind* produces the ideas or representations of external and extended things entirely in itself and by itself. Ideas are thus potentially *innate*.

That Descartes really meant this is clear beyond a doubt. "I suppose that the body is merely a statue or earthen machine made by God on purpose to resemble us as much as possible. . . I want you to consider that all the functions which I have attributed to this machine [the human body], such as the digestion of meat, the pulsation of the heart and of the arteries, the nourishment and growth of the limbs, breathing, waking and sleep, seeing, hearing, smell, taste, feeling hot, and any other properties of the external senses; the impression of their ideas upon the organ of the common sense and of the imagination, and the retention or imprinting of these ideas upon the memory; the internal

movements of the appetites and passions; and lastly, the external movements of all the members which follow so opportunely the many operations of the things that are presented to the senses as well as the passions and impressions that are to be found in the memory, that they imitate so closely those of a real man — I want you, I say, to consider that *these functions quite naturally follow in this machine from the mere arrangement of the organs, neither more nor less than the movements of a clock or other automaton, from its weights and works*, so that so far as they are concerned we need *not think of any vegetative or sensitive soul in it, or of any other principle of life or motion* than the blood and the spirits continually stirred up by the fire constantly burning in the heart, a fire which does not differ by nature from any other fires to be found in other inanimate bodies.”³

It is in this manner that Descartes reduced the mind to thought and its activities to states of consciousness, while he reduced all matter (including the human body) to extension and its activities to mechanical motion. This absolute opposition and disparity between mind and matter gives to his philosophy a double characteristic: an *ultra-spiritualistic* interpretation of the mind, and an *ultra-mechanistic* interpretation of the body and of the extra-mental and external world.

THE FUNDAMENTAL MISTAKE OF DESCARTES CONSISTED IN HIS arbitrary assumption that the essence of the mind consists in ‘thinking’ and in ‘thinking’ only. He had no right to

restrict the essence of the mind to 'thought.' If the activities of man demand that the Ego possess a living soul united to the body with the triple functions of *vegetation, sentiency, and 'thinking,'* so that body and soul form a joint living organism together, and if sense-perception cannot be explained except by means of an organic union between mind and body, then Descartes committed an unpardonable error in arbitrarily limiting the essence of the mind to 'thought' alone. When he stated 'I think, therefore I exist,' he expressed a fact which was indubitably true: 'thinking' is a primary experience of the Ego, an evident datum of intuition. But he overlooked the fact that *'thinking' was not the only primary experience revealed by consciousness.* I am equally conscious that I walk and eat and drink, taste and smell and hear, see and touch; I am conscious that my body has a part in these activities, and that these activities are as real and actual as 'thinking'; and I am also conscious that these activities reveal objects-other-than-self. These are vital activities which are also bodily and extended. What right, then, had Descartes to assume that the body is a mere machine and exclude it from the Ego and its vital functions? This is an arbitrary and one-sided restriction which does violence to the facts recorded by consciousness.

Descartes, of course, defended the dualism of mind and matter, of the world of the Ego and of the world of the non-Ego; but this was an *excessive dualism*, making any interaction between them unintelligible. The theory that soul and body form a unitary organism is the *aristotelian-scholastic* view. This theory had been the traditional doctrine for centuries. In discarding it for his own ultra-

dualistic theory, Descartes rendered a doubtful service to philosophy, because the problem of finding an *epistemological bridge* between mind and body now became the crucial problem of modern philosophy. Chaos followed the Cartesian riddle. Since his endeavor to found a philosophy ‘without presuppositions,’ it became a philosophic dogma that the only certain thing man can know is his own mind and its conscious states.

OCCASIONALISM, ONTOLOGISM

Arnold Geulincx (1625—1669) and *Nicholas Malebranche* (1638—1715) developed the teachings of Descartes. Since there can be no causal interaction between mind and body, the evident co-ordination existing between them can only be the result of God’s causality. On the occasion of bodily stimuli, God produces corresponding ideas in the mind; and on the occasion of ideas and volitions in the mind, God produces corresponding motions in the body: creatures are mere instruments of God’s action. This is occasionalism. Malebranche went a step farther. Instead of Descartes’ theory that man acquires his knowledge from innate ideas, he maintained the view that man’s mind envisions all things by means of a direct intuition of God’s ideas. This theognostic theory is called *ontologism*.

SPINOZISM, MONADISM

Baruch Spinoza (1632—1677) chose a different solution for the problem cast up by Descartes in his arbitrary definition

of mind and matter. The latter's definition set up an irreconcilable opposition between the world and the mind. Spinoza attempted to bring them into a higher unity, thereby dissolving all differences between them. He defined 'substance' as that which exists in itself and is conceived by itself, so that it does not need the concept of another in order to be understood. Now, there can be only *one such substance*, as expressed this definition, and that is the infinite substance, God. This infinite substance has as its attributes 'extension' and 'thought.' Considered under the determination of 'extension,' God is nature or matter; considered under the determination of 'thought,' God is the human mind. And thus Descartes' antithesis between mind and matter is resolved in the higher unity of the infinite substance: God and all beings are one in substance. This is *pantheistic monism*. This absolute, metaphysical monism is, of course, the very opposite of Descartes' dualism. *Gottfried W. Leibnitz* (1646—1716) sought to equalize the difference between mind and matter in the opposite direction. The ultimate beings are individual *monads*. Monads are absolutely indivisible; no two are alike; and all possess the 'power of representation.' Each monad in its representation mirrors within itself whatever takes place in all other monads throughout the universe; some do it consciously, like the mind-monads, others unconsciously, like ordinary body-monads. Each monad is thus a little universe, endowed with the attributes of 'extensions and 'thought.' All knowledge is *innate*: the monads are 'windowless.' The knowledge of each monad corresponds with the facts of external reality by means of a pre-established harmony

which God placed in them. Mind and body, therefore, do not interact, but they are like two clocks running in perfect coordination. By thus postulating that all bodies have minds and all minds have bodies (pan-psychism), Leibnitz was convinced that he had overcome Descartes' ultra-dualism.⁴

EMPIRICISM, PSYCHOLOGICAL IDEALISM

John Locke (1632—1704) strenuously opposed Descartes' doctrine of innate ideas. All knowledge has its origin in *experience*, in sense-perception. The elements of knowledge are the *ideas*, and Locke explains the idea in the following manner: "It being that term which, I think, serves best to stand for whatever is the object of the understanding when a man thinks, I have used it to express whatever is meant by *phantasm*, *notion*, *species*, or whatever it is which the mind can be employed about in thinking."⁵ Descartes placed all sense-perception in the spiritual mind, thus identifying sense-perception with spiritual activity; Locke here does the reverse, by reducing ideas, at least in part, down to the level of sense-perception (phantasm, species). By thus arbitrarily blurring the nature of the 'idea' so as to include sense-perception, he laid the foundation for *sensism*, where all 'thinking' is nothing but a form of 'sensation.' Another important feature of this definition of 'idea' is, that the 'idea' is the *object* of our understanding, instead of the reality of things being the object of our knowledge.

Ideas, according to Locke, are derived from two sources sense-perception and reflection; and all knowledge is

restricted to ideas. "Since the mind, in all its thoughts and reasonings, hath no other immediate object but its own ideas, which it alone does or can contemplate, it is evident that our knowledge is only conversant about them. *Knowledge, then, seems to me to be nothing but the perception of the connection of and agreement, or disagreement and repugnancy of any of our ideas.* In this alone it consists."⁶ This means, of course, that we do not really know objects or things-in-themselves, but ideas or conscious states of the mind; and this is the standpoint of Descartes and idealism. Locke, however, did not deny the existence of material substances, such as bodies, nor of spiritual substances, such as the soul and God; but 'substance' is unknowable to us, whether material or immaterial. "Our idea of substance is equally obscure, or none at all, in both: it is but a supposed I-know-not-what, to support those ideas we call accidents. . . . By the complex idea of extended, figured, colored, and all other *sensible qualities, which is all that we know of it*, we are as far from the idea of the substance of the body, as if we knew nothing at all."⁷ While Locke, therefore, admits the existence of material and spiritual 'substances,' he asserts that they are unknowable; 'accidents' or 'phenomena' alone are knowable: he is in last instance an *empirical phenomenalist*.

George Berkeley (1685—1753) took issue with Locke. He pointed out the inconsistency of Locke in maintaining that knowledge is limited to ideas only and then asserting that have a sense-knowledge of the qualities of extra-mental objects. Berkeley accepted the initial standpoint of Descartes and Locke that 'the mind can know nothing but

its own ideas or conscious states'; but from this he drew the conclusion that *all things are ideas and a physical world does not exist*. Ideas are the sole 'objects of cognition' for the mind; things, therefore, have 'being' only in so far as they are 'perceived' (*esse est percipi*). Physical things, being outside the mind, cannot be perceived at all; consequently, they are nonexistent.

We observe Berkeley's trend of thought in the following quotations. "It is evident to any one who takes a survey of the *objects of human knowledge*, that they are either ideas actually imprinted on the senses; or else such as are perceived by attending to the passions and operations of the mind; or lastly, *ideas* formed by help of memory and imagination.... That neither our thoughts, nor passions, nor ideas formed by the imagination, exist without the mind is what everybody will allow. And to me it seems no less evident that the various sensations or ideas imprinted on the Sense, however blended or combined together (that is, whatever objects they compose), cannot exist otherwise than in a mind perceiving them. I think an intuitive knowledge may be obtained of this, by any one that shall attend to what is meant by the term exist when applied to sensible things. The table I write on I say exists; that is, I see and feel it: and if I were out of my study I should say it existed; meaning thereby that if I was in my study I might perceive it, or that some other spirit actually does perceive it. There was an odor, that is, it was smelt; there was a sound, that is, it was heard; a color or figure, and it was perceived by sight or touch. This is all that I can understand by these and the like expressions. For as to what is said of

the absolute existence of unthinking things, without any relation to their being perceived, that is to me perfectly unintelligible. Their *esse* [being] is *percipi* [being perceived]; nor is it possible they should have any existence out of the minds or thinking things which perceive them.

“It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and in a word all sensible objects, have an existence, natural or real, distinct from their being perceived by the understanding. But, with how great an assurance and acquiescence soever this Principle may be entertained in the world, yet whoever shall find in his heart to call it in question may, if I mistake not, perceive it to involve a manifest contradiction. For, what are the forementioned objects but the things we perceive by sense? and what do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any of these, or any combination of them, should exist unperceived?

“From what has been said it is evident there is not any other Substance than Spirit, or that which perceives. But, for the fuller proof of this point, let it be considered the sensible qualities are color, figure, motion, smell, taste, and such like, that is, the ideas perceived by sense. Now, for an idea to exist in an unperceiving thing is a manifest contradiction; for to have an idea is all one has to perceive: that therefore wherein color, figure, and the like qualities exist must perceive them. Hence it is clear there can be no unthinking substance or *substratum* of these ideas.”⁸

According to Berkeley, then, physical, external objects have no existence of their own: their *esse* is *percipi*. Locke

considered the 'secondary' qualities (color, taste, sound, heat, etc.) to be subjective, but the 'primary' qualities (extension, figure, motion, etc.) were real and objective. Berkeley reduces primary and secondary qualities and *all material things* to 'ideas' whose sole existence consists in 'being perceived': there are no material objects as such. This is idealistic immaterialism. The only realities which exist are God and human minds. How then account for our ideas of extra-mental and external objects, like the human body and the physical world? They are not the product of the human mind, they are objectively produced by God in the mind, *as if* there were a real world outside us. Berkeley is a psychological and acosmistic *idealist*.

PAN - PHENOMENALISM

David Hume (1711—1776) went a step farther. He denied the existence of *all* substances. "I would fain ask those philosophers, who found so much of their reasonings on the distinction of substance and accident, and imagine we have clear ideas of each, whether the idea of *substance* be derived from the impressions of sensations or reflection? If it be conveyed to us by our senses, I ask, which of them; and after what manner? If it be perceived by the eyes, it must be a color; if by the ears, a sound; if by the palate, a taste; and so of the other senses. But I believe none will assert, that substance is either a color, sound, or taste. The idea of substance must therefore be derived from an impression of reflection, if it really exist. But the impressions of reflection resolve themselves into our

passions and emotions; none of which can possibly represent a substance. We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we talk or reason concerning it.”⁹ And thus all substances — physical bodies, soul, God — are argued out of existence. The only things which we know to exist are *phenomena*, and the mind consists of nothing but a heap or collection of different perceptions united by certain relations. This is *pan-phenomenalism* and extreme *subjectivism*. Hume ended as a skeptic.

TRANSCENDENTAL IDEALISM

Emmanuel Kant (1724—1804), alarmed at the trend of thought manifested by the English philosophers, especially Hume, felt the urge to re-vindicate human knowledge. Like them, however, he took as his starting point the principle of Descartes that the mind of man can know only its own internal states and cannot go outside and beyond the limits of consciousness. He considered it to be the essential error of all previous philosophic systems that they endeavored to make the mind conform to the objects; he would reverse the principle and make the *objects conform to the mind*. “Hitherto it has been supposed that all our knowledge must conform to the objects; but, under that supposition, all attempts to establish anything about them *a priori*, by means of concepts, and thus to enlarge our knowledge, have come to nothing. The experiment therefore ought to be made, whether we should not succeed better with the

problems of metaphysic, by assuming that the objects must conform to our mode of cognition, for this would better agree with the demanded possibility of an *a priori* knowledge of them, which is to settle something about objects, before they are given us.”¹⁰

Before entering upon Kant’s views on the nature of sense-perception, it will be necessary to understand what he means by *a priori* and *a posteriori* knowledge; this distinction is the basis of his theory.

“It is therefore a question which deserves at least closer investigation, and cannot be disposed of at first sight, whether there exists a *knowledge independent of experience*, and even all impressions of the senses? Such knowledge is called *a priori*, and distinguished from empirical knowledge, which has its sources *a posteriori*, that is, in experience. . . .”¹¹

There is, then, according to Kant, a double knowledge (and consequently also a double source of knowledge) in the man mind: knowledge *a priori*, independent of all experience; and knowledge *a posteriori*, derived through experience. How can we tell which knowledge is the one and which is the other? Experience can reveal nothing to us except what is *individual and contingent*; it never reveals to us anything that is strictly universal and necessary. “Experience teaches us, no doubt, that something is so or so, but not that it cannot be different. . . . Experience never imparts to its judgments true or strict, but only assumed or relative, universality (by means of induction), so that we ought always to say, so far as we have observed hitherto, there is no exception to this or that rule. If, therefore, a

judgment is thought with strict universality, so that no exception is admitted as possible, it is not derived from experience, but valid absolutely a priori. Necessity, therefore, and strict universality are safe criteria of knowledge *a priori*, and are inseparable one from the other."¹² Whenever, therefore, knowledge is *strictly necessary and universal*, it is a priori and cannot have been acquired through experience. Such *a priori* knowledge must proceed directly *from the mind itself*.

There are various elements which enter into the making of our empirical knowledge or sense-perception, and Kant is explicit in explaining the process through which our knowledge must be acquired in experience. Here is the process in his own words:

"The effect produced by an object upon the faculty of representation (*Vorstellungsfähigkeit*), so far as we are affected by it, is called sensation (*Empfindung*). An intuition (*Anschauung*) of an object, by means of sensation, is called empirical. The undefined object of such an empirical intuition is called phenomenon (*Erscheinung*)."

"In a phenomenon I call that which corresponds to the sensation its matter; but that which causes the manifold matter of the phenomenon to be perceived as arranged in a certain order, I call its form."

"Now it is clear that it cannot be sensation again through which sensations are arranged and placed in certain forms. The matter only for all phenomena is given us a posteriori; but their form must be ready for

them in the mind (*Gemüth*) *a priori*, and must therefore be capable of being considered as separate from all sensations. . . . In the course of this investigation it will appear that there are, as principles of *a priori* knowledge, two pure forms of sensuous intuition (*Anschauung*), namely, *Space and Time*."

Kant

Bearing in mind Kant's axiom that nothing necessary and universal can be derived from experience, but must proceed exclusively and *a priori* from the mind itself, Kant finds that sense-perception contains a double element: the 'manifold' of sense impressions, which is derived from experience, and 'space' and 'time,' which are pure forms of the mind. External to the mind there exists a world of things-in-themselves (*Dinge-an-sich*) or noumena; they are real, physical beings. These make impressions on the sense-faculty, and the faculty responds with an 'intuition' or perception. These impressions are unarranged, chaotic. This chaotic 'manifold' must be arranged in a certain order, and this is done by means of the two sense-forms 'space' and 'time.' Space and time are *in no way attributes of the things-in-themselves*,¹³ but merely "cause the manifold matter of the phenomenon to be perceived as arranged in a certain order," i.e., as arranged in the order of 'space' or in the order of 'time.' Since all intuitions or perceptions appear as arranged in a spatial and temporal order, 'space' and 'time' are universal and necessary conditions of sense-perception and as such must exist *a priori* in the mind. They

are like mental molds into which the unarranged raw materials of sense are poured, so that, after the molding process of cognition is completed, all phenomena appear arranged and molded in 'space' and 'time.' The objects themselves are, so far as we know, spaceless and timeless.

Do we really perceive external objects, so that the objects of sense actually exist, as we perceive them, outside our person? We do not. The real objects of the physical world can never be perceived; we know absolutely nothing about the noumena or things-in-themselves: "All our intuition is nothing but the representation of phenomena. . . . Nothing which is seen in space is a thing-in-itself, nor space a form of things supposed to belong to them by themselves, but objects by themselves are not known by us at all, and that what we call external objects are nothing but representations of our senses [*phenomena*]." ¹⁴ All we can know, then, are the *phenomena* or appearances, and these are always subjective in character, without any resemblance to the things-in-themselves. Even man's perception of his own body is thus seen to be only 'phenomenal'; whether any extra-mental reality corresponds to what he perceives to be his 'body,' man can never know. Kant admits the existence of things-in-themselves as the *exciting cause* of sense-perception on the grounds of inference; but they remain an unknown and unknowable X. Kant is thus a *hypothetical realist and dualist*; since, however, all our knowledge in sense-perception is limited to intra-subjective phenomena, he is a *transcendental idealist*. He failed to overcome the Cartesian antithesis between mind and matter; the mind remains

imprisoned in its conscious states and can know nothing of the external world and non-Ego objects.

ABSOLUTISM

Kant's philosophy left the antithesis between mind and matter, noumenon and phenomenon, the thing-in-itself and the Ego, unsolved; the unity between these opposing elements, so evident in our knowledge, was still unexplained. His followers in idealism attempted to develop his ideas to their logical conclusions.

Johann Fichte (1762—1814) took up Kant's principle that the 'things must conform to the mind' and dissolved the antithesis between the Ego and the 'thing-in-itself' by *identifying all reality with the Ego*. It was his contention that thought cannot be deduced from being, but being must be deduced from thought; *thought, therefore, is the ultimate and only reality*, and the Laws of thought are the laws of being. And since all thought is contained in consciousness, there is no other reality but the Ego; hence, all reality is unified in the Ego. The Ego, of course, does not mean merely human consciousness, but the universal consciousness of the Absolute or God. Such is Fichte's system of *Pan-Egoism*.

Friedrich Schelling (1775—1854) propounded a number of theories at variance with each other. His third system is most characteristic of his thought. Like Fichte, he sought a common formula or principle in which mind and matter, spirit and nature, could be harmonized. He also identified the real and the ideal in the Absolute; but while Fichte

derived them from the 'self-activity' (*Tathandlungen*, deed acts) of the Absolute (Universal Ego), Schelling derived the ideal and the real (subject and object, spirit and nature, mind and thing-in-itself) from the *indeterminateness* of the Absolute. Because the Absolute is 'indeterminate' in its being, it gives rise to the ideal and the real in its development, so that they are but two phases of the ultimate reality which is the Absolute.

Georg Hegel (1770—1831) also identified all things in the Absolute. But with him the Absolute is pure Thought or Idea, dynamic with immanent activity, not static like Schelling's 'indeterminateness.' Since the Absolute is pure Idea, it evolves by means of a purely *logical and rational process of thought* into the ideal and real, into subject and object, into spirit and nature, into mind and matter. The Absolute is continually in a dialectic evolution, so that all being is thought realized. His system is idealism driven to its highest peak.

It is difficult to compress the vastness of Hegel's system into a brief survey. According to him, all reality is idea, and the laws which govern the development of idea are the identical laws which govern the development of reality. Nature and spirit do not proceed from the Absolute, as Schelling stated, but the Absolute gradually becomes nature and spirit in a process of self-actualization. It is the law of development for thought and being (for both are the same) to realize itself by passing from a state of *in-itself* (*an-sich*) through the state of *out-of-self* (*für-sich*, otherness) into the state of *for-itself* (*an-und-für-sich*). The dialectic or logical movement of evolution thus comprises

three stages: the position or *thesis*, the contraposition or *antithesis*, and the identity of position and contraposition or synthesis; or, to express it in a different way — affirmation, negation, and the negation of negation.

This self-evolution of the Absolute begins with Being. Being is abstract, indeterminate, empty of all content, and as such it is indistinguishable from Nothing. Here is Hegel's view: "The distinction between Being and Nought is, in the first place, only implicit, and not yet actually made: they only *ought* to be distinguished. A distinction, of course, implies two things, and that one of them possesses an attribute which is not found in the other. Being, however, is an absolute absence of attributes, and so is Nought. Hence, the distinction between the two is only meant to be; it is quite a nominal distinction, which is at the same time no distinction. . . . Nothing, if it is thus immediate and equal to itself, is also conversely the same as Being is. . . . In Being we have Nothing, and in Nothing Being.... In Becoming the Being which is one with Nothing, and the Nothing which is one with Being, are only vanishing factors; they are and they are not."¹⁵

It is *Becoming* that constitutes the all-important process of evolution for Being. "Becoming is the first concrete thought, and therefore the first notion: whereas Being and Nothing are empty abstractions."¹⁶ Through this process of Becoming indeterminate Being becomes 'determinate Being.' Hegel gives the following account of Becoming. "Even our ordinary conception of Becoming implies that somewhat (something) comes out of it, and that Becoming therefore has a result. . . .Becoming always contains Being

and Nothing in such a way that these two are always changing into each other, and, reciprocally cancel each other. Thus Becoming stands before us in utter restlessness — unable, however, to maintain itself in this abstract restlessness: for since Being and Nothing vanish in Becoming (and that is the very notion of Becoming), the latter must vanish. . . . The result of this process, however, is not empty Nothing, but Being identical with the negation — what we call Being Determinate (being then and there): the primary import of which evidently is that it *has become*.”¹⁷

Since Being is Idea and Idea Being, it is by means of the logical process of Becoming that the Being-Idea gradually and successively passes from a state of indeterminateness to the determinateness of all beings, evolving progressively into nature (the world) and spirit (consciousness), until it finally harmonizes all differences of being in the Absolute Spirit. In this manner Hegel attempts to reduce all unity and plurality, all identity and change, to the supreme self-differentiating unity of the Absolute Idea-Being. Unity essentially involves diversity and self-negation, and it is this ‘power of negativity’ (*Macht der Negativität*) which is the eternal driving urge of self-evolution in the Absolute.

As the final result of this self-actualization of Being-Idea, all beings and all selves are but modes and manifestations of the Absolute. There is, of course, no creation. All finite things are but the ‘expression,’ the ‘appearance’ of the Absolute; the absolute becomes all things in a process of logical necessity. There is *no thing-in-itself* distinct from the all-inclusive reality of the Absolute. All dualism between

thought and thing is obliterated, and man and the world possess no 'otherness' of their own: all is 'thought realized.'

Most philosophers, Descartes and Kant included, maintained the essential dualism of thought and thing, subject and object, mind and matter, spirit and nature, God and world, real and ideal; even though they confused some of these opposites, they upheld the distinction in others. But Fichte, Schelling, Hegel, and their followers, eliminated this dualism and asserted the *one-ness* of all things in the Absolute: they defended the doctrine of *idealistic, pantheistic monism*. In the field of knowledge this involved an *epistemological monism* — the doctrine of the identity of thought with the object of thought.

The ultra-spiritualistic tendency of Descartes' principles here reached its ultimate peak of development. Kant and Hegel, particularly the latter, exerted a tremendous influence on subsequent philosophy. For decades Hegel's idealism held complete sway. Not to be a Hegelian was, for a long time, a sign of obscurantism. Eventually, however, some philosophers refused to follow these thinkers into the speculative clouds of Absolutism and preferred to remain closer to the homely soil of the earth. A reaction set in toward the more human philosophy of *realism*.

SUMMARY OF CHAPTER VII

A number of modern theories have arisen in an attempt to solve the problem of sense-knowledge.

1. *Descartes' Ultra-Spiritualism.* *Descartes* defined the mind as 'thought' and matter (body) as 'extension.' There is no real cognitional interaction between mind and body in man, because their disparity is too great; the body is a mere automaton, and all knowledge is potentially innate in the mind. The mind can know nothing but its own conscious states.

2. *Occasionalism, Ontologism.* *Geulincx* and *Malebranche* maintained that God produced all knowledge in the mind on the occasion of stimuli in the body. *Malebranche* also defended the ontologistic view that man's mind has an intuition of God's ideas and thus comes to know the world outside.

3. *Spinozism, Monadism.* *Spinoza* asserted the one-ness of mind and matter in the infinite substance of God; this infinite substance has 'extension' and 'thought,' so that the world and the mind are but two determinations of God.

According to *Leibnitz*, the ultimate beings are monads. There is no interaction between monads. All knowledge in monads is innate; it corresponds with reality, due to a pre-established harmony.

4. *Empiricism, Psychological Idealism.* *Locke* maintained that all knowledge comes from experience, and it is restricted to conscious states. We can know nothing of material substances. *Berkeley* denied the existence of a

physical world; its 'being' is 'being perceived.' He is a psychological and acosmistic idealist.

5. *Pan-Phenomenalism*. *Hume* denied the existence of all substance. All we can know are phenomena. He was a subjectivist and skeptic.

6. *Transcendental Idealism*. *Kant* claimed that some elements of our sense-knowledge are a posteriori, derived from experience, while others are a priori, derived from the mind anterior to all experience. Sense-perception is the result of the empirical element of sensations and the mental element of subjective, innate 'forms.' The noumena or things-in-them-selves excite sensations, producing the 'intuition' of an object; the object of this intuition is the *phenomenon*. 'Space' and 'time' are not qualities of bodies; they are *a priori forms* making perception possible by arranging the manifold of sense in the order of extension and succession (space and time). Noumena actually exist, but we can have no knowledge of them; our knowledge is limited to phenomena and as such has only subjective value.

7. *Absolutism*. *Fichte* endeavored to dissolve the antithesis between mind and matter by identifying all reality with the Ego: thought is the ultimate and only reality. By 'Ego' he means the universal consciousness of the Absolute. *Schelling* also identified the real and the ideal with the Absolute; mind and matter proceed from the indeterminateness of the Absolute, constituting its two phases. *Hegel* substituted 'immanent activity' for the 'indeterminateness' of the Absolute and made the Absolute or Being-Idea evolve by means of a purely logical and rational process of thought into the real (world) and the

ideal (mind), synthesizing everything in the Absolute Spirit. Absolutism is pantheistic idealism.

The ultra-spiritualistic principles of Descartes were thus developed into Absolutism.

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Chapter 8

RETURN TO REALISM

IT WAS BUT NATURAL THAT A REACTION WOULD SET IN AGAINST THE exaggerated spiritualism of some of Descartes' principles. Locke and Hume insisted strongly on the role of the senses in the acquisition of knowledge. After all, it is hard for men, even if they be philosophers, to rid themselves of the conviction that the external world is real and that, somehow, we can and do perceive the world as it is. Later on, the extreme ideal-ism of the transcendentalists also brought about a reaction toward realism.

Locke had opposed the innateness of sense-perception as defended by Descartes, whereby the latter identified it with 'thinking'; but Locke went to the other extreme by debasing 'ideas' more or less to sense-impressions. Hume finished by reducing all ideas to a sense-knowledge of phenomena. Herein lay the seeds of sensism, positivism, and materialism.

SENSISM, POSITIVISM, MATERIALISM

Thomas Hobbes (1588—1679) was a confirmed materialist and sensist. The Abbé Condillac (1715—1780) made

sensation the sole source of all knowledge, so that all operations of the soul—judgment, reflection, and emotion — are nothing but 'transformations of sensation.' He did not deny the immateriality of the soul, but he considered consciousness itself to be but a form of sensation. Other representatives of the movement were *John S. Mill*, *Alexander Bain*, and *James Sully*.

Positivism owes its origin to *Auguste Comte* (1798—1857). Positivism identifies knowledge with empirical, *physical science*. We can know nothing but facts and the relations of facts. Only natural phenomena of matter and force, and the laws governing them, form the subject matter of positive science, and these alone are the objects of man's knowledge. Sensation is the only source of this knowledge; all else is futility and illusion. Positivism is the philosophic doctrine of many scientists. Modern defenders are: Spencer, Huxley, Tyndall, Congreve, Beesly, Allen, Bridges, Ribot, Ardigo, Laas, and Riehl.

Sensism was bound to end in materialism. Its main protagonists were *Karl Vogt* (1817—1895), *Jakob Moleschott* (1822—1893), *Ludwig Büchner* (1824—1899), and *Ernst Haeckel* (1834—1919). The only reality which exists is matter and mechanical motion; the mind is but a form of matter, and knowledge but a form of motion. Descartes' mechanistic interpretation of the human body and its relation to the mind hereby reached its lowest level; it is the extreme opposite of the idealistic pantheism attained in Hegel's philosophy. *Idealistic monism* and *materialistic monism* are the two epistemological poles of

modern philosophy, the logical result of Descartes' ill-fated antithesis between mind and body.

NATURAL REALISM, TRANSFIGURED REALISM

In opposition both to Humian skepticism and Kantian transcendentalism, the Scottish School reverted to *natural realism*. *Thomas Reid* (1710—1796) defended the immediate perception of external things; yet, oddly enough, he asserts that we are not conscious of this perception. James McGosh and T. Case were defenders of a realism very similar to that of Reid.

Sir William Hamilton (1788—1856), though a follower of Reid, was strongly influenced by Kantian ideas and maintained that we can know nothing but the *relative and phenomenal*. He accepts “the great axiom that all human knowledge, consequently that all human philosophy, is only of the relative and phenomenal. In this proposition, the term *relative* is opposed to the term *absolute*; and, therefore, in saying that we know only the relative, I virtually assert that we know nothing absolute, — nothing existing absolutely; that is, in itself and for

Itself, and without relation to us and our faculties. . . . Thus, mind and matter, as known and knowable, are only two different series of phenomena or qualities; mind and matter, as unknown and unknowable, are the two substances in which these two series of phenomena or qualities are supposed to inhere. The existence of an unknown substance is only an inference we are compelled to make, from the existence of known phenomena. ... Our

whole knowledge of mind and matter is thus, as we have said, only relative; of existence, absolutely and in itself, we know nothing."¹ He is, therefore, a *reasoned realist, but a relativist and phenomenalist*.

Herbert Spencer (1820—1903) was a naturalistic evolutionist. There exists an objective reality which is extra-mental, otherwise we cannot account for the 'persistence' and the 'definite character' of our sense-perceptions. This reality is the cause of our sensations. We cannot, however, go beyond the phenomena of things and know what the *ultimate reality* is like: the ultimate reality in nature is forever unknown and unknowable. We know 'that' it is, but we do not know 'what' it is. We think of reality in the terms of God, soul, mind, space, time, matter, motion, force, and similar ideas, but these are only symbols of the underlying reality, totally unlike the objects they represent. Spencer is, therefore, a *hypothetical realist and dualist*, but also a *phenomenalist*.

"The reality underlying appearances is totally and forever inconceivable to us."² "Ultimate religious ideas and ultimate Scientific ideas, alike turn out to be merely symbols of the actual, not cognitions of it. . . .The reality existing behind all appearances is, and must ever be, unknown."³ "Admitting, or rather asserting, that knowledge is limited to the phenomenal, we have, by implication, asserted that the sphere of knowable is co-extensive with the phenomenal co-extensive with all modes of the Unknowable that can affect consciousness."⁴

"Though Space, Time, Matter, and Motion are apparently all necessary data of intelligence, yet a psychological

analysis shows us that these are either built up of, or abstracted from, experiences of Force. . . Force, as we know it, can be regarded only as a certain conditioned effect of the Unconditioned Cause — as the *relative reality* indicating to us an Absolute Reality by which it is immediately produced. And here, indeed, we see even more clearly than before, how inevitable is that *transfigured realism* to which skeptical criticism finally brings us around.”⁵ And thus, the ultimate data of our knowledge are effects (phenomena) produced in our consciousness by some unknown cause (noumenon); the phenomena are the ‘symbols’ of this unknown ultimate reality, but the ‘symbols’ give us no likeness whatever of the things-in-themselves. This is an agnostic idealism, similar to Kant’s, but without Kant’s ‘mental forms.’

POST-KANTIAN REALISTIC TRENDS

Kant was not able to overcome Hume’s agnosticism. Since the outcome of his philosophy was that we can know only phenomena but never the noumena (things-in-themselves), his agnosticism was as pronounced as Hume’s. He indeed admitted the existence of things-in-themselves, but that was a mere postulate, an assumption. Some of his followers, dissatisfied with this conclusion, attempted to bridge the gap between phenomena and noumena. They desired to show that we could acquire some knowledge of what the thing-in-itself really is. Prominent among these are *F. H. Jacobi* (1743—1819), *J.F. Fries* (1773—1843), *J. F. Herbart* (1776—1841), *E. Husserl*, and *A. Meinong*.

Jacobi claimed that we can attain to a knowledge of supra-sensible reality, such as God and the soul, by means of a rational intuition of faith (*Gefühlsglaube*). Fries maintained that we have a 'presentment' (*Ahnung*) of the suprasensible in the sensible. Herbart looked for a speculative knowledge of the thing-in-itself in a rational criticism of the phenomena. If we analyze the Ego and the thing-in-itself we arrive at a multiplicity of 'reals' (*Realen*). Ultimately, therefore, nature consists of 'reals'; they are somewhat similar to the Leibnitzian monads, but they possess no power of representation and they have no activity except the power of self-preservation. While we have no experience of these 'reals,' the presence of phenomena prove their existence. Herbart's realism represents an approach to modern realistic philosophy. Husserl's and Meinong's 'objects' are not existential, but rather logical realities. These thinkers could not break through the phenomenalism of Kant; their doctrines form a system of logical realism which is at bottom a disguised logical idealism. However, their views greatly influenced contemporary realists.

NEO-ABSOLUTISM

Kant, while an idealist, maintained the essential difference between phenomena (appearances) and noumena (things-in-themselves), as distinct parts in our universe; he was a hypothetical dualist. Fichte, Schelling, and Hegel removed this essential difference between the 'subject' and 'object' in knowledge and made both *immanent* within knowledge,

thereby identifying both 'subject' and 'object,' mind and universe, in a common and single ground, the Absolute. The Absolute is an Organic Whole, a Unity-in-Difference, absorbing and harmonizing all reality. Such is the idea underlying Hegelian Absolutism.

A. *Schopenhauer* (1788—1860) and E. *von Hartmann* (1842—1906) conceived the Absolute in a different manner. Schopenhauer was a voluntarist. Instead of the Idea being the ultimate root of all reality, it is the Will. It is as much the Absolute as Fichte's Ego and Hegel's Being-Idea. The universe is but an objectification of the Will, and the essence of the world consists in a blind impulse, an unconscious, irrational striving of the Absolute Will in an eternal struggle for existence.⁶ Von Hartmann attempted a reconciliation of Hegel's idealism and Schopenhauer's voluntarism. The Absolute is the Will, but it is guided by ideas; since, however, it is not aware of this, it is unconscious. The Absolute, therefore, is the Unconscious.⁷

Neo-Hegelians subscribe to the general principles of Hegel; they differ, however, in their methods of approach and in minor points of doctrine. It is characteristic of these philosophers that they approach their problem through *experience* rather than by means of aprioristic speculations.

F. H. *Bradley*, for instance, begins with the obvious data of the qualities of bodies and attempts to show that they are unreal. He then takes substance and accident, relation and quality, space and time, motion and change, causation and activity, things and self, and comes to the general conclusion that our ideas of their nature are 'unintelligible,' self-contradictory, and full of inconsistencies. As far as we

know the universe, it is a mass of contradictions and appearances. But these appearances must be a qualification of reality in some way, and the contradictions must be overcome in a higher unity. This is done in the Absolute. "Everything phenomenal is somehow real; and the absolute must at least be as rich as the relative. And, further, the Absolute is not many; there are no independent reals. The universe is one in this sense that its differences exist harmoniously within one whole, beyond which there is nothing. Hence the Absolute is, so far, an individual and a system. . . . The Absolute is one system, and *its contents are nothing but sentient experience*. It will hence be a single and all-inclusive experience, which embraces every partial diversity in concord. For it cannot be less than appearance, and hence no feeling or thought, of any kind, can fall outside its limits"⁸ "The Absolute is not personal, nor is it moral, nor is it beautiful or true. . . . The Absolute stands above, and not below, its internal distinctions. It does not eject them, but it includes them as elements in its fullness. To speak in other language, it is not the indifference but the concrete identity of all extremes. But it is better in this connection to call it super-personal."⁹

According to *T. H. Green*, "the terms 'real' and 'objective' have no meaning except for a consciousness which presents its experiences to itself as determined by relations, and at the same time conceives a single and unalterable order of relations determining them. . . . When we analyze our ideas of matter of fact, can we express it except as an idea of a relation which is always the same between the same objects; or our idea of an object except

as that which is always the same in the same relation? And does not each expression imply the idea of a world as a single and eternal system of related elements, which may be related with endless diversity but must be related still? If we may properly call the consciousness which yields this idea 'understanding,' are we not entitled to say that understanding is the source of there being for us an objective world, that it is the principle of objectivity."¹⁰ "The concrete whole, which may be described indifferently as an eternal intelligence realized in the related facts of the world, or as a system of related facts rendered possible by such an intelligence, *partially and gradually reproduces itself in us*, communicating piece-meal, but in inseparable correlation, understanding and the facts understood, experience and the experienced world."¹¹ And thus the knowing subject and the known object, the ideal and the real, the self and the world, are but the distinct realizations of the 'eternal intelligence,' or Absolute, reproducing itself in finite forms.

Other philosophers, who belong more or less to this class, are W. Wallace, J. H. Stirling, I. Caird, E. Caird, J. Watson, J. Royce, B. Bosanquet, A. E. Taylor, W. E. Hocking, W. T. Harris, B. Croce, O. Gentile, J. A. Leighton, M. W. Galkins, A.S. Pringle-Pattison, R. F. A. Hoernlé, F. Paulsen, W. Windelband, H. Rickert, H. Münsterberg, F. Münch, H. Cohen, P. Natorp, E. Cassirer.

NEO-PSYCHOLOGISM

Neo-Psychologism is the outcome of a closer union between empirical science and psychology. Psychological idealism maintains in general that things depend for their existence on being perceived by the mind or in consciousness; their 'being' is 'being perceived,' and they are, therefore, non-existent except as 'ideas.' Berkeley and Hume were exponents of this doctrine. The neo-psychologists, however, are influenced by other systems of thought, which modify the general theory. Neo-psychologism attempts to bridge the gap between mind and matter by applying the principles of empirical science to consciousness; it thus represents a step away from idealism and an *approach toward realism*.

According to *J. H. Poincaré*, all external objects are but sensation-complexes united together by relations. Since we can only think of thoughts, thought is all that exists, and all that is not thought is pure nothingness. Later on his tendency was more toward realism. To *E. Mach* the Ego is a mass of sensations in coherence; bodies are groups of sensations; there are no material realities corresponding to our ideas of objects like atoms and molecules; everything is at the same time physical and psychical, so that there is no fundamental difference between the 'real' and the 'experience.' *R. Avenarius*, in his 'empirio-criticism,' also assumes as his starting point the principle that nothing exists save experience. All our perceptions are subjective; they do not reveal to us the external objects themselves. Logically his principles lead to subjectivism and materialism.

W. Wundt in his 'ideal-realism,' takes a stand midway between idealism and realism; as a scientist he leaned toward realism, and as a Kantian he could not free himself from idealism. His 'theory of actuality' denies the existence of all substance: "The contents of psychological experience should be regarded as an *interconnection of processes*. This concept of process excludes the attribution of an objective and more or less permanent character to the content of psychical experience. Psychical facts are *occurrences*, not objects."¹² The concept of "mind-substance' has no value except to satisfy "a mythological and metaphysical need."¹³ There is nothing but a manifold of interrelated occurrences, an inner (psychical) and outer (physical) experience. This is the system of a *psycho-physical parallelism*.

There is no completely uniform body of doctrine among any set of idealists. However, the general trend of their ideas warrants the placing of the following thinkers in this group: W. K. Clifford, Karl Pearson, H. R. Marshall, G. S. Fullerton, S. H. Hodgson, J. H. Muirhead, D. G. Ritchie, J. Petzoldt, T. Lipps, H. Vaihinger, A. Fouillée, H. Bergson, C. Renouvier.

PERSONALISM

A new philosophic movement is coming to the front in our day. It is closely allied to classic idealism, yet seeks to avoid the absolutistic implications of the latter. In general, it is more voluntaristic than intellectualistic, and it is more in accord with the traditional idea of God than with the pantheistic notion of the Absolute. There are in it, however,

many odd and conflicting elements, which time will have to sift and eliminate, before it can reach a final stage of clarification.

Some forms of personalism are *non-typical* and hardly deserve the name. The personalism of J. M.E. McTaggart (1866—1925) is atheistic; that of Wilhelm Stern is pantheistic: that of C. Renouvier (1815—1903) is relativistic; that of E. Caird, J. Royce, and Sir Henry Jones is absolutistic; and that of G.W.

Howison, W. Vatke, and H. W. Carr is teleological (i.e., God is not the First Cause or creator of the universe, but its Final Cause or goal).

Typical personalism is theistic; it accepts a *personal God* and seeks the ultimate explanation of all things in Him. From this standpoint it differs radically from the non-typical forms of personalism just mentioned. God is the creator of the universe, and this point distinguishes personalism from the systems of Spinozism and Hegelianism. In epistemology it favors dualism rather than monism; there is a real distinction between thought and thing. Personalism, on the other hand, contends that whatever is ontologically real can be found only in personality. Personalism is also more voluntaristic than traditional theism. The will counts more than the intellect. A cogent rational demonstration of God's existence is impossible; our acceptance of His existence rests ultimately on faith, not on reason. And faith, not reason, is the foundation of all philosophy. The reality of the soul or self as a 'person' is of the very essence of personalism; but the soul is, as a rule, considered to be

rather a 'power of action' than a real substance. Most personalists lean toward occasionalism.

Albert C. Knudson gives the following definition of personalism: "We may define personalism as that form of idealism which gives equal recognition to both the pluralistic and monistic aspects of experience and which finds in the conscious unity, identity, and free activity of personality the key to the nature of reality and the solution of the ultimate problems of philosophy."¹⁴ Among the main representatives of the philosophy of personalism Knudson mentions *H. Lotze* (1815—1881), *A. C. Fraser* (1819—1914), *J. Ward* (1843—1925), *A. J. Balfour*, *A. S. Pringle-Pattison*, *J. C. Wilson* (1849–1915), *H. Rashdall* (1858—1924), *W. R. Sorley*, *C. C. Webb*, *R. Eucken* (1846—1926), *G. T. Ladd* (1842—1921), and *Borden P. Bowne* (1847—1910). Of these, Bowne is undoubtedly the most outstanding proponent of the new philosophy.

From the above it will be clear that personalism is far from being a definitely finished and cohesive system. Bowne has this to say of himself: "It is hard to classify me with accuracy. I am a theistic idealist, a Personalist, a transcendental empiricist, and idealistic realist, and a realistic idealist; but all these phrases need to be interpreted. They cannot well be made out from the dictionary. Neither can I well be called a disciple of anyone. I largely agree with Lotze, but I transcend him. I hold half of Kant's system, but sharply dissent from the rest. There is a strong smack of Berkeley's philosophy, with a complete rejection of his theory of knowledge. I am a *Personalism*, the first of the clan in any thoroughgoing sense."¹⁵ Bowne

was the systematizer of personalism. He improved on Lotze by introducing “as an essential and controlling factor the thought of *free* self-activity. . . Bowne made freedom the touchstone of reality.”¹⁶ Personalism, it seems, may be destined to help some devotees of idealism find their way back to theism.

PRAGMATISM, HUMANISM

Pragmatism and humanism are a strong repudiation of Kantian rationalism and Hegelian absolutism. They propose to take man down from the clouds of intellectual abstraction from the “supercelestial heavens of Pure Reason,” and it is their “avowed aim of *humanizing* Truth and bringing it back to earth from such altitudes.”¹⁷ Pragmatism originated as a modern theory of knowledge with *Charles S. Peirce* in 1878, and its chief exponents are *William James*, *F. C. S. Schiller*, and *John Dewey*. Pragmatism and humanism are so closely akin that they can be considered one, the latter being an extension and an expansion of the former. Schiller explains the relation between the two: “Pragmatism will seem a special application of humanism to the theory of knowledge. But humanism will seem more universal. It will seem to be possessed of a method which is applicable universally, to ethics, to aesthetics, to metaphysics, to theology, to every concern of man, as well as to the theory of knowledge.”¹⁸ Both are therefore identical in principle and are more or less interchangeable terms.

Pragmatism is a return to *empiricism* and a protest *against apriorism*. As James puts it: “Pragmatism

represents a perfectly familiar attitude in philosophy, the empiricist attitude, but it represents it, as it seems to me, both in a more radical and in a less objectionable form than it has ever yet assumed. A pragmatist turns his back resolutely and once for all upon a lot of inveterate habits dear to professional philosophers. He turns away from abstraction and insufficiency, from verbal solutions, from bad a priori reasons, from fixed principles, closed systems, and pretended absolutes and origins. He turns towards concreteness and adequacy, towards facts, towards action and towards power. That means the empiricist temper regnant and the rationalist temper sincerely given up. It means the open air and possibilities of nature as against dogma, artificiality, and the pretence of finality in truth. At the same time it does not stand for any special results. It is a method only. . . . Being nothing essentially new, it harmonizes with many ancient philosophic tendencies. It agrees with nominalism for instance, in always appealing to particulars; with utilitarianism in emphasizing practical aspects; with positivism in its disdain for verbal solutions, useless questions and metaphysical abstractions. . . . No particular results then, so far, but only an attitude of orientation, is what the pragmatic method means. *The attitude of looking away from first things, principles, 'categories,' supposed necessities; and of looking towards last things, fruits, consequences, facts.*"¹⁹

The truth is 'made' by means of postulate and experiment, so that something is 'true' if it satisfies some human need of ours and 'false' if it does not. "Pragmatism," says Schiller, essays to trace the actual 'making of truth,'

the actual ways in which discriminations between the true and the false are effected, and derives from these its generalizations about the method of determining the nature of truth. It is from such empirical observations that it derives its doctrine that when an assertion claims truth, *its consequences are always used to test its claim*. In other words, what follows from its truth for any human interest, and more particularly in the first place, for the interest with which it is directly concerned, is what establishes its real truth and validity. . . . Human interest, then, is vital to the existence of truth: to say that a truth has consequences and that what has none is meaningless, means that it has a bearing upon some human interest. Its 'consequences must be consequences to some one for some purpose.'²⁰

Truth is nothing permanent, necessary, universal, objective, absolute; it is relative, transient, particular, subjective, personal. If an idea, judgment, assumption, axiom, postulate, theory, or system of thought 'works' and satisfies our mental or emotional or social needs, *it is, so far and so long as it does this*, valuable and 'true.'

"True ideas are those that we can assimilate, validate, corroborate and verify. False ideas are those that we cannot. That is the practical difference it makes to us to have true ideas; that, therefore, is the meaning of truth, for it is all that truth is known as.

"This thesis is what I have to defend. The truth of an idea is not a stagnant property inherent in it. Truth happens to an idea. It becomes true, is made true by events. Its verity is in fact an event, a process: the process namely of its

verifying itself, its verification. Its validity is the process of its *validation*.”²¹

John Dewey stressed the *instrumentalism* of knowledge. Thinking is a biological function; consequently ideas are only instruments for interpreting and arranging experience, and the mind is only an instrument for controlling the environment. The theory is an application of the principle of evolution to the function of thought.²²

Henri Bergson, though actually a vitalistic idealist in his general doctrine, must be placed among the pragmatists so far as his *intuitionism* is concerned. Evolution has developed consciousness in two opposing directions: intellect and intuition. “Intelligence, by means of science, which is its work, will deliver up to us more and more completely the secret of physical operation. . . . But it is to the very inwardness of life that *intuition* leads us — by intuition I mean instinct that has become disinterested, self-conscious, capable of reflecting upon its object and of enlarging it indefinitely.”²³ The intellect can give us only static pictures, ‘snapshots,’ ‘cinematographical views,’ of reality. Reality is in a process of perpetual change; knowledge, therefore, is forever in the making, and it is intuition which reveals to us the inner nature of reality. “On our personality, on our liberty, on the place we occupy in the whole of nature, on our origin and perhaps also on our destiny, it throws a light feeble and vacillating, but which none the less pierces the darkness of the night in which the intellect leaves us.”²⁴ Intuition is better than intellect.

Hans Vaihinger defends a theory of *fictionalism*. All concepts are fictions of the mind; they have a certain

amount of fictional value as mental constructions of reality, but though they 'work' in this respect they need not be true in themselves. Concepts are only means toward the end of adapting ourselves to our environment; as such they possess only a provisional character.²⁵

Another offshoot of pragmatic thought is the *imaginism* of *Douglas Fawcett* and a few others. Along lines similar to the universal consciousness of idealists, Fawcett considers 'imagination' to be the creative force of all reality. This cosmic imagining is a conscious infinite activity. Human thought is purely instrumental, necessary for adjustment to environmental conditions.²⁶

J. M. Baldwin advocates an esthetic pragmatism, which he calls *pancalism*. *Maurice Blondel*, one of the founders of modernism, propounds a form of religious pragmatism. E. LeRoy combines religious pragmatism with Bergsonian philosophy; scientific laws are mere instruments of practical life, not true expressions of reality.

A number of pragmatists have expressed their views conjointly in a volume, applying the doctrine to various departments of knowledge. The authors are: J. Dewey, A. W. Moore, H. C. Brown, G. H. Mead, H. W. Stuart, J. H. Tufts, H. M. Kallen, B. H. Bode. The book is entitled *Creative Intelligence*.²⁷

NEO-REALISM

In 1910 there appeared the 'Program and First Platform of Six Realists,' and in 1912 these six collaborators published their views in a joint volume, *The New Realism*.²⁸ The

authors were *Edwin B. Holt, Walter T. Marvin, Will. P. Montague, Ralph B. Perry, Walter B. Pitkin, and Edward G. Spaulding*. Though they disagree in details, their fundamental tenets are the same.

The essential issue of this new realism is outlined as follows:

"The escape from subjectivism and the formulation of an alternative that shall be both remedial and positively fruitful, constitutes the central prominent issue of any realistic protagonist. . . . The new realists' relational theory is in essentials very old. To understand its meaning it is necessary to go back beyond Kant, beyond Berkeley, beyond even Locke and Descartes — far back to that primordial common-sense which *believes in a world that exists independently of the knowing of it*, but believes also that that same independent world can be *directly presented* in consciousness and not merely represented or copied by 'ideas.' In short, the new realism is, broadly speaking, a return to naive or natural realism."²⁹

In their endeavor, though, to avoid subjectivism and exaggerated dualism, the neo-realists have gone to the opposite extreme. Instead of identifying external, material objects with the conscious states of the knowing mind, they practically identify mind, consciousness, and Ego with these objects. There are no substances. "I believe," says Holt, "that no knower, or Ego, such as metaphysics means, exists."³⁰ The world is a four-dimensional (spatio-temporal) manifold of 'quality-groups.'³¹ This is, of course, very much like Hume's phenomenalism. Perry is in accord with this view: "Modern realism is closer to the monistic realism of

‘ideas,’ suggested by Hume, than to the dualistic realism of mind and matter, propounded by the Scottish School; and this in spite of the fact that the Scottish philosophy was primarily a polemic, in the name of ‘realism,’ against Hume, as the last and most outrageous of the idealists. The new realism, while it insists, as all realism must, that things are *independent*, asserts that when things are known, they are ideas in the mind. They may enter *directly into* the mind; and when they do, they become what are called ‘ideas.’ So that ideas are only things in a certain relation; or, things, in respect of being known, are ideas.”³² “‘Epistemological monism’ means that when perceived, things are directly and identically present in consciousness.”³³

How can things be directly and identically present in consciousness? Because consciousness is really identical with the things themselves in nature. As Perry expresses himself: “The difference between knowledge and things, like that between mind and body, is a relational and functional difference, and not a difference of content.”³⁴ Or, as Holt puts it: “We have become wedded or indeed welded to the phrase — my thought is of an object, when we ought to say and mean — my thought is a portion of the object — or better still, — a portion of the object is my thought: — exactly as a portion of the sky is the zenith.”³⁵ The ‘mind’ is identical with the nervous system, and ‘thinking’ is a function of it. The mind is thus eliminated as a distinct entity and with it the ‘knower’; all that remains is the ‘object’ and the process of ‘knowing.’ Knowing, therefore, and consequently also ‘consciousness,’ must be a relation or modification of the objects themselves.³⁶ Montague calls

this doctrine *hylopsychism* and explains: "By hylopsychism I wish to denote the theory that all matter is instinct with something of the cognitive function."³⁷ Since all matter is thus 'instinct with something of the cognitive function,' it is obvious that the psychical and physical, mind and matter, are ultimately the same reality. And since the neo-realists always insist that the material objects are real, it follows that mind is reduced to matter. This is plain phenomenalist materialism. The 'epistemological monism' of neo-realism thus ends in *materialistic monism*.

Not all neo-realists subscribe to all the views outlined above. The English neo-realists, like *G. E. Moore*, *B. Russell*, *S. Alexander*, *T. Nunn*, and others, are somewhat more conservative. Within the general framework of this epistemological monism they differ very much among themselves. Since, however, all seem to agree that consciousness is merely a modification of the objects themselves, neo-realism is *pan-objectivism*.

CRITICAL REALISM

As in the case of neo-realism, a group of 'programmists' launched critical realism in 1916 — *D. Drake*, *A. O. Lovejoy*, *J. B. Pratt*, *A. Rogers*, *G. Santayana*, *R. W. Sellars*, and *C. A. Strong*. In opposition to idealism and subjectivism they all maintain the existential independence of physical objects from consciousness and the mind. They all agree, however, that the secondary qualities of colors, sounds, and the like, are not present in the objects as they appear in perception; they are subjective, though causally produced by external

objects in the organism. Their treatment of the primary qualities of extension, motion, and so on, is not so clear and uniform.

Since the fundamental trend of critical realism is *materialistic* and *evolutionary*, mind and consciousness are ultimately reducible to 'brain-events' and to a 'functional variant' of the nervous system.³⁸ Drake believes in *pan-psychism*: "The term pan-psychism' may properly be applied to our theory; but we must understand that it is only mind-stuff that is universal, not mind itself. The attribution of quasi-human forms of consciousness to the inorganic world is poetic and fanciful, not at all an implication of our view. The whole world is indeed, in a sense, alive. But it does not know itself to be alive. . . . We are therefore free to believe that the *stuff* that is deployed in this or that order throughout the universe is the same sort of stuff that composes us, sentient beings that we are. . . . Our theory puts an end to the need of introducing such magical entities as 'souls' or 'entelechies,' and (as we shall see) explains consciousness in natural terms."³⁹

In describing the process of sense-perception, critical realists use a terminology of their own. The elements involved are thus described by Strong: "By 'object' I mean the real thing, existing in one continuous space and one continuous time. An essence' is anything that can be given, whether to sense-perception or to thought, considered not as given but simply in itself. A 'datum' is an essence considered as given. 'Consciousness is the function by which things are given — i.e., the same as 'awareness' or 'givenness.' The 'Ego,' or 'self,' is the being (located in or

the substance of the organism) to which things are given. By 'psychic state,' finally, I mean the concrete state of the self which makes it possible for things to be given, or a similar state. . . . Of these the two most important are (1) that what is given in sense-perception is not the object as an existence, but only the object as an essence, (2) that in addition to the essence no givenness is given. So that, on both grounds, the datum of sense—perception is a bare essence"⁴⁰

To understand what Strong means by the term 'essence,' we must go to Santayana, who introduced it into epistemology as a factor in sense-perception. It is "a universal, of any degree of complexity and definition, which may be given immediately, whether to sense or to thought. Only universals have logical or aesthetic individuality, or can be given directly, clearly, and all at once."⁴¹ "That which appears, when all gratuitous implications of a world beyond or of a self here are discarded, will be an *essence*."⁴² "The inalienable individuality of each essence renders it universal; for being perfectly self-contained and real only by virtue of its intrinsic character, it contains no reference to any setting in space or time, and stands in no adventitious relations to anything. . . . After things lose their existence, or before they attain it, although it is true of them that they have existed or will exist, they have no internal being except their essences, quite as if they had never broached Existence at all: yet the identity of each essence with itself and difference from every other essence suffices to distinguish and define them all in eternity, where they form the Realm of Essence."⁴³ "The realm of essence, like the

empyrean, is a clear and tranquil region when you once reach it"⁴⁴

From all these characterizations of Santayana it is clear that essence is very much like the Universal Idea of Plato — a logical, ideal entity, which may or may not be embodied in physical things. This idea has been taken over into epistemology by the critical realists, though not always in this pure form. Strong, for instance, calls the ‘datum’ of sense-perception “the logical essence of the real thing. By ‘essence’ I mean its what divorced from its *that* — its entire concrete nature, including its sensible character, but not its existence.”⁴⁵ But Love-joy is opposed to these essences as ‘universals,’ when applied to physical ‘reals’ (objects), at least in the meaning that the senses can perceive these essences themselves.⁴⁶ Drake explains the matter this way: “Anything that *could* be imagined, or that might exist, any describable somewhat, is an ‘essence. . . Every particular existent is the existential embodiment of some particular essence. . . These ideas, essences, characters, logical entities, are merely possibilities of existence, and possibilities of discourse.”⁴⁷

Though the critical realists differ in their interpretation of the term ‘essence,’ they all agree that the ‘datum,’ or ‘essence,’ or ‘content,’ or ‘thing-experience,’ or ‘character’ (the terms mean the same thing), is the only thing which is intuited in perception. *The physical object itself is never perceived directly.* After all, then, the ‘datum’ is only a symbol of reality, and no one can be certain that the symbol adequately reveals the reality symbolized. Critical realism at best is a disguised form of *representative realism*.

EMERGENT EVOLUTION

Modern theories of realism are conjoined, as a rule, with the theory of evolution. From this combination there has arisen a new doctrine of realism, called evolutionary naturalism or *emergent evolution*. The basic idea is that nature is the product of evolution in such a manner that *entirely new and unpredictable properties* originate through synthesis and thereby form new and higher levels of reality. These new properties are not mere 'resultants' obtained by addition or subtraction from among previously existing properties; rather, these new properties have no counterpart in the lower levels and simply emerge' with specific characters not discoverable in the former (lower) levels.⁴⁸ W. McDougall characterizes emergence as follows: "It is claimed that each instance of emergence is creative of real novelty, of some new quality or property of type that did not exist before the emergence; that it is unpredictable before the event on the basis of any knowledge, matter how complete, of the things or events that enter into the synthetic event; that, because it is unpredictable, it is to be regarded as non-mechanistic; further, the new kind of relatedness, or the new quality or property, has causal efficacy, makes a difference to the further course of events."⁴⁹

According to S. Alexander the root of all things in evolution is Space-Time. "The world actually or historically develops from its first or elementary condition of Space-Time, which possesses no quality except what we agreed to call the spatiotemporal quality of motion. But as in the

course of Time new complexity of motions comes into existence, a new quality emerges, that is, a new complexity possesses as a matter of observed empirical fact a new or emergent quality."⁵⁰ In this manner all new levels of reality 'emerge': "Material things have certain motions of their own which carry the quality of materials. In the presence of light they are endowed with the secondary quality of color. Physical and chemical processes of a certain complexity have the quality of life. The new quality life emerges with this constellation of such processes, and therefore life is at once a physico-chemical complex and is not merely physical and chemical, for these terms do not sufficiently characterize the new complex which in the course and order of time has been generated out of them."⁵¹ *Mind* is also such an emergent: "Mind is a new quality distinct from life, with its own peculiar methods of behaviour."⁵²

Emergent evolution thus travels upward along the following lines: matter, life, mind, and (according to some) deity. Morgan represents the whole trend by means of a diagrammatic pyramid, whose base is space-time, and all emergents are built up from this base — "atom-pyramids near the base, molecules a little higher up, yet higher, things (e.g., crystals), higher still, plants (in which mind is not yet emergent), then animals (with consciousness), and near the top, our human selves."⁵³

Other emergentists are: *L. T. Hobhouse* (who seems to have relinquished his views later), *C. A. Strong*, *D. Drake*, *E. Noble*, *R. Sellars*,⁵⁴ but they disagree on certain vital points.⁵⁵ It will be noted that these philosophers attempt to bridge the gap between mind and matter by means of

‘emergence.’ The relation of this theory to the problem of knowledge is indirect; all emergentists are realists in explaining the process of cognition. Among biologists who favor the theory of emergent evolution one might mention H. F. Osborn, C. J. Herrick, H. S. Jennings, G.H. Parker, S. R. Lillie, W. M. Wheeler, W. E. Ritter, and others [Teilhard de Chardin, ed.].

OBJECTIVE RELATIVISM

Objective relativism (or, as William P. Montague⁵⁶ calls it, relativistic objectivism) attempts to harmonize two theories of knowledge which seem mutually exclusive: objectivism and relativism. Objectivism contends that things are, when not experienced by us, just what they seem when experienced by us. Relativism, on the other hand, maintains that every known object is relative (in relation) to the knowing subject and as such is dependent in its being upon the knowing subject and incapable of existing apart from consciousness. ‘Objective relativism,’ then, is the doctrine which holds that all perceivable objects are relative to the perceiver, so that they owe their nature and existence to the relations in which they stand to the perceiver; and this relativity is of such a character that the perceived objects (phenomena) are physically objective precisely as they appear in the act of perception, according to the standpoint of the individual perceiver.

This seems very obscure and complicated, but it is really quite simple. Three persons look at a penny from three different angles. The first sees it as a circle; the second sees

it as an ellipse; the third, looking at it edgewise, sees it as a straight thin line. Which of these three 'appearances' is the objectively true one? All three are; the penny is objectively and actually circular and elliptical and straight-lined, depending on the 'context' or 'experience-set' of the individual observer. Two persons look at a table top; one sees it as a square and the other as a rhombus. The table is really both a square and a rhombus at the same time. If a patient suffering from *delirium tremens* sees pink elephants and green monkeys, these animals are as real and genuine for him as those he sees in a zoological garden. What you perceive, that *is*. And as objects appear in perspective, that is what they *objectively are*. There is no objective difference between 'real' and 'unreal' appearances.

What, then, are the *objects*? Nothing but the 'aspects' of things seen in perspective. As *Bertrand Russell* says: "Instead of supposing that there is some unknown cause, the 'real' table, behind the different sensations of those who are said to be looking at the table, we may take the whole set of these sensations (together possibly with certain other particulars) as actually being the table. That is to say, the table which is neutral as between different observers (actual and possible) is the set of all those particulars which would naturally be called 'aspects' of the table from different points of view. . . . We have only, therefore, to notice how they [the particulars which are its aspects] are collected together, and we can keep the collection without assuming any 'real' table as distinct from the collection."⁵⁷ Or, as *Arthur E. Murphy* puts it: "The qualities are not the

existent, to be sure, but they are its whole nature, and it has no other.”⁵⁸

That objective relativism admits of no objective distinction between *reality and illusions or delusions* is clear from the following statement of A. N. Whitehead: “Pure presentational immediacy refuses to be divided into delusions and non-delusions. It is either all of it, or none of it, an immediate presentation of an external contemporary world as in its own right spatial.”⁵⁹ There is no difference between ‘delusions and non-delusions’; the former are as objectively real as the latter. What I perceive in nightmare dreams and fever hallucinations is no less real in the objective world than what I perceive in broad daylight when awake and normal.

This is the objective relativism of Whitehead, Dewey, Murphy, and others. It is a peculiar mixture of phenomenalism, subjectivism, objectivism, and neo-realism.

ARISTOTELIAN-SCHOLASTIC REALISM

Along with all these conflicting and confusing theories of knowledge, the age-old doctrine of *immediate perception* maintained its hold on the more conservative philosophers. It teaches that the spontaneous conviction of mankind is in general the correct view, and that we actually perceive the objects of the external world as they are in themselves. The senses do not merely ‘represent,’ they actually ‘present’ reality, at least in some form; man, therefore, does *not infer* the existence of objects ‘out there’ in nature from the existence of some ‘representative’ image in his

consciousness, but *perceives them directly through intuition*. As such, then, this theory subscribes to the doctrine of natural dualism and natural realism, at least in its main features. Ego and non-Ego, mind and matter, self and world, subject and object, consciousness and nature, psychical and physical, retain their respective individuality, distinct and unconfused, each in its own identity and being; this is natural dualism as opposed to monism and absolutism. The mind perceives the things of the external world directly in some form or other, so that the world is *immediately present* to the mind in the process of sense-perception without the perpetual intervention of a 'screen of representations,' and what the mind perceives in its intuition is not its own 'ideas' or subjective states but the *objects themselves*; this is natural realism as opposed to idealism and subjectivism.

The bridge between the world and the human mind is the *human body*. It is through the body and its senses and nervous system that external objects are able to contact the mind, and the mind is able to perceive the external objects. Since, however, the body is itself a part of the external world (as distinct from the mind), the only way in which the body can become the 'epistemological bridge' between the mind and the world, thereby making a direct perception of the world possible, is by entering into a distinct epistemological union with the mind: *mind and body must be an epistemological unit*. They must act together as the unit of perception. If each were divorced from the other, as postulated in the radical antithesis of Descartes, there would be no possibility of interaction between them, and

knowledge of the external world could never enter the mind. This Cartesian antithesis must, therefore, be a false conception. Mind and body must form one *organic whole*. Perception is a 'vital' function, but 'extended' in process; consequently neither the body alone nor the mind alone forms the adequate basis of perception, but the *animated organism of mind and body together*.

According to the general aristotelian-scholastic view, the material objects emit certain active energies (light, sound, heat, mechanical motion, etc.), and these energies affect the sense organs and nervous system, producing therein a *cognitional image* or likeness of the objects. This image is, of course, not a 'mirroring' or 'photographing' of the object upon the mind, but a vital *cognitional determinant* impressed upon sense-consciousness. The sense-consciousness responds in its own way to this determinant by becoming aware of the presented object. The mind is thus not conscious of this 'image' itself in the act of perception, but directly of the 'object'; the 'image' is merely the means by which the mind perceives the external reality.

Many modern scholastic philosophers, however, lean strongly in the direction of representative perception. They contend that this sensory 'image' becomes directly an object of awareness to the mind, and in it and from it the mind derives a sense-knowledge of material objects, instinctively referring these 'representations' to the things themselves. This would be mediate, not immediate, perception. They adhere to this view, because they are convinced that science has proved that objects are not always in nature as they appear to the senses; they claim

that the perceiving subject modifies the physical stimuli in its own characteristic manner (for instance, in color-vision, taste, etc.), so that the result is different from the condition of the objects as they are in nature. In this view all qualities of objects exist *formally in the subject and only causally in the objects*.

Other neo-scholastics, also influenced by the findings of science, defend the view that the facts prove that some perception (for instance, that of touch) is *immediate*, while other perceptions (for instance, those of color-vision, sound, flavor, taste, etc.) are *mediate* in character. In this view the fundamental sense of touch is the guarantee for the essential truth of the perception of extra-mental reality and serves as a check or control of the other perceptions. This theory is, therefore, partly 'presentative' and partly 'representative,' partly 'immediate' and partly 'mediate.' In any case, however, external reality is revealed to the mind through sense-perception.

Scholasticism combined within its system the best elements of the philosophy of Plato, of Aristotle, of the Neoplatonists, and of St. Augustine. In the main, however, it followed the teachings and principles of Aristotle. Scholasticism reached its highest development in the great minds of *St. Albert the Great* (1193 [or 1206]—1280), *St. Bonaventure* (1221—1274), *St. Thomas Aquinas* (1225—1274),⁶⁰ perhaps the most brilliant genius of synthesis who ever lived, and *John Duns Scotus* (1274 [or 1266]—1308). In the period of transition between medieval and modern scholasticism, the following names are noteworthy: *Thomas de Vio Cajetan* (1469—1534), *Toletus* (1532—1596),

Fonseca (1528—1599), *Vasquez* (1551—1604), *Suarez* (1548—1617), and *Sylvester Maurus* (1619-1687).

In general, *scholasticism* advocates a natural dualism of God and creature, mind and matter, thought and thing, as against monism and pantheism; it defends a moderate realism, as against ultra-realism, nominalism, and conceptualism, in the problem of the universals; it is spiritualistic and not materialistic, experimental and not aprioristic, objectivistic and not subjectivistic; in sense-perception it is presentational and not agnostic or representational or idealistic; concerning intellectual knowledge it defends a moderate rationalism, as against sensism, positivism, and innatism; it is common-sense knowledge critically examined and philosophically vindicated.

Neo-scholasticism is the renewal or revival of medieval scholasticism, adapting its fundamental principles and tenets to modern intellectual problems, remaining in close contact with the progress of the natural sciences and employing their legitimate findings as the basis for philosophical research. Neo-scholasticism had its beginnings in the middle of the nineteenth century, and since that time it boasts a long roster of prominent names in various countries.

In *Italy* we may mention *C. Sanseverino* (1811—1865), *J. M. Gornoldi* (1822—1892), *S. Tongiorgi* (1820—1865), *T. Zigliara* (1833—1893), *M. Liberatore* (1810—1892), *S. Schifflini* (1841-1906), *G. Bruni*, *A. Gemelli*, *P. Gény*, and *F. Olgiati*. In *Spain, Portugal*, and the Spanish-speaking countries: *James Balmes* (1810—1848), *Z. Gonzalez y Diaz*-

Tufion (1831—1892), J. M. Orti y Lara, A. Gomez Izquierdo, J. Urráburu, Teixeira Guedes, G. Garcia, E. Valverde Tellez. In *Germany, Austria, Poland, Switzerland*: J. Kleutgen (1811—1883), A. Stöckl (1823—1895), T. Pesch, J. Hontheim, C. Gutberlet, E. Commer, O. Willmann, J. Jungmann, V. Cathrein, M. Grabmann, A. Lehmen, F. Ehrle, C. Baeumker, J. Fröbes, B. Jansen, J. Geyser, E. Przywara, B. Switański, P. de Munnynck, P. Mandonnet, J. Donat. In France and Belgium: Domet de Vorges, P. Vallet, A. Farges, E. Blanc, P. Peillaube, A. Sertillanges, R. Garrigou Lagrange, J. Maritain, E. Gilson, L. de San, *G. Lahousse, D. Card. Mercier* (1851—1926), M. de Wuif, D. Nys, L. Noel, S. Deploige, R. Kremer, J. Maréchal, A. Michotte. In Hungary, Bohemia, and the Netherlands: Kiss, Pécsi, and Van de Groot. In *England, Ireland, and the United States*: T. Harper, John Rickaby, Jos. Rickaby, R. Clarke, B. Boedder, *M. Maher*, C. Devas, L. Walker, G. Joyce, M. D'Arcy, *P. Coffey*, M. Cronin, W. Poland, J. Driscoll, E. Pace, W. Turner, J. Ryan, F. Sheen, L. Ward, G. Esser, J. Zybura, T. Moore, H. Gruender, R. Bandas, J. Barron, J. McWilliams. Many more names could be added.

This brief survey of the systems which have originated in the course of the past three centuries, plainly shows the confusion of thought brought about by Descartes' ill-fated ultra-dualism. It is a veritable *reductio ad absurdum* of his fundamental principles.

SUMMARY OF CHAPTER VIII

From the maze of conflicting theories which followed Kant and Hegel many signalize a return to realism.

1. *Sensism, Positivism, Materialism.* They all agree in this that sense-knowledge is the only true and scientific knowledge.

2. *Natural Realism, Transfigured Realism.* The Scottish School reverted to natural realism. Hamilton, though a follower of Reid, is a relativist and phenomenalist. Spencer restricts all knowledge to phenomena, but admits the existence of an unknown and unknowable ultimate reality; our ideas are 'symbols,' giving us a 'transfigured realism.'

3. *Post-Kantian Realistic Trends.* Among the followers of Kant, who attempted to bridge the gap between noumenon and phenomenon to realism, are Jacobi, Fries, Herbart, Husserl and Meinong.

4. *Neo-Absolutism.* Schopenhauer conceived the Absolute to be the Will; E. von Hartmann, the Unconscious. The NeoHegelians, like Bradley, Green, and others, approach the Absolute through experience.

5. *Neo-Psychologism.* It applies the principles of empirical science to consciousness, seeking to harmonize idealism with science. Representative thinkers: Poincaré, Mach, Avenarius, Wundt.

6. *Personalism.* Closely allied to classic idealism, it seeks to avoid the absolutistic implications of idealism by insisting on the element of personality. Typical personalism is dualistic and theistic. Lotze and Bowne are representative.

7. *Pragmatism, Humanism.* It is a protest against idealism and a return to realism: the attitude of looking away from first things, principles, categories, supposed necessities, and of looking toward last things, fruits, consequences, facts. Truth is judged by events and consists in verification; that which works' and satisfies human needs, is true. Chief proponents are James, Schiller, Dewey. Dewey stresses instrumentalism; Bergson, intuitionism; Vaihinger, fictionalism; Fawcett, imaginism; Baldwin, pancalism; Blondel, religious pragmatism (modernism).

8. *Neo-Realism.* Neo-realists identify mind and consciousness with objects; objects, when known, are 'ideas' and as such are directly and identically present in consciousness. This is pan-objectivism and epistemological monism.

9. *Critical Realism.* This is a form of epistemological dualism; thought and thing are distinct and independent. The datum of sense-perception is the 'essence' of a thing. Essences are logical entities, the 'what' of a thing divorced from its 'that.'

10. *Emergent Evolution.* Through evolution new and unpredictable properties originate and thereby form new and higher levels of reality. These emergents have no counterpart in the lower levels. The general trend of evolution is from space-time to matter, life, mind, and deity.

11. *Objective Relativism.* All perceivable objects are relative to the perceiver, so that they owe their nature and existence to the relations in which they stand to the perceiver; and this relativity is such that phenomena are

physically objective according to the experience-set of the observer.

12. *Aristotelian-Scholastic Realism*. It is a form of natural realism and natural dualism. Though some neo-scholastics lean toward representative realism, direct perception in some form is maintained. Mind and body are an organic compound and form an epistemological unit of perception.

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Chapter 9

FALLACY OF IDEALISM

THE FOREGOING REVIEW OF THE TRENDS IN MODERN PHILOSOPHY was necessarily brief. It will suffice however, to indicate the maze of contradictory theories which have arisen in this relatively short period of time. Almost every thinker has his own particular brand of theory, more or less at variance with that of his fellow philosophers. There seems to be hardly a single point on which they all agree, when they begin to expound the details of their system. On the surface, there appears to be nothing but intellectual chaos. Viewed from a broader standpoint however, by far the majority of these theories and systems will be seen to be more or less alike. They reveal a common parentage and show a common kinship. As such, then, they must possess a uniform trait, a fundamental doctrine identical in them all, which underlies all the variants and forms the root-idea from which they derive their origin and then develop into different philosophies. This uniform trait is idealism, and the root-idea is the *idealist postulate*.

It would be an impossibility to submit every form and variant of idealism to a critical evaluation. Nor is this necessary. If it can be shown that the fundamental doctrine

the root-idea, of idealism is essentially fallacious, then idealism itself as a system of thought, no matter what its individual shade and shape, will also be shown to be essentially fallacious.

THE COMMON ELEMENT IN IDEALISM

Idealism arose out of the difficulty of understanding and explaining how the human mind can transcend itself and know extra-mental reality. The ordinary man sees no difficulty in this; for him there is no problem. He sees houses; he hears sounds; he smells odors; he tastes flavors; he touches objects: these are plain, everyday facts; what more is there to say? The epistemologist acknowledges these facts, and he finds his problem precisely in these facts. Certainly we see and hear and smell and taste and touch; but what do we perceive in these psychical acts and *how* do we perceive these supposedly extra-mental things? The extra-mental objects (if there be such) cannot very well leave their location, travel through the intervening space, pierce the body, and enter the mind in their physical being; the house across the street, for instance, remains across the street and the red of the rose remains in the rose out there in the garden. And the mind assuredly does not leave the body, flit through space, and envelop the star billions of miles away in its physical being; the mind remains here and the star remains there. How then, can the mind perceive things at a distance, or how can things get into the mind? It does not seem to solve the difficulty by referring to the stimuli (light-waves, air-waves, etc.), which are supposed to

leave the objects and impinge upon the sense-organs; because then we should perceive these stimuli and not the objects from which they come. That, however, is not the case: we perceive apparently objects and certainly not stimuli.

The greatest difficulty lies in the fact of the dissimilarity which exists between mind and matter. The mind is psychical, while the objects are physical; the mind is unextended, while the objects are extended. How can the mind assimilate something so diametrically opposed to its own nature? And how can physical, extended objects impress themselves upon a mind which is altogether devoid of all extension? Can the extended become unextended, or the unextended become extended? Can the physical become psychical, or the psychical become physical? Is this not a contradiction in terms? Since the mind is psychical, it seems perfectly obvious and logical, that nothing but what is psychical can affect the mind and nothing can proceed from the mind but what is psychical. All knowledge, then, since it proceeds from the mind and takes place in the mind, must be purely mental. Physical objects are, therefore, absolutely excluded from knowledge: *the objects of knowledge are mental objects, ideas*. Consequently, even when we apparently perceive external and extended objects, what we really perceive are 'mental objects, 'ideas,' 'conscious states, 'representations,' but not physical, extra-mental things themselves. All we can perceive is our 'ideas' of things; whether anything corresponds 'out there,' extra-mentally, to these 'ideas,' is something we can never actually know. If such extra-mental objects exist, we simply

cannot know them, because they are physical entities, and the mind is restricted to the mental, the psychical, the ideal, in all its processes. As far as the mind is concerned, its objects have 'being' only in so far and so long as they are 'perceived': *esse est percipi*. Such 'being' is then not physical, but ideal; and since it proceeds from, and resides in, the mind as its 'subject,' it is subjective. All objects of our knowledge are, therefore, ideal and subjective, because they are mental products. This doctrine, that the mind in its knowing can know only its own 'ideas' or 'percepts, is *idealism*; and when this doctrine is accepted as an axiom or postulate, it is the *idealist postulate*.

This line of reasoning, formulated in many different ways, though seldom cast into strict logical form, is basic to idealism. It can be worded thus: Objects, so far as the knowing mind is concerned, exist only when perceived; but perception ('being perceived') is a conscious mind-state or 'idea'; hence, objects are only conscious mind-states or 'ideas'; consequently their existence or 'being' (*esse*) is nothing but 'being perceived' (*percipi*): *esse est percipi*. The argument originated with the antithetical dualism existing between body and mind, as postulated by Descartes.

THE FALLACY OF THE IDEALIST POSTULATE

Logic is not the strong point of modern philosophers. They disdain the strictly logical formulation of arguments and prefer the loose language of the essayist. And loose language often hides loose thinking. We can see this clearly in the argument of *Berkeley* if we cast his thoughts into

strict form. A close analysis will reveal the fallacy underlying his argument. Here are his words: "What are the aforementioned objects [houses, mountains, rivers, and, in a word, all sensible objects] but the timings we perceive by sense? and what do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any of these [ideas or sensations], or any combination of them, should exist unperceived?"¹ A casual reading of this argument sounds plausible enough; in fact, it almost seems self-evident; and to many this line of reasoning has appeared so transparently and unanswerably obvious, that it has been accepted without question and become the dogma of idealism. It deserves, therefore, to be analyzed more in detail.

It will be evident that the conclusion of the idealist argument will have to be that objects cannot exist in reality except when they are perceived, because it is the contention of the idealists that the 'being' of objects is their 'being perceived.' So far as we are concerned, they cease to 'be' once they cease to 'be perceived.' Here is the syllogism:

Ideas or sensations cannot exist unperceived;
But sensible objects (houses, etc.) are ideas or
sensations;
Ergo, sensible objects (houses, etc.) cannot exist un-
perceived.

The fallacy lies in the minor premise: "Sensible objects (houses, etc.) ideas or sensations." The term 'sensible objects' can be taken in two meanings: objects can be called

'sensible' in the meaning of 'actually sense-perceived' and in the meaning of 'potentially sense-perceived.' In the first meaning they are perceived in the act of perception; and in the second meaning they can be perceived. In the first case we have objects which are 'within' the act of perception, and in the second case we have objects which are 'outside the act of perception but are capable of being perceived. In either case such objects would be called 'sensible.' The difference lies in the fact that in the first case these 'sensible' objects are considered as 'perceived, while in the second case they are merely 'perceive-able.' Berkeley confuses the two meanings: he identifies the 'perception of objects with the objects of perception. His argument merely proves that 'sensible' objects *when perceived* are ideas or sensations'; but it says nothing whatever about such *objects when not perceived*. All that his argument can prove is that 'objects are perceived when we perceive them'; and that, though true, is plainly a redundancy and a juggling of words but no proof that things 'cannot exist unperceived.'

If he contends that the argument also holds in the second meaning, so that there are no sensible objects outside the act of perception which are unperceived but perceive-*able*, he begs the whole question by presupposing in his premise what is supposed to be the burden of the conclusion. Such a contention is an unwarranted assumption. "Sensible objects are ideas and sensations" when perceived; but that is no proof that they cannot be objects in and for themselves without being perceived. What idealists prove is merely that 'sensible objects cannot be *perceived as existing* without being perceived as ideas

or sensations'; but this in no way proves that 'sensible objects *cannot exist* without being perceived as existing.' Because objects, when perceived, have now a 'subjective existence,' it does not follow that such objects have a 'subjective existence' only. Things could possibly have an 'objective existence' for themselves and then obtain an added 'subjective existence' in the subject when perceived by the subject. In order to establish their case, idealists would have to disprove this possibility; but this their argument fails to do.

The fallacy of the idealist argument will, perhaps, be more clear if we cast it into the form of a hypothetical syllogism. It could be made to read in the following manner:

If something has a purely subjective existence, it has
a mental existence;
But perceived objects have a mental existence;
Ergo, perceived objects have a purely subjective
existence.

The major premise contains a true statement: anything that has a purely subjective existence is mind-dependent, because it is produced by the mind; it has, therefore, a mental existence. The minor premise is also true: when objects are perceived, they are perceived by the mind and as such exist cognitively in the mind; they have, then, a mental existence. But the conclusion does not follow logically from these premises. It is the *fallacy of false consequent*. The minor premise posits the consequent instead of the antecedent, and that is not logically

permissible. If we wish to avoid this inconsistency and make the minor premise posit the antecedent, the syllogism will read:

If something has a purely subjective existence, it has
a mental existence;

But perceived objects have a purely subjective
existence;

Ergo, perceived objects have a mental existence.

But now the argument does not prove enough. It merely proves that perceived objects have 'a mental existence,' and that is something which the realist admits; the idealist, however, desires to prove that all perceived objects have *nothing but* 'a purely subjective existence,' since it is his contention that the '*esse*' of all perceived objects is their '*percipi*.' The argument does not reach that far. Besides, in the syllogism, as now given, the minor premise states that 'perceived objects have a purely subjective existence.' This statement begs the question in dispute, because here the '*esse est percipi*' is already assumed as true, while the truth of this fact is supposed to be found only in the conclusion.

There is only one more way in which this argument can be formulated so as to be logically correct and consistent. It could be made to read as follows:

If something has a mental existence, it has a purely subjective existence;
But perceived objects have a mental existence
Ergo, perceived objects have a purely subjective existence.

This syllogism is consistent, but the conclusion is not true. The major premise, as it stands is again a begging of the whole question. The fact in question is precisely that which is assumed in the major premise: Is it a fact that, if something has a mental existence, it has a purely subjective existence? This is the very point which the idealist intends to prove by the argument; hence to assume its truth in the premises is an illegitimate procedure.

It is thus seen that the fundamental position of the idealist is untenable, because illogical. He cannot prove that the objects we perceive have only a subjective existence in the mind; for all he knows, they may have a mind independent, objective existence in nature also. And if objects can exist both in nature and in the mind (and no valid reason has been adduced to the contrary) then the fundamental idealist postulate is invalid. D. C. Macintosh has summarized the essential fallacy of idealism in these concise words:

“The fallacy may appear as one of equivocation — the common fallacy of ‘four terms’ — as in the following syllogism: What is subjective (*dependent* on self for existence) is not externally real, but mere idea; all objects of which we are aware are subjective (*related* to a self which is conscious of them); therefore, all objects of which

we are aware are not externally real, but mere ideas. Or, if the equivocation he avoided, the fallacy will remain as that of an 'undistributed middle term,' as in this syllogism: The unreal objectively is subjective (related to a subject); Similarly all of which one is conscious is subjective (related to a subject); therefore, all of which one is conscious is unreal objectively (mere ideas). Or, more simply, psychological idealism may be said to rest upon a fallacious conversion. From the obvious truth that all elements which depend on consciousness for their existence, such as pains, feelings, desires, etc., are in the subjective relation, i.e., are objects for a subject it is inferred, by the fallacious process of simple conversion, that all that is in the subjective relation, all that is object for a subject, is dependent on consciousness and this relation to consciousness for its own existence."²

THE EGO-CENTRIC PREDICAMENT

Every form of idealism, whether dualistic or monistic, rests upon the *primacy of consciousness*. Things simply cannot be known, perceived, experienced, except by a conscious mind. Consciousness is thus for them the universal condition of all knowledge and also of being. Consciousness *constitutes* its objects; and if this consciousness maintains its own individuality in the human mind, we have dualistic idealism and if it is merged in a universal Ego, we have monistic idealism. In either case the 'object known' is identified with the 'subject knowing.' We have seen how Berkeley argues for the oneness of the material reality with

the perceiving mind. Bradley argues in a similar fashion for the oneness of all reality with sense-experience. Immaterialism, phenomenalism, absolutism, and every shade of idealism, ultimately base their doctrine on the fact that reality is somehow enclosed within the realm of consciousness, for the simple reason that we cannot perceive objects as existing apart from consciousness perception. This ultimate fact, which is the heart of idealism, thus rests on what has been so aptly styled 'the ego-centric predicament.' Here is Perry's exposition of the idealist fallacy as based on the egocentric predicament:

"No thinker to whom one may appeal is able to mention a thing that is not an idea, for the obvious and simple reason that in mentioning it he makes it an idea. No one can report on the nature of things without being on hand himself. It follows that whatever thing he reports does as a matter of fact stand in relation to him, as an idea, object of knowledge, or experience. . .

"This predicament arises from the attempt to discover whether the cognitive relationship is indispensable to the things which enter into it. In order to discover if possible exactly how a thing is modified by the cognitive relationship, I look for things *out* of this relationship, in order that I may compare them with instances of things *in* this relationship. But I can find no such instances, because 'finding' is a variety of the very relationship that I am trying to eliminate. Hence I cannot make the comparison, nor get an answer to my original question by this means. But I cannot conclude that there are no such instances; indeed, I

now know that *I should not be able to discover them if there were.*"

"Just in so far as I do actually succeed in eliminating every cognitive relationship, I am unable to observe the result. Thus if I close my eyes, I cannot see what happens to the object; if I stop thinking, I cannot think what happens to it; and so with every mode of knowledge. In thus eliminating all knowledge, I do not experimentally eliminate the thing known, but only *the possibility of knowing whether that thing is eliminated or not.*"

"This, then, is 'the ego-centric predicament.' But what does it prove, and how does it serve the purpose of idealism? It should be evident that it proves nothing at all. It is simply a peculiar methodological difficulty. It does, it is true, contain the proposition that *every mentioned thing is an idea*. But this is virtually a redundant proposition to the effect that every mentioned thing is mentioned — to the effect that every idea, object of knowledge, or experience, is an idea; object of knowledge, or experience. And a redundant proposition is no proposition at all. The assertion that an idea is an idea conveys no knowledge even about ideas. But what the idealist requires is a proposition to the effect that everything is an idea or that only ideas exist. And to derive this proposition directly from the redundancy just formulated, is simply to take advantage of the confusion of mind by which a redundancy is commonly attended."

"It may be argued, however, that the ego centric predicament is equivalent to an inductive proof of the proposition that all things are ideas. Every observed case of a thing is a case of a thing observed. Neglecting the

redundancy, which is sufficient of itself to vitiate the assertion, we remark that the induction proceeds entirely by Mill's 'method of agreement,' which is invalid unless supported by 'the method of difference, that is, the observation of negative cases. But the egocentric predicament itself prevents the observation of negative cases. It is impossible to observe cases of unobserved things, even if there be any. In other words, there is a reason connected with the conditions of observation why only agreements should be observed. But where this is the case the method of an agreement is worthless; and the use of it is a fallacy."³

Perry's criticism of the idealist argument from the egocentric predicament is eminently justified. The argument is essentially fallacious. The only way in which we can become acquainted with things, is to perceive them or have ideas of them; therefore, *if and when and while* we know them, they must be 'percepts' or 'ideas' in our consciousness. The very nature of our knowing demands this. But things could possibly have existence without being perceived and thus be mind-independent in their being; all that the egocentric predicament can prove is that things *cannot be perceived without being perceived*, which truth, of course, amounts to a mere tautology.

If we now turn to Bradley's idealist argument, it will be evident that it is nothing but a sample of specious reasoning from the ego-centric predicament. He says: "Find any piece of existence, take up anything that anyone could possibly call a fact, or could in any sense assert to have being, and then judge if it does not consist in sentient experience.

Anything in no sense felt or perceived becomes to me quite unmeaning."⁴ Certainly, things 'in no sense felt or perceived' must be 'unmeaning' *to the perceiver or knower*; for how could they acquire a meaning for him, if he did not 'feel' or 'perceive' them? That would imply 'knowing' them without someone knowing them, and 'perceiving' them without someone perceiving them. The very fact of cognition always involves the perceiver or knower just as necessarily as the object itself that is to be known; because an object, to be known, must be known by someone. Wherefore, Bradley's argument only proves that objects cannot exist for a perceiver and knower without sentient experience; but it says nothing whatever about what objects can or cannot be for themselves outside the knowledge relation, and Bradley's conclusion that 'experience is the same as reality' is thus seen to be entirely unwarranted. The ultimate nature of reality is still an open question.

The whole attitude of the idealist, of whatever type he may be, rests upon a confusion of ideas. From the fact that a being, in order to be known, must be perceived within the consciousness of the perceiver in a mental act, he concludes that the 'reality itself' of the being, and not merely its 'perception,' is mental.

Reality would thus be *immanent* in the knower. The confusion is based on the identification of the 'reality' and the 'perception' of the object known. It is unquestionably true that the 'perception' of an object is mind dependent and immanent. To assert that an object, *when known* can remain unperceived is a contradiction; and it would also be a contradiction to assert that an unperceived object, when

unperceived, can be known. But it is no contradiction to assume that an object, which has a reality of its own, can remain unperceived by a human mind, either temporarily or forever, either in part or in whole. We would simply not know of its existence until such time when it enters our experience. To deny that such an object can exist as an 'unperceived reality' means to confuse the *reality* of this object with the *perception* of its reality. This is precisely what idealists do, but it is an illogical and dogmatic procedure and therefore fallacious.

The foregoing criticism shows that idealism arises out of the ego-centric predicament and that its arguments involve a faulty logic. This, of course, does not prove that extra-mental reality actually exists; it merely shows that idealism has not disproved the existence of extra-mental objects. The question of the existence of such objects must be solved, not by any *a priori*, but by an *a posteriori* method. Facts alone, together with their proper interpretation, must settle the issue; that is the only scientific and philosophic procedure which can lead us with safety to a definite conclusion.

SUMMARY OF CHAPTER IX

1. Most modern theories of knowledge are a form of *idealism*. The fundamental position of idealism is fallacious.

1. The element common to all forms of idealism is the tenet that reality lies within the consciousness of the perceiver and the mind cannot transcend its own conscious states. It arrives at this conclusion through the difficulty of understanding how the mind can perceive objects at a distance and how a psychical mind can conform itself to a physical object. Hence, there has arisen the idealist postulate that the mind in its knowing can know only its own 'percepts' or 'ideas.' The argument can be formulated as follows: Objects, so far as the knowing mind is concerned, exist only when perceived; but perception ('being perceived') is a conscious mind-state or 'idea'; hence, objects are only conscious mind-states or 'ideas'; consequently their existence or 'being' (*esse*) is nothing but 'being perceived' (*percipi*): *esse est percipi*.

2. The Idealist Postulate of idealism is *fallacious*. Berkeley's argument that *esse est percipi* is grounded on faulty logic. His term 'sensible object' is ambiguous, because he does not distinguish between the 'sensible' as perceived and as perceivable. He merely proves that 'sensible objects', when perceived, are 'ideas or sensations', so that his proof really amounts to the redundant proposition that 'perceived objects must be perceived.' The fallacy of idealism thus consists in confusing the statement that 'sensible objects cannot be perceived as existing

without being perceived' with the statement that 'sensible objects cannot exist without being perceived as existing'. To assume that the latter statement is true, is a *petitio principii*. All arguments which tend to prove that all reality must be identified with 'ideas' involve either a 'four-term' syllogism, or an 'undistributed middle,' or a fallacious 'conversion.'

3. The ego-centric predicament, or the difficulty to discover any objects outside the cognitive relationship existing between object and subject, is responsible for the fallacy of idealism. Dualistic and monistic idealism rests upon the primacy of consciousness. Since consciousness is the universal condition of knowledge, it is also assumed that consciousness constitutes the being of all objects of knowledge. Due to the ego-centric predicament, every mentioned thing is an 'idea', and from this idealists conclude that everything is an 'idea' and that only ideas exist. But this reasoning is fallacious, because it merely proves that objects, if and when and while known, must be 'percepts' or 'ideas'; in other words, 'things cannot be perceived without being perceived', which is a redundancy and a platitude. The argument, however, does not prove that objects may not *exist in themselves*, as mind-independent things; without being perceived. The whole attitude of the idealists is based on the confusion of identifying the *reality* of an object with the *perception of this reality*; they fail to distinguish between the 'knowledge of objects' and the 'objects of knowledge.'

The foundation of idealism thus rests on faulty logic and on the ego-centric predicament. The existence of extra-

mental things is a question which can be settled only by a close analysis of the facts and by the proper interpretation the facts; not the *a priori*, but the *a posteriori* method can solve the problem.

READINGS

D.C. Macintosh, *The Problem of Knowledge*, Chs. V-IX; D. Card. Mercier, *The Origins of Contemporary Psychology*, Ch. V; R. B. Perry, *Present Philosophic Tendencies*, Chs. VI-IX; J. T. Barron, op. cit., Chs. X, XI; P. Coffey, op. cit., Chs. XIX, XX; William James, *A Pluralistic Universe*, Chs. I-VI; A. J. Balfour, *A Defense of Philosophic Doubt*, Chs. VI, IX; R. W. Sellars, *Critical Realism*, Ch. VI; G. E. Moore, "The Refutation of Idealism," in *Mind*, 1903.

1 *A Treatise Concerning the Principles of Human Knowledge*, p. 259

2 *The Problem of Knowledge* (Macmillan, 1915), p.95 --- Regarding the various kinds of fallacies mentioned in this chapter, see the author's *Science of Correct Thinking* (Bruce Publishing Co.)

3 *Present Philosophical Tendencies*, pp 129-131 Longmans, Green and Co.

4 *Appearance and Reality*, pp. 144, 145

Chapter 10

EXTRA-MENTAL AND EXTRA-EGO REALITY

FROM THE WELTER OF CONFLICTING SYSTEMS AND THEORIES OF knowledge which have come into vogue during the last three centuries, it is possible to draw but one conclusion: there must be something radically wrong with the starting point and the method used in the attempt to solve the problem of knowledge. When the results are so disastrous, the principle must be faulty. The only logical thing to do, then, is to disregard these systems and begin the solution of the problem from a common-sense standpoint: scrutinize the facts, note their implications, interpret their meaning, and draw the implied conclusions.

Three main factors enter into the problem: the human *mind*, the human *body*, and the external physical *world*. The body, if it exists, is an extra-mental reality, distinct from the mind; but it belongs to the human Ego as an integral part, together with the mind, and as such it would be extra-mental but intra-Ego. The physical world, on the other hand, if it exists, would be extra-mental and also completely external to the perceiving subject; it would be extra-Ego and non-Ego. The best procedure will be, therefore, to see whether we can vindicate the existence and perception of

the extended, extra-mental human body, and then proceed to investigate the existence and perception of the extended, external world: because the world cannot come into contact with the mind except through the body. If the existence and perception of the body, as distinct from the mind, cannot be vindicated, then there is no possibility whatever of establishing the existence and perception of the external world at large.

THE DATA CONCERNING EXTRA-MENTAL REALITY

Besides my mind, I perceive within my being a reality which possesses *extensity*, and this reality I call my 'body.' There is a very definite *spatial configuration* to my body. By passing my hand over the body, I obtain a clear impression and touch-perception of its relative size and contour. I know, for instance, that my body occupies a very limited area from head to foot which, measured by a standard rule, will be, perhaps, more than five feet in height and less than six. I know, too, that different members comprise the complex of the body, and that these members occupy separate and distinct *positions*, both in relation to each other and to the body as a whole. Feet and head form the extremities, while the limbs and the torso have intermediate locations.

Touch, especially the experience of double-contact, reveals *voluminousness* in my body. In moving my hands over the body, I obtain an immediate perception of 'up and down,' 'right and left,' 'before and behind.' I thus perceive that my 'body possesses the three dimensions of length, breadth, and depth. The intra-muscular sense reveals to me

the fact that the different parts of my body change position in space: I sit, I stand, I lie down, I stretch, I bend backward, I incline forward. I also perceive that the entire body moves at times: I walk, I run, I swim, I rise, I climb. *Weight* is revealed to me in the difference experienced in ascending and descending a sharp incline or in being lifted into the air and then dropped to the ground. And *solidity* is manifested to me in the fact that one part of the body cannot penetrate the other.

My experiences also make me aware of various *sense-organs* and their *distribution* and *localization* within the confines of my body. I have eyes to see, ears to hear, a palate to taste, a nose to smell, and touch pervades the entire body. Each organ, I note with intuitive consciousness, has its own *specific type of object for perception*: colors, flavors, sounds, odors, heat and cold, pleasure and pain, hardness and softness, smoothness and roughness, freshness and fatigue. During active sensation I experience, by means of the intra-muscular sense, the precise *place* on and within the body where the sensation is localized; in this manner I experience not only the actual perception as such (for instance, the perception of color, sound, etc.), but also the organic *activity* accompanying this perception, showing me that the perception is mine and belongs to a definite portion of *my body*.

In this manner I have a clear picture of my body in its parts and as a whole. Furthermore, and this is important, in this concrete picture I concretely perceive through immediate awareness that my body is a reality distinct from the thinking mind; it is an *extra-mental reality*. At the same

time, however, I am also concretely aware that my body is an integral factor, together with the mind, in the *process of perception*. If I close my eyes, I cannot see; if I open them, I see again. If I touch a burning object, I experience heat; if I withdraw my hand, the sensation ceases. If I push against a wall, I feel resistance; if I step away, the feeling of resistance ends. And since the sensation becomes perception only when the mind adverts to it and becomes aware of it, I notice that both body and mind are necessary for perception, although I clearly realize that both are not the same thing. *But both are felt to belong to my Ego*. It is my body and my mind; I think and am conscious, and I weigh so-and-so-much and move about from place to place. Whatever affects my body I am conscious of as affecting *me*, and whatever takes place in my mind I am aware of as taking place in me. My Ego is thus perceived to be something that possesses both body and mind, forming a unitary combination of the two which, notwithstanding their distinct differences, makes them act together in perception.

These, then, are in brief the data of consciousness regarding my 'body.' These data cannot be denied; for any person, observing himself in the manner indicated above, will readily verify them through his own experience. The facts must be accepted; it is in the interpretation of them that various theories arise.

THE EXISTENCE OF EXTRA-MENTAL REALITY

In placing an interpretation upon the aforementioned data, it must be borne in mind that no *a priori* presuppositions or

theories can be allowed to dictate the explanation. The facts must speak for themselves, and mere difficulties do not constitute impossibilities. The facts must assuredly be accounted for, and that theory alone should be accepted as true which gives the most natural explanation of the data in their entirety. Now, the most natural and most general explanation is the one which claims that my perceptions *reveal my body as an existent reality*.

This view is in agreement with the spontaneous conviction of men in all ages. Even the educated and intelligent, notwithstanding their knowledge of physics and psychology, accept the reality of their own body as an indubitable fact, because this view alone harmonizes with *everyday practical life*. Our entire mode of living is devoid of sense and reason, if the reality of our own body be considered merely as an 'internal state,' 'idea,' 'image,' 'representation,' or 'percept' of the mind. When we give food and drink to the body, when we labor unto fatigue and exhaustion, when we are sick and in suffering, when we break an arm or undergo an operation, when we experience physical comfort and pleasure, when we grow from childhood into maturity and decline into old age — these actualities of life are meaningless except under the supposition that our body is a *physical reality* just as we perceive it to be in consciousness. Idealism, with its reduction of all knowledge to terms of mental 'percepts' or 'ideas,' may do in books and in classrooms, but will serve little purpose in the stark necessities of life which confront man in his bodily being day after day. Idealism puts no bread into the mouth of the starving and eases no pain in

the sick. Only an idealist philosopher could be satisfied with the theory that the reality behind his bodily 'appearances' and 'phenomena' is some unknown and unknowable, unperceived and unperceivable x; our body is far too real and personal for us to rest content with such vaporous hypothetical existences. And even the most inveterate idealist is only an idealist *in theory*; when he goes about his daily occupations and supplies the daily needs of his 'phenomenal' body, he acts and behaves like the simplest and most plebeian realist. But a theory that cannot be *lived*, that must be contradicted by every un-philosophical act of daily life, must be essentially wrong.

This view also agrees with *science*. The departments of anatomy, physiology, biology, physics, genetics, medicine, and psycho-physics, when not influenced by the purely theoretical considerations of idealistic thinking, are frankly *realistic*: they accept the human body as given and as perceived, and their treatment of it shows plainly that they are convinced of its reality and existence. Here again, some scientists may be idealists in theory, but in every practical issue they are realists. This, of course, does not prove that realism is necessarily true in itself; it does show, however, that human reason can accept an idealistic interpretation of the human body only by doing great violence to its natural judgment.

After this indirect argument, we must consider the *direct evidence of consciousness*. Consciousness, as was shown before, must be essentially free from error in all matters of which it has immediate intuition. To doubt or deny this is equivalent to the suicide of reason, because then all

knowledge must be adjudged illusory. But the evidence of consciousness is transparently clear in testifying to the reality and existence of our body. We can discover no difference between the intuition which consciousness has of mental states and that which it has of the reality and existence of the body. There is indeed a difference in the *object* of awareness, but there is no essential difference in the *nature of the act* of awareness itself. Now, if this act of awareness is perceptive of the reality and existence of internal states, why should it not be equally perceptive of the reality and existence of the human body with which it is so obviously connected? The testimony of consciousness is equally clear and intuitive in both cases. To affirm the validity of its perception in the one case and to deny it in the other, amounts to a practical destruction of its character as a reliable witness in both. We could no longer trust its testimony; certain knowledge would be impossible, and skepticism would inevitably follow. Hence, the testimony of our consciousness concerning the reality and existence of our body as perceived by us must be accepted.

THE PERCEPTION OF EXTRA-MENTAL REALITY

The entire difficulty of the idealists arises from the view, prevalent since Descartes, that mind and body are so antithetical and foreign to each other, that there can be no real communication between the two. The mind is conceived as a purely unextended entity which is the total subject of knowledge. This view of the 'subject of knowledge' is arbitrary and false; it is an unwarranted

assumption, contradicted by the very data of consciousness. *My Ego is the real subject of my knowledge*: that is the verdict of my consciousness. The mind is a mere instrument of my Ego, and this is clearly perceived by introspection: I think, I imagine, I remember, I judge, I reason. It is the Ego, then, and not the mind itself, which is the ultimate subject of intellectual knowledge. And the same is true of sensory knowledge: I feel, I see, I hear, I have pain in my hand, I have a fever. Thus it is seen that the Ego is the real subject of both intellectual and sensory knowledge, that is, of all knowledge. Now, if we analyze our sensory knowledge, we must come to the conclusion that it involves 'extension' in the very *act of perception*. I perceive, for instance, 'colored surface'; but how could I perceive a 'surface' which is extended, if my act of perception were totally unextended? I feel the 'whole length of my arm'; how can I feel or perceive such a thing, if my feeling and perception were wholly mental? I experience a pain 'down my left side'; again, how is such an experience possible, if there be no extension in the act of perception? We could multiply such instances by the thousands. They are evident data of our consciousness. But these facts are unintelligible, if we maintain that sense-perception takes place in an unextended subject.

Sense-perception is a vital act, certainly; but it is also an 'extended' act. The *subject* of sense-perception must, therefore, also be a *vital and extended reality*. And since the Ego is the real subject of sense-knowledge, it must be a reality which is both vital (perceptive) and extended. Only a body, however, is extended. Consequently, an extended body must form an integral part of the being of our Ego, in order

to account for the *psycho-physical* character of our sense-perception as a vital yet extended act. We are thus forced to conclude that our Ego does not consist solely of our unextended mind, but is a *compound of mind and body*, united in such a way that our Ego is a unified living organism consisting of both. Neither the mind alone nor the body alone can explain sensation and perception; both are required for an adequate explanation. And both must be fused together so intimately in their being, that they form a single principle of perceptive action.

Since our body is an integral part of our Ego and is thus *partly identical* with it, our Ego must be capable of perceiving its body just as well as it is capable of perceiving its own mind with its internal states: both belong as constituents to and in our Ego. There is, then, no intrinsic impossibility for our Ego to perceive its own body; on the contrary, the Ego should be able to perceive that which is a component part of itself as a factor in sense-perception.

The above analysis of the data of our consciousness concerning the reality and perception of our own body shows how arbitrary and fundamentally wrong Descartes was in his treatment of the relation existing between mind and body in the human being. In his eagerness as a mathematician to deduce all knowledge from a single principle he disdained to submit the data of our consciousness to a close scrutiny. Instead, he attempted to give an *a priori* definition of mind and body and built his entire theory of knowledge upon this foundation. The facts of experience certainly do not bear out his antithesis. We are conscious beyond doubt that we are *one single being*,

not two, and this presupposes that the mind-body combination in our person is a unitary principle of action. It takes more than a definition and a statement to sever the union between them. Simply because 'thought' is an obvious characteristic of mind, Descartes judged it to be the *exclusive* characteristic of mind and proceeded to define 'mind' as 'thought'; and for the same reason he defined 'matter' (body) as 'extension.' But this is the fallacy of *definition by initial predication*, and on this fallacy the whole system of idealism has been reared.

THE DATA CONCERNING THE NON-EGO WORLD

Unquestionably, much of our knowledge of the external world, which we ordinarily consider directly given in sense-perception, is acquired through a very complicated process of perception, intellectual abstraction, and mental inference. We are not brutes, but intellectual beings; we not only perceive, but think. Consequently, it is not always easy to distinguish what is due to direct sense-perception from that which is the result of our interpreting judgment. Nevertheless, the primary facts are plain and simple. The very data which reveal to us our body as real and intra-Ego, reveal to us *concretely* at the same time and in the same way that bodies exist which are extra-subjective and extra-Ego: they possess the feature of *externality* and *otherness*.

The sense of *touch* is fundamental in this respect. When I move my hand over parts of my body, I perceive that my hand is distinct from these parts. At the same time, however, I also perceive that the parts touched are not

foreign to my being but belong to it as well as my hand does: they are all parts and members of the same organic, structural whole. But when my hand touches a book, a desk, an apple, a building, a tree, a human body (other than my own), it is immediately clear to me that these things *do not belong to my being*; they are 'other,' extra-Ego, external, something totally different from my self. All the objects which I contact while moving through space are thus perceived to possess this characteristic of 'otherness.' I can move my own bodily members from place to place, but I observe a definite *resistance* exerted against my body by many things. I cannot walk through them, neither can I surmount them nor push them aside; they are unyielding objects which block my path, so that I am obliged to walk around them. I thus experience objects with triple dimensions, with solidity, with weight, with impenetrability, with permanence and stability.

Besides this passive resistance to my body, I also experience the *active influence* of other bodies upon my own. Fire burns it, water wets it, a stone bruises it, dirt soils it, a heavy object breaks and crushes it. These things are not perceived by me to belong to my organism as a part of my being and self; on the contrary, just because my organism is clearly intuited as consisting of definite members occupying definite limits of space, I *concretely* perceive at the same time that these 'other' objects are external to me, having a real existence for themselves independent of my own.

The sense of *sight* also reveals 'externality' and 'otherness,' when taken in conjunction with the sense of

touch and assisted by conscious experience. I soon learn to interpret the visual picture according to the more immediate perceptions of touch. My right hand touches my left arm; and my visual image coincides so completely with my tactual experience, that I thereby discover that the 'thing touching' is my right hand, while the 'thing touched' is my left arm. A number of such experiments helps me to 'identify' visually the various parts of my body with accuracy and security. Once this identification is an established fact, my sight unerringly distinguishes between my own body and objects *external* to my body. A blind man clearly perceives the 'otherness' and 'externality' of objects outside his bodily frame, but a person with sight possesses the added perception of the more far-reaching and more clearly defined visual image. When touch and sight are united in perception, the result provides an overwhelming amount of data which reveal an evidently real and existing material world of 'external' objects. I thus learn that my body occupies a relatively small amount of space, while the world is a tremendously large place filled with innumerable objects, large and small, at rest and in motion, permanent and changing, endowed with characteristics which are partly the same and partly very different from those of my own body.

THE EXISTENCE OF THE NON-EGO WORLD

In establishing the reality and existence of this external, non-Ego world so vividly presented in our perception, the procedure is practically the same as in proving the reality

and existence of our extra- mental body. If our own extended body must be admitted as real, there can be hardly less reason to admit the extra-Ego world as real; for, after all, our own body is also a *part of the world at large*, possessing the same general characteristics and features as those possessed by 'external' bodies.

Whatever *theoretical* difficulties idealists may find in the perception of an external world by an unextended mind, it is obvious that their theory does not harmonize with the exigencies of practical life as lived by everybody, including these theorists themselves. The things of this workaday world are simply too real to be argued out of existence in this fashion. If our body is real, the world is real. No mother can ever consider her child and her pains to be the same, mere 'felt-experiences.' No soldier in the ghastly turmoil of war, with his leg ripped to shreds by a shell, can be made to believe that the bullets and shells he faced and the men and guns he fought were only 'conscious states.' When the farmer plows his field, and the laborer digs his ditch, and the ironworker rigs his beams, and the engineer runs his train — in short, when man lives his routine life in his daily occupations, he cannot but be a thoroughgoing realist concerning the world of material objects around him. All humanity cannot be wrong, and a few idealist philosophers right, in their view regarding the reality and existence of the external, physical world. If idealist theories cannot agree with this 'realism of the savage,' as demanded by practical living, then so much the worse for these theories: there must be something radically wrong with them.

Plain realism is in accord with the findings of the *sciences*. Astronomy, physics, geology, anthropology, zoology, botany, chemistry, bacteriology, therapeutics — in fact, all the natural sciences have sense and meaning only on the assumption that nature is a real world of existing, extended, material objects. The laws of nature which scientists formulate have application, not to mental states and subjective phenomena, but to the physical objects in a mind-independent existence. Their observations and experiments in no way impugn the realistic conception of the universe; if anything, they confirm it, even when age-old beliefs are proved to be naive and erroneous.

The reason why our mind is naturally convinced of the reality of the external world as we perceive it to be, lies in the fact that we are intuitively aware that we do not produce our impressions and perceptions of the external objects: we are passive, in the sense that our consciousness testifies that the impressions and perceptions are *produced in us from outside*. We cannot produce them at will, nor can we change them at our convenience. But if the objects, as we perceive them, were only internal modifications of our consciousness, without a reality of their own, why this *persistence*, this *regularity*, this *permanent order*, this *compulsion*? Many of our perceptions are painful, unpleasant, nauseous, embarrassing, nerve-racking; though we fain would rid ourselves of them, we cannot. The reason is plain: these impressions are made by objects which are real and over which we have no control. We are *forced* to perceive them, if our senses are within the sphere of their influence.

THE REALITY OF OTHER MINDS

There is one thing in which idealists are egregiously *inconsistent*: they all admit, tacitly or explicitly, the existence of *other minds*. And how could they deny the existence of 'other minds,' when they appeal to them, reason with them, argue with them, quote them, and wrangle with them, all in an effort to convince them of the truth of idealism? But how do they know of the existence and thoughts of these 'other minds'? Our experience is witness to the fact that we have direct and immediate knowledge of no other mind but our own. Our knowledge, then, of 'other minds' can only be indirect and mediate. Then how? Through the medium of *language and speech*. Language may be expressed in spoken or written words, or by means of signs; but language in some form is necessary.

Idealists agree that extra-Ego reality either does not exist at all or, if it does, it is an unknown and unknowable quantity, because the mind of man is restricted in its knowledge to its own subjective conscious states. Were this the case, our mind could not know anything about 'other minds,' for the simple reason that they are not only extra-mental but *extra-Ego* with regard to ourselves. The fact of language, however, proves conclusively that 'other minds' are not the unknown and unknowable beings which the idealists would have us believe.

That this 'other mind' is an existent entity distinct from myself is clear from the fact that the *ideas* which I thus receive in the course of this thought-communication from the 'other mind' are often entirely *new* to me and are given

to me 'from without.' I am aware beyond the possibility of doubt that these ideas are not my own, are not the product of my own thinking. In many instances these ideas are so foreign to my way of thinking and so antagonistic to my own ideas that a conflict arises between the two sets of ideas and a controversy or argument ensues between 'my mind' and the 'other mind.' How could this happen, if 'my mind' and the 'other mind' were identical in being? Hence, the fact of language and speech proves conclusively that both 'my mind' and 'other minds' exist and that they are distinct and non-identical.

If my knowledge cannot go beyond my own conscious states, if I cannot transcend the boundary of my own knowing mind, and if all extra-Ego reality is unknown and unknowable to me, so that I cannot refer these 'extraneous' ideas to 'other minds,' then I myself must be the *originator* of all these ideas. Consider the consequences of such a theory. Whenever I read a book or listen to a lecture, the contents of the book or lecture enters my consciousness. And thus all the philosophies of the world, from Thales and Socrates and Plato and Aristotle to St. Thomas Aquinas and Descartes and Kant and Hegel and James, would perforce be the product of my own mind and its thinking! The idealist postulate demands this conclusion. This, however, is ridiculous on the face of it. No one in his sane mind would seriously assert that he alone is the author of all these different, contradictory systems of thought. If they are the result of my own thinking, why the differences and contradictions between them? And why the *difficulty in understanding some of these systems*, if I am their author?

Can anyone seriously doubt that these philosophies originate in 'other minds' and that I merely assimilate their ideas from them?

The whole argumentation can be formulated in the following dilemma. The knowledge which we naturally and spontaneously ascribe to 'other minds' either originates from them or from our mind. If the former, realism is established, because we possess a true and valid knowledge of extra-mental and extra-Ego reality. If the latter, then we cannot explain why we are not conscious of the process, why so much of this knowledge is foreign to our consciousness, why so many of these ideas and systems are contradictory to our own, and why we are compelled to 'learn' the different languages. In the former case, idealism is refuted and realism proved; in the latter case, there is a contradiction and an illusion in our mental equipment, and universal skepticism must follow. All the evidence points to the former of the two alternatives as being true.

THE PERCEPTION OF THE NON-EGO WORLD

Though our conviction in the reality and existence of the external, physical world is thus established as a fact, we still have to face the question: How can our Ego perceive something which is completely non-Ego? What is the *epistemological bridge* between the unextended mind and the extended, external world? The difficulty seems more formidable than it actually is. Once the reality of our own body is proved and admitted, the difficulty vanishes to a great extent. Our body is the 'epistemological bridge'

between our mind and the world. Our mind does not contact the physical universe directly, but through and in our body.

It is not necessary to prove that we can perceive *all* reality of the material world. If we can show that physical, external reality can be contacted and perceived *in some phase of its being*, it suffices to prove that external reality exists outside our Ego and can be perceived. Then realism is rationally justified. And this can be shown to be a fact.

Our body is an extended being, occupying space and place in three dimensions. United with the mind into a single organic principle of perceptive action, it forms a sense-conscious being. Our Ego thus feels itself to be a living, sense-conscious, *extended, corporeal substance*; this has been shown previously. As such, then, we should be capable of perceiving extended bodies, whether it be our own body or 'other bodies.' If we can perceive our body as *our own*, then any body, different from our own and in contact with it, should be perceived as *different*, and as 'other.' Such actually is the case.

I walk along the street, and I feel my body moving; my intra-muscular sense tells me that I am taking steps and that each stride covers a certain distance. If I come face to face with a wall or building, my progress is stopped; I find a barrier which effectively hinders me from continuing in motion. No matter how strenuously I push against this barrier, I cannot push it over and proceed on my way. I perceive here the same impenetrability and resistance that I experience in my own body, when I stop the progress of a moving object, like a rolling ball, with my hand or foot.

Consequently, just as I know that my body is real in resisting the ball, I know that the resisting wall or building is as real as my body; the situation, though reversed, is actually the same in both instances. When I walk alongside a building, holding my hand against it as I walk, I perceive that the building is stationary, while I am moving; but when I stand still beside a train, and feel the train passing along under my outstretched hand, I know that I am stationary and the train is moving. I thus perceive that the building and train are similar to my own body and must be just as real, but are extra-Ego and 'other.' Thus my body becomes a standard of measurement with which I can gauge the size and *distances* of things in relation to me. The reason 'why' and 'how' I can perceive them lies in their *objective commensurate-ness and corporality*, which is like that of my own body.

It is, then, through *direct contact* with my body and through the sense of touch that I can become immediately and intuitively aware of 'other' bodies in their reality and existence. I perceive my own body as 'identical with self,' while I feel these others as 'non-identical with self.' The perception and the felt- experience is the same in both cases. If my body is perceived to be real, the 'other' bodies must also be real; the former guarantees the latter. In this fashion my body acts as the 'epistemological bridge' between the mind and the world: though an extra-mental thing, my body is organically united with the mind and is related psychically to it; as an extended thing, it is of the same nature as the extended objects in the material world and is related to them. This unique position of the body as

an extra-mental, extended being within the *unity of the Ego* enables it to bring the extra-mental, extended objects of the external world into cognitive union with the mind, so that mind and world meet each other in the human body: *there*, on this epistemological bridge, is their mutual point of contact. The 'extended' but 'vitalized' body, being a psychophysical substance, is the natural link between the world of mind and the world of matter, making a perception of the latter within the former both a possibility and a fact.

Considering the facts as manifested in the data of our consciousness, we are compelled to conclude that realism, and not idealism, correctly interprets sense-perception with regard to our body and the non-Ego world. The spontaneous conviction and the common-sense view of humanity is seen to be vindicated as substantially valid and true. We have now obtained two truths of tremendous epistemological value: *'The reality and existence of our own body as an extra-mental object and of the external world as an extra-Ego object is a fact; and our body and the universe can be perceived by us as they are in themselves.'* We now have a reflex, philosophical certitude regarding them: idealism cannot explain the fact, while realism does.

SUMMARY OF CHAPTER X

In order to discover whether extra-mental and *extra-Ego reality* exists and can be perceived, we must scrutinize and interpret the facts.

1. *Data Concerning Extra-Mental Reality.* Our body is such a reality, and it is clearly perceived to possess 'extensivity.' It is revealed to us as 'extra-mental,' but an integral factor in the process of sense-perception. Mind and body belong to the Ego and form a unitary principle of action.

2. *Existence of Extra-Mental Reality.* Realism, which accepts the existence of the human body, is in agreement with the facts of everyday life and with the findings of science. Consciousness gives direct evidence of the reality and existence of our body.

3. *Perception of Extra-Mental Reality.* It is possible, because the 'subject of knowledge' is not the unextended mind as such, but the Ego. The perceptive act is vital, but extended, demanding a vital and extended organism as its subject. Such is the Ego and, since the body is an integral part of this organism, it should be capable of concretely perceiving the body as an extra-mental reality. Descartes' antithesis is based on the fallacy of 'definition by initial predication.'

4. *Data Concerning the Non-Ego World.* They reveal 'externality' and 'otherness' in objects. Touch shows them as external to our body. The active influence of such objects on our body shows them to be extra-Ego.

5. *Existence of Non-Ego World.* Daily life and science demand that we accept the non-Ego world as real. Our passivity in receiving impressions proves that they are produced in us by 'outside' things; this alone accounts for their persistence, regularity, order, and compulsory perception.

Other minds exist. This is proved by language, which conveys new ideas to my mind; my consciousness testifies to the fact that they do not originate in my own mind. But 'other minds' — whose existence is admitted by idealists — are non-Ego realities.

6. *Perception of the Non-Ego World.* Extra-Ego objects can be perceived because our body, being a psycho-physical reality, is the *epistemological bridge* between the mind and the world. Through touch I perceive my own body as 'identical with self' and other bodies as 'non-identical with self'; this is due to their commensurateness and corporality.

Realism is thus critically established. We have vindicated the spontaneous conviction: *The reality and existence of our body and of the extra-Ego world is a fact; and both are perceived as they are in themselves.*

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Chapter 11

REPRESENTATIVE AND PRESENTATIVE REALISM

REALISM, WHICH CONTENDS THAT EXTRA-MENTAL AND EXTRA-EGO reality exists and can be known by the human mind, must be accepted as the only true and valid theory of human knowledge, because it alone gives an adequate interpretation of the facts and data revealed by our consciousness. By accepting realism, however, as a general theory, the problem of the validity of human sense-knowledge is not completely solved. There are rival theories of realism. Realists are not in accord as to the manner in which the mind receives its knowledge of the external physical world through sense-perception. Due to their divergence of views in explaining the manner in which the mind effects its knowledge, realism appears in two radically different types: *representative and presentative* realism. These will now have to be examined and evaluated.

TYPES OF REPRESENTATIVE REALISM

Representative realism (mediate realism, hypothetical realism, cosmothetical realism, inferential realism) is the theory which maintains that the human mind is immediately

aware, not of the external objects themselves, but of its own *internal 'representations' only*, from which it then *infers* the existence of external, non-Ego reality as their cause. Representationists accept, of course, the existence of an external, physical, extra-Ego world, otherwise they would not be realists; but they claim that we are incapable of 'perceiving' it in any way directly and immediately by means of intuitive sense-perception. We have only subjectively produced images or 'representations' in our mind. The mind perceives these images or representations and, since it is aware that it is not their sole cause, *reasons* to the existence of an outside world as their physical cause. The existence of the non-Ego world is thus a matter of inference on the part of our intellect; hence the name 'inferential' realism. And since this gives us no immediate but only a mediate knowledge of the world, we have 'mediate' realism. The world is simply assumed as a necessary hypothesis, in order to give an adequate explanation of the data of sense-perception; therefore the term 'hypothetical' or 'cosmothetical' realism. In any case, we never perceive directly anything but our own internal mental representations, and these are produced partly by the outside objects and partly by the subjective action of the perceiving mind. The question naturally arose: Is there any *resemblance* between these 'representations' and the extra-mental and extra-Ego objects which they represent? The answer led to two main kinds of representative realism: subjective and objective.

According to *subjective* representationism our knowledge of the existence of an extra-mental universe is

mediate, indirect, inferential; we know that extra-mental reality *exists*, but that is all we know. What the objects in this universe really are like in nature, is beyond our knowledge, because our 'representations' of these things are merely 'mental images' or 'symbols.' These images or symbols bear no resemblance whatever to the objects they 'represent'; they resemble them no more than the printed words on a page are similar to the things for which they stand. The outside reality itself is absolutely *unknown* and *unknowable*; we can only know that *something exists* which produces this subjective image in us. The 'representations' of our perception are indeed caused by external objects, but they tell us nothing about the reality of the objects which cause them. Such is the view of the hypothetical dualists of modern epistemology. Since, however, this class of representationists admits the existence of some sort of extra-mental and extra-Ego reality, they claim that their theory is a genuine form of realism.

The *objective* representative realists agree with the preceding class of philosophers in contending that what the mind immediately perceives is the mental image or 'representation'; and from this 'representation' they also *infer* the existence of an outside world. But they differ from 'subjective' representationists in claiming that the mental images or 'representations' resemble the objects which cause them. They base this *resemblance* on the Principle of Causality. They argue that an effect must resemble its cause. All operations proceed from the nature or essence of a thing; different natures, then, will produce different kinds of operations. Consequently, the kind of operation will

reveal the kind of nature from which it springs. And thus, from the effects of these operations we can logically infer the qualities of the nature operating. Applying this principle to the case of sense-perception, they contend that the 'representations' produced in the mind by external, physical objects enable us to draw a legitimate inference to the qualities and nature of the causes which produce the 'representations' in us. In this manner, these 'representations' are truly 'images' of the things outside and much more than mere 'symbols' of them. The knowledge thus acquired contains genuine information regarding the extra-mental and extra-Ego world, even though we have no immediate perception or intuition of the objects themselves. This view of sense-perception is held by many neo-scholastic philosophers, like *Mercier*,¹ *Jeannière*, and others. Some *critical realists* belong to this class. According to them, the mind perceives the 'essences' of things, not the things themselves; but these 'essences' resemble the nature of the individual realities.

SUBJECTIVE REPRESENTATIVE REALISM

We group in this class all those theories which, while maintaining the fundamental idealist principle that the mind cannot transcend its own conscious states, accept the existence of an extended, material reality as the hidden and unknown cause of our sense-perception. Such are, for instance, Kant's phenomenalism and Spencer's 'transfigured realism.' There are, of course, many variations of this general theory of representative realism, but they all

agree in this that they are a form of *hypothetical dualism* and realism; they *postulate* the existence of extra-mental and extended things, claiming at the same time that the human mind can have no knowledge or perception of them. Such a realism is no realism at all; it is a disguised and veiled idealism. These philosophers intend to be realists, but they could not escape the net of idealism.

The proof of this has already been given in our examination of extra-mental and extra-Ego reality. According to subjective representationism we can know only our own conscious states. All perception of extension and extended objects is merely a conscious state. Therefore, they say, all such perception is nothing but a modification of our mind and reveals nothing of the qualities and nature of the objects themselves.

If this were the case, our knowledge of our body (extramental reality) and of the external world (extra- Ego reality), as proved in the preceding chapter, would be purely of an *imaginary* and *subjective* character. And since, according to these thinkers, this knowledge tells us nothing whatever about the things-in-themselves outside the mind, this knowledge is illusory. Our *intellectual* knowledge, however, is based on this sense knowledge, and as such must also be illusory. What value, then, can our knowledge have? It is all a mental construction, a subjective fabrication. That this would destroy the validity of all our knowledge, must be obvious. Skepticism is inevitable.

Practically all subjective representationists, unless they are thoroughgoing idealists, speak of the *brain* and brain-conditions, *nerves* and neural currents, *sense-organs* and

sentient experiences. But what meaning have such terms and phrases except that they refer to a real body with the side-by-sideness of extended, material parts? If the body is real, we know a great deal about the 'extra-mental' body and its operations, and representationism refutes itself; and if the body is not real, these philosophers are illogical and inconsistent in speaking of such things and building their theory upon them.

The adherents of subjective representative realism admit that *some form* of extra-mental and extra-Ego reality *exists*. Most of them are even willing to concede that this reality consists of a multiplicity of things; they are pluralistic. Some lean toward the notion of a vague 'world stuff,' 'mind-stuff,' or 'neutral stuff,' very much akin to the Absolute of the more pronounced idealists. But whether their conception of extra-mental and extra-Ego reality be pluralistic or dualistic or monistic, they thereby claim to know *more* about this reality than *its mere existence*. This, however, is inconsistent, because their fundamental position is thus relinquished.

Besides, on what grounds do they acknowledge the existence of this reality? On the grounds of causality: these things or this reality is the cause of our perceptions. But if the Principle of Causality enables them to infer this existence, why should this same principle not enable them to infer *more* than the mere existence? One can see no logical reason why it should be restricted to this one fact alone. If representationists were consistent with the tenets of their theory, they could not conclude legitimately even to this fact of existence, because in this knowledge they

actually *transcend* their own conscious states; they do know something which lies *outside* the confines of their mind. Again, if all our knowledge is purely mental, then the Principle of Causality is also nothing but a purely mental product; as such, this principle would demand only a *mental cause* for our perceptions. For them to apply a principle of the mental and ideal order to the real and physical world is, according to their own theory, an illogical and unwarrantable procedure. What, then, is left for them but an unmitigated idealism which must eventually end in solipsism? But that would be intellectual suicide.

Representative realism is the outcome of empiricism, and empiricism is the philosophic offshoot of *science*. Above all things, these philosophers want to be scientists and be in accord with science. We agree with them in the view that science must furnish the groundwork, the raw material, of philosophy. But science is by no means a champion of subjective representative realism. On the contrary, science absolutely demands extra-mental and extra-Ego reality, not only as far as its existence is concerned, but also as regards the *nature, qualities, and operations* of the extended, physical *objects* as we know them. Or would anyone seriously assert that the laws of science are only 'mental' laws which regulate the relations of 'symbols,' 'ideas,' and 'representations' of the mind? Do they not apply, according to the intentions of scientists, to actually existing objects of a real, material universe? The *scientists themselves* certainly are convinced that they are dealing with extra-mental and extra-Ego realities that have an existence of their own, independent of the mind that conceives and

knows them. Subjective representative realism is thus seen to be contrary to all suppositions and conclusions of science. If these things are not real, science loses all meaning and purpose. But a theory that is so subversive of the fundamentals of exact science, must be fallacious.

Subjective representative realism is nothing but a half-hearted idealism and therefore no realism at all. It cannot explain the facts and must be rejected.

OBJECTIVE REPRESENTATIVE REALISM

While *objective* representative realism agrees with subjective representationism in admitting that the mind perceives directly and immediately only 'images' or 'representations,' from which it then infers the reality of extra-mental and extra-Ego objects (the human body and the universe), it differs radically from it in contending that these 'images' or 'representations' bear a *resemblance* to these objects and thereby give us a genuine knowledge of their being. They base this contention, as we have seen, on the Principle of Causality.

The question then arises: *Must effects 'resemble' their causes?*

If so, the theory can be considered valid; if not, our knowledge of the external world is no better than that of subjective representationism, which is, as we have just noted, only idealism in disguise. The whole matter, then, resolves itself into this: Does the fact of causality always imply a *similarity* between cause and effect, so that a knowledge of the effect (the representations' here)

automatically gives us a knowledge of the nature and being of the cause (the extra-mental and extra-Ego objects)?

Experience tells us beyond reasonable doubt that effects do *not* always resemble their causes; in many cases there is no similarity whatever between the two. Our daily contact with causality shows plainly that effects are of two kinds: *univocal and equivocal*. 'Univocal' effects are those which are *similar in kind* to the causes which produce them. We see innumerable instances of this in nature. Plants, animals, and men reproduce their own kind, and here the effects are certainly similar to the causes. Horses produce horses, cows produce cows, eagles produce eagles, man produces man, and so on, throughout the entire kingdom of living beings: the offspring (effect) resembles the parent (cause). These are univocal effects similar to their causes.

'Equivocal' effects, on the other hand, are *dissimilar in kind* to their causes. The world is also full of these. The music (effect) of a pipe organ in no way resembles the pipes, the mechanism, the organist, the air (cause). The destruction caused by a shell hitting a building has no similarity to the shell, the exploding powder, the gun, or the gunner. A piece of sculpture representing a horse carries no resemblance to the chisel or the sculptor.

Bearing this in mind, we are now in a position to pass judgment on the validity of the theory of objective representative realism. The main contention, that the 'images' or 'representations' of extended material objects bear a real resemblance to these objects, is *groundless* and *gratuitous*. These 'representations' are produced by external objects, but what guarantee can they give us that

these 'representations' are *univocal effects*? This is, from what we have seen above, certainly not self-understood; because an effect might be either univocal or equivocal, and there is nothing to show why these 'representations' must be, or will be, univocal rather than equivocal. And if they should happen to be equivocal, their 'resemblance' to the external objects is gone, and then we know nothing about what these external objects are in themselves.

The *only* things the mind can perceive are the 'images,' the 'representations.' They *may* resemble external objects, but they may also, as far as we can tell, be totally unlike the external objects which produce them. Our mind must be forever in doubt on this score. Our knowledge of the external world loses all certainty, and we are again on the threshold of idealism and skepticism.

Objective representative realism thus offers no solution for the problem of the validity of human sense-knowledge. It also is but a veiled and disguised form of idealism and as such is erroneous and fallacious. What, then, is the outcome of our present investigation? Just this: every form of representative realism, whether subjective or objective, restricting the human mind to a knowledge of its own internal conscious states and denying a direct perception of extra-mental and extra-Ego reality, is no realism at all, but only a disguised variant of idealism.

PRESENTATIVE REALISM

Presentative realism (immediate realism, intuitive realism, natural realism, perceptionism) is the theory which

maintains that physical, external objects are 'presented' *directly in some form* to consciousness in sense-perception, so that their reality is perceived *as it exists in itself* 'out there' in nature. In this. View the objects are 'present' or 'presented' directly to the mind through the medium of the senses; hence the term 'presentative.' The external object itself is 'immediately' the object which is 'perceived' or 'intuited'; this explains the terms 'immediate' and 'intuitive' realism and 'perceptionism.' And since it is 'natural' for man to think that he actually perceives the objects themselves as they are 'out there in nature,' this theory is also called 'natural' realism. The fundamental thought in presentative realism is that the *objects themselves, in some form or other*, are directly perceived in sense-perception. Because of the active influence of both object and mind upon the sense-process, it is natural that some realists will give a more 'objective' and others a more 'subjective' interpretation of the facts involved. And thus two rival theories have been advanced to account for our experiences: rigid or naïve presentative realism and moderate or critical presentative realism. The difference between these is one of degree, not of principle.

Rigid or *naïve* perceptionism is the realism of the ordinary man and of the philosopher who is convinced that the things he perceives are actually in nature as they *appear to his senses*. If he sees a colored object, the color is really 'outside' in the thing, just as he sees it. Sounds are real tones emitted by the sounding object, just as he hears them with his ear. And all objects are extended, have a definite shape, and are at rest or in motion, just as he

experiences them through one or more of his senses. In other words, *all qualities are objectively real as perceived*.

Critical or *moderate* perceptionism claims that some qualities of objects are 'objectively' real and as such are perceived immediately and intuitively by the senses; other qualities are not present in the object as such, independent of the sensing subject, but exist only *potentially* or *causally* in the objects. Thus, extension, shape, motion or rest, unity or multiplicity, would be considered 'objective' qualities inherent in the bodies themselves, independent of sense and mind, and as such would be directly perceived. But color and sound, for example, do not exist in the objects themselves as 'color' and 'sound'; these are 'subjective' qualities which exist only in the perceiving senses, with this distinction, however, that they are causally produced in the senses by vibrations coming from the objects 'out there' in nature. In order to understand the problem better, it will be necessary to explain the various kinds of sense-qualities.

It has become customary to divide the sense-qualities of objects into *primary* and *secondary*, or as Aristotle and the scholastics did, into *common* and *proper*. Any object, quality, or feature of reality, which can be perceived by a sense, is called a 'sense-object,' 'sensile,' 'sensible,' or 'sense-quality'; they all mean the same thing. Now, some of the sensibles or sense-qualities can be perceived by a single sense only. Thus, the organ of sight alone perceives colors; the organ of smell alone perceives odors; the organ of hearing alone perceives sound: such qualities are *proper or secondary* sensibles. Other sensibles or sense-qualities can be perceived by *more than one sense-organ*. Extended

surface, shape, volume, number (i.e., whether one or many), rest and motion, can be perceived by at least two of the senses, sight and touch: they are common or primary sensibles.

And this brings us to the very heart of the controversy waged between rigid and critical perceptionism: *Are all sense-qualities 'objective' or are some of them 'subjective'?* Rigid or naive perceptionism stands for the theory that all sensibles are 'objective'; they are really in the objects as perceived. Moderate or critical perceptionism, on the other hand, claims that the common sensibles are really in the objects as perceived, but the proper sensibles are more or less 'subjective' in character.

THE CASE OF RIGID PRESENTATIVE REALISM

The rigid realist occupies a naturally strong position, for he has practically all humanity to support his view. The man in the street, undisturbed by the findings of science and the psychological difficulties involved in sense-perception, is a naive realist who is thoroughly convinced that he directly perceives all extra-mental and extra-subjective objects as they *really are in themselves*. The philosopher, who is a rigid perceptionist, is not so unreflecting and unscientific; he knows that he cannot take things for granted and that many objects do not always 'appear' as they 'really are.' Still, while he is fully aware of the many philosophic difficulties inherent in rigid realism, he places himself frankly on the standpoint that all sense-qualities, primary and secondary, are intuitively perceived as they 'really are'

in nature, provided the *normal conditions* of sense-perception are present. If conditions are abnormal, errors will be committed; if they are normal, errors can be eliminated. These conditions pertain to the 'sentient subject,' to the 'sensed object,' and to the 'medium' intervening between the object and the subject.

As far as the *sentient subject* is concerned, it is necessary that the sense-organs be free from organic and functional defects. If any of the senses are abnormally constructed or if their proper function is impeded in any important degree, it will be but natural that they cannot register the data properly; distorted perceptions will result, and errors of judgment will be the inevitable consequence. The case would be similar to using defective instruments or tools in highly specialized crafts. Regarding the *sensed objects*, they must be placed at the right distance and in the right setting. Every sense has its own definite field of operation; within this field its efficiency is high, and beyond this field it is low or even nil. A specific relation exists between object and sense, and this relation cannot be appreciably disturbed without incurring the risk of faulty perception. The *medium* intervening between object and sense must also be normal, otherwise perception cannot be normal. A change of the medium will naturally bring about a change in the relation between the object and the subject, with the result that the perception of the object will be distorted. An oar partly submerged in water will appear bent, because a part of the rays of light reaches the eye through the medium of air alone, while the other part reaches it through air and water. In a similar manner, due

to the refracting action of the atmosphere at the horizon, the morning sun is seen before it actually rises above the earth's rim, and it appears red and much larger than it really is; variations in the density of the atmospheric medium account for the phenomenon.

It is unquestionable that the *normality of conditions* is an important factor in true sense-perception. Given the presence of normal conditions, the rigid perceptionists claim, our senses must be considered reliable within the sphere of their proper function and enable the intellect to draw proper conclusions from the data presented by the senses. To deny this would mean that our normal senses under normal conditions would give us a false and illusory picture of the world around us; and that would be tantamount to the assertion that *illusion and error* would be the *normal result* of our faculties in their *normal and natural operations*. Such an assertion, however, would inevitably lead to general skepticism, because neither our senses in their normal operations nor reason in its legitimate conclusions could be trusted. That, of course, would be the bankruptcy of all knowledge, and science and philosophy would be hopeless and useless occupations. But this is evidently absurd. Consequently, our senses under normal conditions must be reliable sources of information concerning the extra-mental and external world. If errors occur, they are only incidental and accidental and can be avoided by careful and thoughtful attention to the data.

This general principle the rigid perceptionists then apply to the perception of *sense-qualities*. And they argue in the following fashion. "There are innumerable instances in

which we act with deliberate attention and with a knowledge of the essential normality of our senses. In applying our senses to an object, we are conscious that *all* our sense-perceptions testify with equal force to the existence of certain qualities in the single bodies, namely, motion or rest, volume, shape, and distance. The conjunction of these conditions, however, entitles us to pass a judgment on the sense-qualities of the single bodies, because we thereby find ourselves *forced* to pass this judgment, and we consider any serious doubt to be unreasonable. If our judgment, notwithstanding this compulsion, were false, we would be subject to error out of necessity and would have to despair of all certitude. In special and definite instances, therefore, Our reason is capable of judging with certitude on the sense-qualities of bodies.

“With regard to the particular case of the so-called *secondary* sense-qualities, there can be no doubt that our subjective sense-perceptions, if we presuppose the existence of bodies, will find their adequate explanation in nothing but the specific qualities of bodies through which the latter act upon our senses. For even the existence of bodies could not be known to us except by means of those qualities in virtue of which the bodies appear to us as colored in this or that way, as having this or that taste or odor, or as being hard or soft. To deny or doubt the trustworthiness of our senses in the perception of these qualities would therefore be as much as to question the possibility of a knowledge of the *bodies* themselves.”²

Immediate intuitive perception of sense-qualities we certainly have. Then why make a distinction between primary and secondary sensibles at all, some of which are supposed to be 'objective,' while others are considered more or less 'subjective'? There seems no reasonable cause in the *qualities themselves* to judge any of them to be more subjective or less objective than the others.

Furthermore, humanity in general has the spontaneous conviction that *all* sense-qualities, primary and secondary, are found in the objects as they appear in perception. This is the verdict of *common sense* and therefore of *natural reason*. Can all humanity be wrong in a matter which is so interwoven with daily experience of the most intimate character? If so, is human reason then not unreliable? And if unreliable, is not every philosophical theory then just sheer waste of time and energy? If we impugn the reliability of reason and our senses, must we not end in the bog of skepticism? We must remember that the constant and universal conviction of mankind gives *presumptive evidence* of tremendous force to this view of the objectivity of all sense-qualities without exception. This theory explains the facts so fully and convincingly that it amounts practically to a *scientific and philosophic law of nature*.

ANSWER OF CRITICAL PRESENTATIVE REALISM

As far as the arguments of the rigid realists are concerned, the critical perceptionists subscribe to them, considering their general trend and import. But they deny that the arguments prove that *all sense-qualities* without exception,

primary and secondary, must be accepted as *objectively present in the objects* 'out there' in nature just as they 'appear' to the senses. This conclusion exceeds the premises. The argument merely proves that *in general* immediate, intuitive perception of the external, physical qualities of objects is the correct theory of knowledge, but it does not prove that all sense-qualities in particular are intuited as objectively present in the things themselves. To argue from the 'general' truth of a statement to every 'particular' instance and case which apparently falls under it makes them guilty of the fallacy of passing from an 'absolute' to a 'qualified' statement. Certainly, if the argument were as exclusive as the rigid realists assert, the question would be definitely settled; but that they have not proved. After all, the question is a matter of *facts* properly interpreted. The facts are the same for everybody, and no one denies them; but the interpretation of these facts is a different affair, and reason is the arbiter there.

We must always bear in mind, that the *senses* themselves *do not judge*: they merely report the presence of certain sense-impressions. It is reason, and reason alone, which judges whether anything 'objective' corresponds outside in nature to the subjective sensations and perceptions thus recorded by the senses. Truth resides in the judgment, and judgment is exclusively the function of the intellect. The senses can do no more than present the data, which reason must then interpret according to its own lights. And if reason, after a careful scrutiny of the data of sense-perception, is forced to judge that certain sense-qualities are not objectively present in nature as perceived

by the senses, we must accept the dictates of reason as final. Any other course would be unscientific and unphilosophical and would be bound to lead ultimately into error. General statements will not settle the issue; facts alone can. So let the facts speak for themselves.

Again, rigid idealists assert that the *secondary* qualities of bodies must be objectively present in them; otherwise we would not know even of the *existence* of bodies themselves, and thus the possibility of a knowledge of the *bodies* themselves would be called in question. They are wrong, for they prove too much and therefore nothing. Both rigid and critical presentationists consider the primary qualities as perfectly 'objective,' as really existing *in* the bodies as they are perceived by the sense of touch. It is through these qualities that the existence, extension, shape and voluminousness of bodies are observed in sense-perception. Here we have the essential guarantee of the reality of external bodies, and this guarantee is not invalidated by the assumption that the secondary qualities are not actually present in the bodies as perceived.

Furthermore, rigid perceptionists maintain that there is no foundation in nature for making such a radical distinction between primary and secondary qualities. Again they are wrong. Nature itself gives us the ground for making this distinction. The primary qualities are in themselves more fundamental in character than the secondary. To have definite shape, volume, weight, and impenetrability, flows necessarily from the extension of bodies. There could be no colors, sounds, odors, flavors, temperature, and resistance, if these primary qualities

were not present *before* them, since these secondary qualities need extended surface in order to exist and be what they are. The primary qualities can exist without the secondary, but the secondary cannot subsist without the primary. And then, too, the very nature of the perceptive act provides a reason for this distinction. The primary qualities are perceived by *direct contact* between our body and other bodies through the immediate perception of the sense of touch. Herein lies the ultimate assurance that these bodies and their fundamental qualities are real and objective. Other qualities, like color, sound, etc., are perceived, not through direct contact, but through some 'medium' distinct from the bodies and distinct from the qualities themselves, namely, vibratory motions of ether, air, and so on. Hence, it is false to assert that there is no natural distinction between the two sets of qualities and that bodies could not be known unless the objectivity of secondary qualities were also admitted. It might, then, very well be that the latter are more or less subjective, while the primary qualities alone are objectively present in bodies, without destroying the essential validity of sense-perception.

Finally, rigid perceptionists appeal to the spontaneous conviction and the common-sense judgment of mankind; all men, they say, consider the secondary as well as the primary qualities to reside in the objects as perceived. In answer to this, critical perceptionists maintain that this argument is of very dubious force, because this conviction is *not* at all as *universal* as claimed. In fact, it was the natural philosophy of the ordinary man which coined the phrase

that “appearances deceive.” This implies the well-grounded *judgment* that things are not always as they ‘appear’ to the senses. He corrects many sense-impressions through the judgment of his reasoning faculties, so that he is by far not as ‘naïve’ as many people think. He would never dream, for instance, of accepting the *diminishing perspective* of objects, as seen in his visual picture, as a literal transcription of reality; and that is a very vital point in visual perception. Nor does he believe in the actual *shifting of position* among objects, relative to each other, as he witnesses this phenomenon while traveling in a train or riding in his car, although that is what his eye shows him as clearly as anything else. He is Very wary regarding the *real color* of objects, especially when viewed under different kinds of light, even though his eye can make no distinction between the ‘objectivity’ of the varying color perceptions under changing sources of illumination, he knows that a suit of clothes, which he examines, may appear black under electric light and yet be blue in sunlight. He is aware, too, that there is a considerable element of *subjectivity* in many of his sense-reactions. Sweet wine, for instance, always tastes sour to him after eating sugar, while dry wine appears sweet after lemon juice; he experiences chills of coldness throughout his body, so that his teeth chatter, although the temperature of his body is much higher than usual. Hundreds of similar examples could be adduced which manifest his conviction that things are frequently quite different in reality from what they appear to be according to the testimony of his senses. If he is not fully conscious of the corrective judgment of his interpreting

reason in these and similar cases, this is due to the *habitual action* of lifelong experience which enables him to interpret these deceptive appearances correctly without being aware that he is doing so. All of which shows that the spontaneous convictions of the ordinary man do not favor rigid realism as much as is claimed.

Such is the answer of the critical perceptionists to the arguments of the defenders of rigid presentative realism. Their answer so far is *negative* in intent, showing that the opposing arguments lack cogency. More than this, of course, is required in order to prove that critical, and not rigid, presentative realism deserves to be classed as the only theory of sense-perception which explains all the facts. *Facts must prove or disprove a theory.* And critical perceptionists produce a formidable array of facts from science and from everyday life which, according to their view, furnish positive and incontestable proof of the truth of their theory. These facts, at least in their main outline, will now have to be considered.

SUMMARY OF CHAPTER XI

There are two main realist theories: representative and presentative realism. Both claim to be a genuine form of realism, capable of explaining all the facts.

1. *Representative Realism*. It is also called mediate, hypothetical, cosmothetical, or inferential realism. It maintains that the mind is immediately aware, not of the external objects themselves, but of its internal 'representations' only, from which it then infers the existence of external reality as their cause. It is *subjective* representationism, if it contends that these representations are mere 'symbols' of reality, without any resemblance to it. It is *objective* representationism, if it contends that these representations actually resemble the external objects which are their cause, thus giving us a genuine knowledge of these objects.

2. *Subjective Representative Realism*. If this theory were correct, our knowledge of our body and of extra-Ego reality would be imaginary and illusory. For these thinkers to speak of the brain, nerves, and sense-organs is an admission that we can and do know 'extra-mental' reality. They are inconsistent in restricting the Principle of Causality. Their position is contrary to science, because scientists are convinced that their findings refer to a real extra-mental world.

3. *Objective Representative Realism*. Effects may be univocal or equivocal, i.e., similar or dissimilar in kind to the causes. Experience shows that there are many equivocal

effects in nature; they do not resemble their causes. Hence, the fact of resemblance must ever remain doubtful. All representative realism is disguised idealism.

4. *Presentative Realism*. It is also called immediate, intuitive, natural realism, perceptionism. It maintains that physical objects are 'presented' directly in some form to consciousness in sense-perception. *Rigid* or *naïve* perceptionism contends that all sense-qualities are objectively real as perceived. *Critical* or *moderate* perceptionism contends that some qualities are objectively real as perceived, while others are only potentially or causally in the objects.

5. *The Case of Rigid Perceptionism*. The general proof is as follows. Given the presence of normal conditions, our senses must be considered reliable; otherwise illusion and error would be the normal result of our faculties in their normal and natural operations. Applying this general argument to secondary qualities, rigid perceptionists claim that we could know nothing of bodies, not even their existence, if these qualities were subjective. Both primary and secondary qualities are equally 'objective' to the senses. It is the verdict of common sense and therefore of natural reason, that all qualities are objective; this amounts practically to a law of nature.

6. *Answer of Critical Perceptionists*. The argument is too general; it merely proves that some qualities must be objective. The reality and existence of external bodies is guaranteed sufficiently by the primary qualities. Primary qualities are more fundamental than secondary; nature itself makes this distinction. The common-sense conviction

of mankind is not as universal as claimed; in their daily life men frequently show that they do not consider things to be objectively real as they are subjectively perceived.

READINGS

M. Maher, *Psychology*, Chs. VI, VII; J. Barron, *op. cit.*, Chs. XII, XIII; J. G. Vance, *op. cit.*, Ch. VI; J. Rickaby, *op. cit.*, Part II, Ch. II; P. Coffey, *op. cit.*, Vol. II, Chs. XVI-XX; James McCosh, *First and Fundamental Truths*, 1889; Part II, Bk. I, Chs. I-V; T. Pesch, *op. cit.*, Vol. II, pp. 136-151; A. Lehmen, *Lehrbuch der Philosophie*, 1909, pp. 189-200; A. K. Rogers, *What is Truth?*, pp. 100-106; C. D. Broad, *Perception, Physics, and Reality*, Chs. I-III; A. J. Balfour, *A Defense of Philosophic Doubt*, Ch. XI; G. F. Stout, *Mind and Matter*, Bk. IV; R. W. Sellars, *Critical Realism*.

¹ *Criftériologie Générale*, 1906, n. 140, p. 386: <<Mais il nous est impossible d'affirmer avec certitude l'existence d'une ou de plusieurs réalités extramentales sans employer le principe de causalité.>>

² A. Lebmen, *Lehrbuch der Philosophie*, Vol. I, p. 192, 3rd edition (Herder in' Breisgau, 1909).

Chapter 12

CRITICAL PRESENTATIVE REALISM

IN DISCUSSING THE FACTS OF SENSE-PERCEPTION, WE DEAL WITH ultimate experiences of the human subject, and we must distinguish closely between the facts themselves and the interpretation of these facts. The facts are registered by the senses, but the senses tell us nothing of the 'nature' of these facts: it is the interpreting intellect which gives us an insight into their being. It is the duty of the philosopher to study the facts of everyday life and of science and to draw the conclusions necessarily implied in them. The facts must dictate the theory which attempts to explain them; and any theory which fails to give an adequate account of all the facts of the case must be relinquished in favor of the one which does.

THE PROBLEM OF SECONDARY QUALITIES

Rigid perceptionists and critical perceptionists agree that the *primary* qualities of objects (extension, shape, unity and multiplicity, rest and motion) are objectively real and are perceived as such. The difference between them centers in the problem of the *secondary* qualities (color, sound, odors,

flavors, etc.). Rigid perceptionists contend that all primary and secondary qualities are *objective* and *absolute* in the sense that they exist 'out there' in nature, independent of, and antecedent to, the act of perception; they are present and remain present in nature, even if there be no sense-organ in existence to perceive them. Critical perceptionists distinguish between the two classes of qualities and contend that the secondary qualities do not exist 'out there' in nature as such, objectively and absolutely, but are *subjective and relative*, in the sense that they exist only in the act of sensation of the perceiver; secondary qualities, therefore, do not exist independent of, and antecedent to, the act of perception. However, these secondary qualities are not 'purely' subjective and relative, because their causes, namely, the bodies and their properties, exist and through their influence produce these sensations of color, sound, etc., in the perceiver. According to critical perceptionists, then, secondary qualities are 'causally' and 'potentially,' but not 'actually' and 'formally,' present in the bodies. When speaking of the 'objectivity' or 'subjectivity' of secondary qualities in the following discussion, the terms must be accepted in the meaning here designated.

The controversy concerning the nature of the secondary qualities has been very keen among philosophers in modern times, especially among the *scholastics*. This is due mainly to the findings of science. Scientists in general favor the subjectivity of these qualities, as will be seen by consulting the standard works of psychology, physics, physiological psychology, and experimental psychology.¹

The older medieval scholastics considered all qualities as *formally* present in the objects themselves. Redness, for instance, is a physical accident of the rose itself, independent of light; sugar is sweet in itself; ice is cold in itself; a bell really emits a sound. Others distinguished between 'formal' and 'fundamental' qualities. According to them, color and sound as such (and all the other secondary qualities) are not present in the object itself, but in the *medium* which intervenes between the object and the sense-organ; light is colored and air is sounding. This view places color and other qualities *fundamentally* in the objects and *formally* in the medium; but as such they are objective and absolute, independent of, and antecedent to, the perceiver. Among the older prominent scholastics who favored this theory are *St. Albertus Magnus, St. Thomas Aquinas, and Suarez*.

Neo-scholastics, generally speaking, seem to lean toward that form of rigid perceptionism which distinguishes between 'formal' and 'fundamental' qualities. Among those who adhere to the objectivity of secondary qualities as independent of perception may be mentioned: M. Liberatore, C. Sanseverino, T. Zigliara, Z. Gonzalez, F. Seewis, L. de San, M. Glossner, T. Pesch, E. Commer, B. Loranelli, A. Farges, G. Lahousse, I. Straub, M. Schneid, van der Aa, S. Schiffini, J. Urráburu, L. Lercher, O. Willmann, C. Willems, C. Boetzkes, P. Gény, A. Michelitsch, de la Vassière, A. Seitz, C. Frick, Lehmen-Beck, J. Maritain, J. Gredt, G. Esser, P. Coffey, and others.

Other neo-scholastics are *critical perceptionists*. They claim that the secondary qualities have only a *subjective*

existence in the perceiver, so that their formal being is dependent on the act of perception; as such, then, they exist neither in the objects nor in the intervening medium.

The chemico-physical properties of things, however, are the cause of their production, in as much as the energies of objects influence the sense-organs effectively and through their stimuli produce therein the sensation of color, sound, etc. Among those who defend this view are: D. Card. Mercier, C. Gutberlet, J. Balmes, A. Stöckl, J. Pohle, G. Hagemann, M. Maher, M. Domet de Vorges, J. Linsmeier, P. Fournier, D. Palmieri, S. Tongiorgi, Ch. Lahr, J. Fröbes, P. Balzer, Mattiussi, de Sinéty, H. Gruender, Necchi, P. Siwek, and others.

Critical presentative realists maintain that the facts clearly show the secondary qualities to be subjective in character; i.e., they are not independent of, and antecedent to, the act of sensation, otherwise *contradictory attributes* will have to be predicated of the same object in the same respect. In support of their view, they appeal to experience and science.

TOUCH, TASTE, SMELL, AND HEARING

Touch. 'Heat' and 'cold' are secondary qualities and, to all appearances, are objectively present in the things which come in contact with our body. But *temperature is relative* to the perceiver. If man's body temperature be taken as 'physiological zero,' any object of the same temperature will evoke no thermal experience; but anything below this zero will appear cold and anything above it will appear warm or

hot. As the body temperature is heightened or lowered, objects will change from hot to cold and vice versa, although nothing was done to change their temperature. Thermal impressions also depend upon humidity. Evaporation from the skin gives the impression of coolness; but if the surrounding air is humid, so that evaporation is impeded, we have the sensation of increased heat, although the temperature is the same. Increased temperature of the air increases its capacity to absorb moisture; hence, even though the temperature of the air be increased, we experience the sensation of greater coolness. Similarly, agitation of the air around the body, for instance, by means of a fan, produces the sensation of coolness, although the temperature of the air has not been changed. If we place the right hand in a vessel of water of $+60^{\circ}$ and the left hand in a vessel of water of $+100^{\circ}$ and then place both hands in water of $+80^{\circ}$, the same water will appear warm to the right hand and cool to the left.

According to science, the sensation of heat is due to electromagnetic radiation. The closer we move to its source, the hotter the object seems to become; and the farther away we move, the less we experience of its heat. If heat were really objective, in the object itself or in the intervening medium, then the space between the sun and the earth should be filled with 'objective heat'; and this heat should be more intense above the earth in the direction of the sun. This, however, is not the case: the temperature decreases as the altitude increases, and interstellar space, according to science, is hundreds of degrees below zero.

From this we must conclude that the experience of heat is a subjective reaction of our nervous system.

Taste and Smell. All people are aware that taste is a capricious sense and that 'there is no accounting for tastes.' Taste and smell are physiologically closely related, and many experiences which we attribute to taste are really due to the sense of smell; the confusion is remarkable. The same substance may produce a different taste, depending on what part of the tongue it is placed. Passing from the tip to the base of the tongue, the following changes of quality have been shown by experimentation to take place: sodium chloride changes from salty to slightly bitter; potassium chloride changes from salty to sweet; alum, from sour to sweet; bromo-saccharine, from sweet to bitter. Distilled water, after a solution of hydrochloric or sulphuric acid, tastes sweet. A weak solution of quinine sulphate, after sulphuric acid, tastes sweet at the tip of the tongue and bitter at the base. Objects, however, cannot be objectively sweet and bitter at the same time or change objectively, because of their mere position on the tongue.

It is a common experience that certain substances are delicious to the taste or smell of some persons and nauseating to the taste or smell of others. If flavors and odors were objective qualities, all who can taste or smell should perceive the same objective qualities. The qualities certainly do not change objectively in themselves, simply because different persons perceive them. Men and animals perceive entirely different flavors and odors in the same object. If they taste the same objective flavors and smell the same objective odors, there should be no difference in their

reactions. There is, however, a great difference, and this can be adequately explained only on the supposition that flavors and odors are not objective qualities of the objects themselves, but are chemical properties which produce effects according to the subjective character of the perceiving organs.

Hearing. Sound is also supposed to be objective, independent of the organ of hearing. A bell, for instance, emits a sound which corresponds to the note 'c' on the scale. No matter how often we strike the bell, the note will always be the same. Let it be assumed that a bell is clanging at a railway crossing and that its note is 'c.' Here, then, there is nothing to alter the note; the bell continuously emits 'c,' and anyone standing near by hears this identical note as long as the bell rings. However, every person in a rapidly moving train will hear the pitch of the bell rise as they near the bell, and they will hear it sink as they move away; it is only in the immediate vicinity of the bell that they hear the note as 'c.' Everyone in the train, from the engine to the last car, hears a different tone, ranging, for instance, from 'c' to 'e' and from 'c' to 'a' at the same moment of time, although nothing has happened to the bell to change its tone. If the 'objective' tone of the bell is 'c,' it should be physically impossible to hear a different tone, otherwise people would hear tones which are not present and not hear the one 'objective' tone which is present. That, however, is actually what is experienced: each person hears a different supposedly 'objective' tone. Consequently, sound is not objectively present in the bell; to

maintain its objective character involves the contradictory property of 'c' and 'not-c' at the same time.

Due to this characteristic of sound, many neo-scholastics place sound, not in the object itself, but in the air or intervening medium. This, however, will not save their position of rigid perceptionism. Persons standing within range of the stationary bell at any point will hear only 'c.' Let us suppose that the middle of the moving train is directly opposite the bell. Then every person standing near the tracks at the head of the train or at the end of the train will hear only 'c,' but every person within the moving train will hear a different tone, as explained above. If, then, the 'objective' tone in the air is 'c,' this tone must be the same wherever the sound happens to travel, and everyone must hear this tone 'c' and no other. That, however, is not the case; the tone is experienced as different by different persons. Consequently, formal sound is neither in the object nor in the air, but in the organ of hearing itself; in nature there are only vibrations of definite length and frequency which are then translated into sound by the individual ears in the act of sensation.

SIGHT: REFRACTION OF LIGHT

Nothing seems more obvious to us than that things are really colored and that color exists in the bodies themselves. This, however, is a matter of judgment, not of sense; the eyes merely report the facts of sight and tell us nothing about the actual reality of what they perceive. If a thorough scientific investigation of the data confirms the

theory of objectivity, we must, of course, accept the verdict of science; we must, however, also accept its verdict, if it can show that colors are not objective. This, critical perceptionists claim, science does.

Refraction produces results which are extremely difficult to comprehend and explain, if color is objectively present in objects. The phenomena of the rising and setting *sun* are familiar to everyone. The sun appears much larger than usual; it appears elliptical in shape; it appears as a deep-red or golden ball; it appears to become smaller in size as the morning progresses and larger as it sinks toward the horizon in the evening. We know that none of these things are actually so. The actual sun does not change in size, shape, and color from hour to hour during the day, but remains the same throughout the year. Were the sun 'objectively' red, why do we see it as white during the greater part of the day? Were it white, why do we see it as red in the morning and evening? Were either of the colors objective, we should see nothing but that one color all the time. Since the color changes continually in the unchanging sun, neither can be objective. This becomes even more obvious when we consider that people on different parts of the earth in the east and the west, looking at the sun *at the same instant of time*, receive entirely different impressions regarding its size, shape, and color: it is big and little, red and white, round and flattened, at the selfsame moment. But this is obviously impossible; the *real* sun cannot have such opposite qualities at one and the same moment.

At sunrise the real sun is still actually below the horizon, although we 'see' a red sun in the eastern portion of the

sky. The sun, therefore, *is not there at all* where we see it. This phenomenon is due to the refraction of the sun's rays. What we actually see, then, is not the sun as an *object*; it is a consciously apprehended *retinal image*, produced by the radiant energy of the sun in the organ of sight, and that is subjective.

The *stars* in the heavens present a somewhat similar phenomenon. The stars, even those which are called 'fixed,' move at tremendous speeds. We cannot see a star until the light rays emitted by it reach the eye. Light travels at a velocity of over 186,000 miles a second; despite this speed, many stars are so distant that it takes hundreds and thousands of years for their light to reach the earth. Let us assume that a certain star is a thousand light-years away and that it travels in the general direction of west to east at a rate of 1,000,000 miles a year. At the moment, then, when we look at this star, we see it where it was located *one thousand years ago*; this means, that we see it one billion miles to the west of where it is at present. The star is not there where we see it, and where it actually is we do not see it at all. And this is true of all the so-called fixed stars. We even see the sun only where it was eight minutes ago. It follows, then, that we never see the stars themselves as *real objects* in the heavens, because they are never visible as such where they actually stand. Then what do we perceive? Evidently, a consciously apprehended retinal image.

Rainbows are also phenomena which show that colors are not in the objects, contrary to the seemingly evident testimony of our eyes. The colors of a rainbow seem as objectively real in the mist or in the rain as the colors of

flowers or of other objects. Yet the water drops in which the rainbow is seen to exist are colorless. It is all a matter of the refraction and reflection of light rays. That the water drops are in no way actually colored by the light rays, is obvious from the fact that persons not standing at the proper angle will see no rainbow. A dozen persons may view a spray of water, but only a few, those who stand in the right relation to sun and spray, will see the colors; all others will see only a colorless spray. If the colors were objectively present, independent of, and antecedent to, the perceivers, all should be able to see the colored water. The water drops are thus observed to be colored and not colored at the same time, if rigid perceptionism were correct. The same is true of *mirages* and of the *iridescence* seen in oil films, soap bubbles, sea shells, and in the feathers of many birds. Aristotle and many of the older scholastics knew these facts and on their account made the distinction between 'real' and 'apparent' colors.²

The phenomena of the rising and setting sun and of the distant stars show that we do not perceive these objects themselves in any form of direct perception; and the rainbows and similar phenomena show that their colors are not in the objects. The images of these things, then, can only be *retinal images*; and they are subjective. Nor can we say that the colors are in the air or ether occupying the space between the object and the eye. Air and ether are colorless in this intervening space. If we stand at right angles to the colored object and gaze straight through the intervening space, we perceive no color traveling from the

object to the eye. Where, then, is formal color? Solely in the perceiving organ.

SIGHT: COLOR MIXTURE

There is no 'objective' *white* color in sunlight, although we perceive it frequently. The seven prismatic colors of sunlight, striking the same retinal points of the eye, produce the sensation of white, although there is no 'white' in the spectrum. In fact, all complementary colors do this, as red and green-blue, orange and blue, gold and blue, yellow and indigo-blue, green, yellow and violet. The law of color mixture reads: "For every long wave of the visible spectrum (that is, for every wave not shorter than 563.6 millimicra) a definite short wave can be found so that when the two waves are mixed in appropriate proportions, each component of the mixture will neutralize the chromatic effect of the other and the sensation of *neutral white* will arise; but if the relative strength of the two components is not appropriately adjusted, the neutralization of one component is incomplete and the result of such a mixture is the sensation of an unsaturated color whose tone is determined by that of the stronger component." This law is proved experimentally by means of the *color top or color disk* revolving at rapid speed. The disk or top still retains its original colors; but as the speed is increased the eye perceives a neutral gray. If I take one disk with 170o yellow and 190o indigo and another disk with 300o black and 60o white and revolve them with sufficient speed, both disks will look *exactly alike* in color. The eye sees the same color,

though the disks and their colors have not changed. As it is, the eye sees a color which is *not there* and does *not* perceive the colors which are there. Snow, steam, foam, and clouds appear as white, but they all consist of colorless water particles. The mass of their surfaces simply reflect *all* the colors of sunlight to the eye, and the sensation of 'white' is produced on the retina.

The *contrast box*³ makes colors appear very different to the eye than they (supposedly) are in reality. A colored background is seen through a compartment, and the latter is illuminated with different intensities of filtered lights. Without changing the background in any way, so that its 'objective' color remains the same, yellow can be made to look like an orange-red or a green; bluish-green, like a slightly greenish black; white, like a purplish red or a bluish green or a blue or a gold or even a black. We have here a case of the same color appearing to the eye as a *different* color, and each individual color can, under controlled conditions, be made to look like practically every other color.

If blue and yellow *dry powders* are mixed, the mixture appears as green to the eye, although this gross mixture does not change the original colors in any way. That the powders are still blue and yellow, can be shown by looking at the mixture through a powerful magnifying glass; the blue and yellow particles will be seen to lie in juxtaposition. Where, then, is the green color? Not in the objects, for they remain blue and yellow. Printers make use of this principle in *three-color printing*; red, blue, and yellow, by means of a mere superposition and juxtaposition of colored particles,

give the impression of all colors, although there are no intermediate colors present. The light rays, striking the same retinal elements, produce therein a sensation of colors which are blends of the original color particles. *Filtered light* shows the same effect. Take two pieces of glass, one blue and one yellow, and hold them in such a way that they overlap, but with a space between them. You, looking at the overlapped pieces, see them now as green; but others, viewing them from the side, still see them as blue and yellow. The 'objective' color cannot be blue and yellow and also green at the same time. There is no green in the glass, because the glass did not change; still, that is what you observe. Due to the difference of position, the same objects produce the impression of different colors in the eyes of the observers. And so it is with all other colors. If color were 'objective,' independent of, and antecedent to, the act of perception, we are forced to state that this objective color is 'green' and 'not-green,' 'blue and yellow' and 'not-blue and not-yellow' at the same time.

Stereoscopic color vision shows plainly that the blending of colors takes place in the organ of perception. Fasten a piece of bright blue paper over the one picture of a stereoscope and a bright yellow paper over the other; adjust the distance to the eyes in such a manner that only blue light reaches the one eye and yellow light the other eye. Here, then, we have no blending of colors in the object and no blending of light rays between the papers and the eyes. Gazing fixedly and with equal intensity at both pieces of paper (provided both eyes are practically normal in visual strength), the perception of green will gradually

appear. This is due to the chiasma, or crossing, of the optic nerve bundles of both eyes to the optic centers in the two hemispheres of the brain. This is an instance of *psychological color mixing*, and it may be considered a crucial experiment: the new color, green, is neither a blend in the object, nor in the intervening medium, nor in the single eyes, but is an effect produced by the light rays in the entire perceptive organ of sight, and it is subjective in character. Since the same principle applies to other colors, color as such cannot be objective.

SIGHT: SCOTOPIC AND PHOTOPIC VISION

There are two kinds of receptors in the retina, *rods and cones*, forming a double apparatus of sight. Physiologists have determined that the cones are the organ of high intensity or *photopic* vision, while the rods are the organ of low intensity or *scotopic* vision. The cones are adapted for brightness and the rods for twilight and darkness. The central portion of the human retina is covered with cones, and here direct vision and color perception take place; the peripheral portion of the retina is covered with rods, and here oblique vision and 'rod-white' perception occur. The cones, therefore, translate the light stimuli into colors, and the rods into 'rod-white' luminosity devoid of color. Nocturnal mammals, like mice, bats, and hedgehogs, possess no cones in their retina; they are color-blind, because color vision would be of little use to them at night. For the same reason nocturnal birds have the cones developed in much smaller quantity than diurnal birds.

Here, then, we have a double apparatus, natural and normal in every respect, designed in a most marvelous manner for functioning in brightness and in relative darkness, one for color vision and the other for neutral luminosity vision. Each operates in its own way, producing its own particular *subjective effect* in the perceiver. A simple experiment will show the double effect of the same light rays. Place three electric lamps (preferably with carbon filaments) in a row, connected together in one circuit and standing about a yard apart. Decrease the current until the filaments barely glow. Stand in such a position that only the center bulb is seen in the line of direct vision, while the two outer bulbs are seen by oblique vision only. In a darkened room the center bulb will now appear with a red glow, while the two outer bulbs will show the 'rod-white' neutral luminosity. No matter how quickly you shift your gaze from one lamp to the other, only the one directly viewed will be red; the other two will immediately change to 'rod-white.' You perceive the lamp as 'red' when its rays fall upon the cones, and as 'rod-white' when its rays enter the eyes obliquely and fall upon the rods. Although the lamps do not change color, the position of your eyes and their rod-and-cone construction produce in your retina a continuous change of color. Color, then, is subjective, dependent on the organ of perception for its existence.⁴

SIGHT: ENTOPTIC PHENOMENA

There are numerous phenomena *within the eye itself* which are impossible to explain according to the theory of

objectivity. "Thus, the 'rays' which are such characteristic features of stars, or other bright points in the visual field, are attributable not to the physical luminaries, but to the striated structures of the eye lenses. Halos, surrounding such bright points, are due to the scattering or diffraction of light by cells in the cornea. The '*muscae volitantes*,' which may move across a white paper or open sky area, are representations of tissue fragments floating between the vitreous humor and the retina. Darting and sparkling points, seen against bright backgrounds, correspond with the blood corpuscles which pulse through the retinal capillaries. Under violet illumination, the complex branching formation of the retinal blood vessels become clearly visible. These and many other 'entoptic phenomena' demonstrate that changes in ray patterns within the eye can bring about corresponding modifications of consciousness. Such facts strengthen our belief that the consciousness is adequately determined by the retinal images, without references to preceding stages of the response.

"Certain phenomena of binocular vision also contribute to this conviction. If one of the eyes is pressed out of its normal position, the visual pattern in experience is doubled. A similar effect is noticeable in the case of objects upon which the eyes do not properly converge. In these instances, the stimulus conditions external to the eyes are essentially unmodified, but the normal interrelations of the two retinal images are disturbed."

In cases of retinal detachment, the visual objects in experience are correspondingly distorted; and may even be

doubled or tripled where the receptor layer is folded over upon itself. However, we can go further than this and show that the excitation of the retina, by means other than light, yields corresponding results in the visual-experience field. Thus, pressure produces patches of brilliance, electrical currents yield color patterns, and an alternating magnetic field generates a luminous haze.”⁵

When absolutely all light is excluded from the eyes, as in a totally dark room, the resulting sensation is not that of an ideal black, but of a deep gray. This is sometimes called *idio-retinal light*, produced by the self-activity of the retinal elements.⁶

After-images also show the subjectivity of visual perception. If we keep our eyes fixed on a colored object placed on a black ground, we will notice after a time that the color gradually loses something of its luster. Then, if the eye is suddenly shifted to a white surface, we see an image of the same shape and form with the original object, but of a color complementary to the other. An original red object will thus appear as a green image, and *vice versa*; yellow will appear as violet and blue as orange, and *vice versa*. The same effect can be produced, if the eyes, after viewing the object for a time, are closed and a handkerchief or other opaque thing is pressed tight against the eyes, so as to shut out all light. In this *total darkness and within the closed eyes* an after-image of the original object will appear in perfect outline and colored with the complementary color. If, in the above experiment, the eyes are kept closed, but the handkerchief be taken away, so that light can shine through the lids, this image immediately changes into an

accidental image of the reverse color. Thus, a bright window in daylight will have dark sashes and light panes, when all light is excluded from the eyes; they will appear as light sashes and dark panes, when light is allowed to enter the eyes through the tissues of the eyelids. This phenomenon brings out a very important fact. The *change of color* here takes place absolutely *within the closed eyes*. Where, then, is this color which is so vividly perceived? Not in any object, but in the eye itself. But if *this* color is subjective, the *original* color must be in the eye as subjective also. Any other explanation would mean playing fast and loose with the facts. The 'cause' of the color is assuredly external and objective; but the 'effect' (the formal color) is internal and subjective.

SIGHT: IMAGE PROJECTION AND PERSPECTIVE

Image projection is another fact which proves that vision is subjective. To say that visual images are projected or 'externalized' seems opposed to all experience; it is apparently evident that we behold distant objects at a *distance*. However, consider the implications of the following experiment. While in a dark room, hold a burning taper about two inches away from one eye, a little in front and at the side, so as to insure oblique vision. Keeping the other eye closed, the field of vision will gradually become red. If the taper is moved slowly up and down, while the eye gazes steadily at the wall opposite, an arborescent figure of a dark color on a red field will appear on the wall. This is

the 'choroid figure,' a shadow picture of the retinal arteries and veins upon the seat of vision.

Apparently, this choroid figure is on the wall, and we do not seem to perceive it as present in the eye, although that is the only place where it exists and can be perceived to be. There is no 'objective' red on the wall, nor an arborescent figure; both are 'subjective' perception images within the eye. Is there, then, a process of real 'externalization' or projection? Evidently not; the perception takes place within the eye and stays there. Then how can the red field and the shadow figure be perceived as 'external' on the external wall? Because the perception of the wall itself is not external but internal. In fact, all visual perception is but *retinal imaging consciously apprehended as present*.

The same explanation accounts for perception of objects in *perspective*. Parallel tracks seem to converge; highways vanish to a point in the distance; all objects appear proportionately smaller the farther they are away; a near object looks larger than a distant object of the same size. If we accept the view that we perceive a consciously apprehended retinal image, everything is explained, because light must naturally strike the retinal field according to the angles and laws of perspective. This will also explain the apparent shifting of the countryside when we ride in a car or train or airplane, and the apparent position of the stars in a place where they no longer exist. All of which shows that we do not see the objects themselves; visual perception consists in consciously apprehended retinal imaging.

Such, then, is the case of *critical presentative realism*. If these facts force us to the conclusion that the secondary qualities are subjective in character and not objectively present in nature, independent of, and antecedent to, the act of perception, then rigid perceptionism must be abandoned and critical perceptionism accepted. Whether the facts as presented are convincing, is a matter for the individual to decide.

IS CRITICAL PERCEPTIONISM DISGUISED IDEALISM?

Rigid perceptionists claim that this theory destroys the truth-value of all sense-perception; it is a compromise between idealism and realism and as such has the difficulties of both without the merits of either. They are convinced that critical perceptionism must be a wrong theory, because it is against the *natural evidence of the senses*; the senses tell us plainly that secondary qualities are 'objective.' The answer to this objection is simple. The senses tell us nothing about the objectivity or subjectivity of the secondary qualities; they merely *report the presence of these qualities in our perception*. The senses cannot judge about objects and qualities. It is the *intellect alone* which interprets the data furnished by the senses and gives us a reasoned certitude as to whether these things are internal or external, subjective or objective. If rigid realists are convinced of the objectivity of all qualities, they obtain this conviction through *reason*, not through the mere sense presentation of the organs of perception. Hence, if reason

comes to the conclusion that the secondary qualities are not objective, it does not go contrary to the testimony of the senses, provided the senses themselves furnish the facts which warrant this conclusion.

Rigid realists claim that critical perceptionism leads to *idealism*: if the secondary qualities are subjective, then the primary qualities must also be considered subjective, because we would never be able to know which particular causes produce the particular secondary qualities as effects. Critical perceptionists answer that the matter is not so desperate as this. The intellect has a very simple way of discovering which bodies are the particular causes of particular effects in our sense organs. This way: My body is an integral part of my Ego; I am identified with it, and I perceive it is 'mine.' It is an extended reality, possessing triple dimensions; it possesses extended parts and members, and these I also perceive as mine. This is evidenced by my immediate consciousness, and I cannot doubt this testimony. All this was brought out in proving the real existence of extra-mental reality. Independent of all sight perception, through the *direct contact* of my body with 'other' bodies, it was proved that extended bodies, other than my own, also exist. If my body is real, they are real; if they are not real, mine is not real. I do not need sight or color or sound to prove the real existence and the real extension of extra-Ego bodies. Hence, even if all sight-perceptions be shown to be subjective, I would still have a *reasoned certitude* of extension and extended bodies other than my own, through the *direct and immediate contact* of my own body.

From this to the localization of the causes of the secondary qualities of color, sound, flavor, odor, and temperature, is an easy step. I see a lamp and touch it; I turn on the light with my hand, and it burns; I extinguish the light, and it is dark. It is clear to me that the lamp is the 'cause' of the sensation of light. I see a colored apple; I place my hand over it, and the color is gone; I remove my hand, and the color appears again. My intellect rightly concludes that this particular object, the apple, produced the sensation of color in me. I put a piece of candy in my mouth, and the taste is sweet; I hold a rose to my nose, and the odor is pleasant. If I remove them, the sensation ceases. I hold a bell in my hand, shake it, and I hear a sound; I stop it, and I no longer hear the tone. All this happens as often as I repeat the procedure. I thus know with certitude just what *particular bodies* are the *particular causes* of the secondary qualities which I perceive. Nothing more is needed for the intellect for its causal knowledge of the bodies and of the secondary sense-qualities. Rigid realists, therefore, are wrong when they assert that the denial of the objectivity of these secondary qualities would destroy our certainty of the existence of the external world. Idealism does not follow from critical perceptionism.

AGAIN, RIGID PERCEPTIONISTS CLAIM THAT MAN EXPERIENCES A *natural compulsion* in considering the secondary qualities to be objective; if they are subjective, man must be said to suffer from an *unavoidable illusion*. Critical perceptionists admit that, if there were a *real* mental compulsion here, the

question would be settled in favor of the objectivity of the secondary qualities. Such, however, is not the case; it is only an *apparent* mental compulsion. A real mental compulsion exists in analytical judgments like ' $2 + 2 = 4$ '; or in a principle which states that 'everything must have a sufficient reason for its existence and being'; also in facts perceived in a direct act of consciousness, like the fact that I am writing at this very moment. We cannot doubt the immediate evidence of our reason or of consciousness; to do so would destroy the essential reliability of our powers of knowledge. But when things are *not self-evident*, one cannot speak of a 'necessary' compulsion of our intellectual judgment.

The rigid realists themselves admit that the intellect can and does commit *errors*, in its judgment concerning the objectivity of some qualities. They lay down certain rules and conditions which the intellect must follow in order to guard itself against rash judgments and errors. But this shows plainly that the objectivity of secondary qualities is *not self-evident*; consequently there can be no necessary compulsion on the part of the intellect to judge these qualities to be objective. At best there may be an *apparent* mental compulsion; in that case, though, even a prolonged misjudgment on the part of unreflecting mankind will not justify the conclusion that a revision of our judgment would imply necessary illusion in normal perception. We see this clearly in the case of the judgment of mankind regarding the apparent movement of the sun around the earth. It is only in the last few hundred years that people have realized that the earth moves and not the sun. This revision of our

judgment was due to *science*; our eyes still see no difference between the movement of the sun and the 'noon. But if science can correct an erroneous judgment prevalent from the dawn of the human race without destroying the validity of sense-perception and of human knowledge in this case, there is no reason why it cannot do the same with regard to the objectivity of secondary qualities. Here, too, we have merely an *apparent* mental compulsion of our intellectual judgment. Critical perceptionism, therefore, does not lead to idealism nor does it destroy the essential validity of sense-perception.

This concludes our investigation into the validity of our sense-perception. It has been necessary to wind our way cautiously and laboriously, step by step, through the maze of modern errors back to the common-sense view of *presentative realism*. This we have done. First, it was imperative to expose the fallacy of idealism. Then, we had to establish the existence of extra-mental reality in our own body. Next, the existence of the extra-Ego world of material bodies had to be proved. Further, the pseudo-realism of representationism demanded refutation. Finally, we arrived at the age-old aristotelian-scholastic doctrine of presentative realism; a theory which should never have been abandoned for the excessive dualism of Descartes. It was a very roundabout detour we were forced to make in order to arrive at the solution of this perplexing problem. But the result has vindicated the *spontaneous conviction* of mankind in the reality of the world, and a truth of the greatest epistemological value, namely the *essential validity*

of sense-perception, has been critically proved and philosophically justified.

SUMMARY OF CHAPTER XII

In the question of the objectivity or subjectivity of sense-qualities, we must bear in mind that the facts must dictate the theory.

1. *The Problem of Secondary Qualities.* Rigid and critical perceptionists agree that the *primary* qualities are objective. The former claim that the *secondary* qualities are also objective, while the latter claim that they are subjective. By 'objective' rigid perceptionists mean that these qualities are present in nature, independent of, and antecedent to, the act of perception.

By 'subjective' critical perceptionists mean that these qualities are present neither in the objects nor in the intervening medium, independent of, and antecedent to, the act of perception; they are 'causally' and 'potentially' in the objects, but 'formally' and 'actually' in the perceiver.

2. *Touch, Taste, Smell, Hearing.* 'Hot' and 'cold' are relative to the perceiver's body temperature; temperature does not increase with altitude in the direction of the sun. If flavors and odors were objective, all men and animals should taste and smell these qualities in the same way; these qualities change for the same persons. Sound changes with the relative position of the perceiving ears; if sound were objective, all should hear the same tone without change.

3. *Sight.*

Refraction of Light. Due to refraction, we perceive the sun before it is above the horizon; the sun also appears to change in size, shape, and color, although the sun does not change. Stars are seen, although they are not present where perceived to be. Rainbows are observed in water drops; but the water is really colorless. The same applies to mirages and iridescence.

Color Mixture. White sunlight is not objective. The colors of a color top remain unchanged, but they change for the eye. The contrast box makes colors appear as different. Pigments and filtered lights show blends of color which are not objective. Stereoscopic color vision reveals psychological color mixing which under no circumstances is objective.

Scotopic and Photopic Vision. The rods and cones are a double apparatus of sight; the cones translate light rays into color vision and the rods into neutral luminosity vision. The effects, of course, are subjective.

Entoptic Phenomena. Many phenomena occur within the eye which are apparently objective. After-images can be seen with closed eyes.

Image Projection and Perspective. The choroid figure appears as if projected and externalized, although it is obviously Only an intra-ocular perception. Perspective vision also shows that vision is consciously apprehended retinal imaging.

4. *Disguised Idealism?* Critical perceptionism is not contrary to the natural evidence of the senses: the senses merely report the qualities; it is the intellect which must interpret the data furnished by the senses. It does not endanger the objectivity of the primary qualities, because the extended character of our bodies enables us to know which objects are the causes of our visual perceptions. There is no unavoidable illusion in critical perceptionism due to natural mental compulsion: the facts of perception are the reason why the secondary qualities are considered to be subjective.

The *essential validity* of sense-perception is vindicated and critically established.

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¹ It is next to impossible to enumerate all the works which deal with this subject. The following may be considered representative. Woodworth, *Psychology*; Troland, *Psychophysiology*, 4 vols.; Spindler, *The Sense of Sight*; Ladd-Franklin, *Color and Color Theories*; Hollingworth and Poffenberger, *The Sense of Taste*; Foster and Tinker, *Experiments in Psychology*; Dashill, *Fundamentals of Objective Psychology*; Myers, *Text Book of Experimental*

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2 Aristotle, *De Sensu et Sensibili*, C. 3, fl. 9 sqq. St. Albertus Magnus, *Lit. de Sensu et Sensato*, tr. 2, C. 1; *De Anima*, 1. 2 tr. 3, C. 7; *Summa de Creaturis*, P. II, q. 21, art. 3, part. I. Suarez, *De Anima*, 1. 3, C. 15, fl. 7. Sylvester Maurus, *Quaest. Phil.*, t. III, q. 41

3 For a description of the construction and operation of the contrast box, see II. Gruender, *Experimental Psychology*, pp. 67 if. (Bruce, Milwaukee. 1932).

4 See L. T. Troland, *The Principles of Psychophysiology* (New York: D. Van Nostrand Co., 1930), Vol. II, pp. 70, 71, 117, 118, 179

5 L.. T. Troland, *op. cit.*, Vol. 1, pp. 171—173

6 L. T. Traland, *op. cit.* Vol. II, p. 75

Chapter 13

THE PROBLEM OF THE UNIVERSALS

SECTION II - INTELECTION: IDEAS, JUDGMENTS, REASONING

SO FAR WE HAVE ESTABLISHED THE VALIDITY OF CONSCIOUSNESS and of sense-perception as a source of human knowledge. Our consciousness acquaints us with the various mental states which occur within our own self as 'subjective events,' such as thinking, willing, imagining, striving, emotion, sensation. Sense-perception brings our own body and the external world within the field of knowledge, so that we obtain a cognition of them as 'objective events' through the medium of our sense-organs. But we also have an *intellectual knowledge* of things, and this knowledge manifests itself in ideas, judgments, and reasoning. It will now be our task to examine the validity of our intellectual knowledge.

Our reasoning processes consist of judgments, and these processes cannot be valid, if our judgments are not valid. Judgments, on their part, consist of ideas, and hence cannot be valid, if our ideas are not valid. It will, then, be necessary first of all to submit our *ideas* to a critical investigation of their essential validity before we pass on to the validity of our judgments and then to that of our reasoning.

THE PROBLEM OF THE UNIVERSALS

There is a close connection between the intellect and sense, between intellectual knowledge and sense-knowledge. The proper object of our cognition is the *sensible*. Our senses contact the external world by means of a cognitional image

through which the material, external objects are *perceived*. Thereby the objects become 'present to sense' and also 'present to consciousness,' and they are thus sensuously 'known.' This process is the same for men and brutes, because they are sentient beings.

Man, however, is also an *intellectual* being, and as such has a form of knowledge distinct from sense-perception: man *thinks*. In the presence of this 'percept,' the mind forms a concept.' Since sense and intellect are both faculties of the one, identical Ego, the intellect fashions a 'concept' or 'idea' of the external object perceived by the sense. The intellect now is aware of the existence of the object, and so the object becomes present to sense' and also 'present to intellect' at the same time. It is really the *Ego* that is the active agent of 'perceiving' and 'conceiving' and that forms within itself the 'percept' of sense and the 'concept' of intellect. Our consciousness testifies to this very plainly: I see the thing, I have an idea of the thing. And our experience tells us that our Ego forms the concept of a thing in the intellect after it has had the percept of it in the sense: we first 'perceive' the thing, and then 'conceives it by means of a concept or idea. In other words, our knowledge begins in the senses and ends in the intellect. Intellectual knowledge presupposes sense-knowledge. The materials for our ideas are drawn from the percepts of sense, so that we could have no intellectual knowledge of things, if we did not have sense- knowledge first. Hence the principle: '***Nihil est in intellectu quod prius non fuerit in sensu***; nothing is in the intellect which was not beforehand (in some manner) in the sense.

Sense and intellect, percept and concept, are thus seen to exist in close relationship. Nevertheless, there is a great difference between percept and concept, between sense-knowledge and intellectual knowledge. Both sense and intellect make an 'image,' a 'representation' of the object which is present to them, but the nature of this image or representation is very dissimilar. Things in nature are always singular, individual, concrete, and the sense-image of them depicts them in their *singularity, individuality, and concreteness*, and so this image itself has a content which is singular, individual, and concrete. When the sense perceives, for instance, a man, it will always be a definite man in all his individual characteristics, such as size, shape, color, age, sex, weight, and mannerisms. Not so the intellect. It apprehends that which pertains to man as man. The *intellectual image* retains only that which all men have in common, that which makes a man to be what he is precisely as a member of the *class* of men, leaving aside all those characteristics which distinguish one man from another, like size, shape, color, age, sex, weight, and mannerisms. Instead of depicting the exterior elements, as the sense-image does, the intellectual image represents the elements which constitute the nature of man: man is conceived as a 'rational, sentient, living, corporeal substance.' This idea now fits every single man and all men as a class; it applies to them individually and collectively. To drop the individualizing properties of a thing in this way and retain the elements common to the class is the process of intellectual 'abstraction.' Intellectual images are,

therefore, not singular, individual, and concrete, but *universal, general, and abstract*.¹

In actual sense-perception we have a singular, concrete sense-image which applies only to a single, concrete man; each image is different according to the individual differences existing between the single persons; and each image is restricted according to time and place, depending upon the conditions of time and place prevailing for the individuals perceived. This is not the case with the intellectual image or idea of a man. It is *one* in content, but it applies to *all* men, living and dead, actual and possible; all the individual differences between individual men are eliminated, and the *common element* is represented and expressed; temporal and spatial conditions are absent in the idea, so that it has value for all times and in all places. The idea of 'man' as a 'rational, sentient, living, corporeal substance,' since it is an abstract and universal image of the elements common to all men, contains those elements of man which are *fixed, unchangeable, necessary*: these elements are such that they cannot be missing without man ceasing to be man, because they constitute that which makes him to be what he is a 'man,' and these elements must be and will be found in all men at all times and in all places.

What has just been said is true of all concepts or ideas: they are *abstract and universal*. We have taken the example of 'man,' because it is fairly obvious; any other object will show these characteristics of the idea just as well. Our idea of a 'plant' as a 'non-sentient, living, corporeal substance' applies to the rose, the pumpkin, the elm, the pine, the

chrysanthemum, and to every other plant with equal truth. Our idea of a 'building' fits the home, the business office, the school, the shack, and any other building. Our idea of a 'dog' applies to the mastiff, the bulldog, the greyhound, the poodle, and all other dogs. And so with all other ideas. They apply to every single individual belonging to the class and to the class as a whole. And that is what is meant by a *universal idea*: one that represents some common nature or attribute which can be applied to a *class as a whole* and to *each individual* of that class.

This brings up the question of the *validity of ideas*. Since ideas are abstract, leaving aside all individualizing factors and retaining an attribute or nature common to one and many, they are *universal*. But therein lies a problem. Ideas are supposed to be representations of things as they are in themselves; then universal ideas must also represent things as they are in themselves. But how can they? A universal idea is one whose thought-content (comprehension) applies to a class as a whole and to each and every member belonging to that class. The idea 'man,' for instance, applies in the same way to 'each man' taken singly and to 'all men' taken together as a class. If this universal idea is a true representation of man as he is in reality, it would seem to imply that 'man,' as found in reality, has a nature which is 'single' in each individual and also one in the whole class. The nature of 'man' would be *one* because it applies to the class as a whole; and it would be *multiple*, because it applies to each individual of the class. How can it be *one and multiple* at the same time? It would seem that, if it is one, it could not be multiple; and if it is multiple, it could not

be one. Does this not make our universals essentially invalid? Or how can we reconcile this apparent contradiction in the very nature of the universal ideas? The problem of the universals can be formulated in the question: *How can or do the universals apply validly to things*, so as to give us a genuine knowledge of reality?

IMPORTANCE OF THE PROBLEM

At first sight it might appear that the problem is of trifling significance. But this is not so. If our universal ideas do not give us a true representation of reality, the whole fabric of our *intellectual knowledge is destroyed*. Universal ideas form the warp and woof of this fabric; if they are false representations of reality, our entire intellectual interpretation of reality is false. The judgment is supposed to interpret reality in such a way that the truth of the judgment is a similitude of the truth of the reality expressed in the judgment. If our universal ideas are false, our knowledge of reality is false. Then what becomes of the validity of our intellect and its knowledge? Once we come to the fatal conclusion that our intellect is not a valid source of truth, we have demolished the very foundation of *reason* and of our *reasoning processes*; our reason must be adjudged untrustworthy in its operations and its findings fallacious. Such a conclusion would not only be intellectual suicide for the individual person, but would undermine the very structure of human society in its moral, commercial, economic, political, and international associations. The validity of our intellectual knowledge must be maintained

and vindicated, if man is to live as a human being and not be degraded to the sense-level of the brute.

Then, too, if the validity of our intellectual ideas cannot be upheld, *science* is a chimera. It is not the purpose of science to state individual facts and record individual events. It is of no interest to science to know that 'this particular glass of water has a temperature of 56°; 'this man is white'; 'this plant is ten feet tall'; and so forth. These are individual facts of no importance. What the sciences really attempt to discover are *general truths, permanent facts, necessary relations, universal laws*, which are not only true and valid now and then, here and there, but *always and everywhere*, independent of the individual circumstances and conditions. Such truths, facts, relations, and laws are of incalculable value for mankind in general, since they are the steppingstones of material and intellectual progress. Destroy the validity of these and humanity is poor indeed, because its highest form of knowledge, that of the intellect, is essentially false and unreliable.

Science deals with the *universal*. The basic ideas underlying all scientific thought and investigation are universal. 'Substance, accident, quality, quantity, action, reaction, force, energy, cause, effect, law, principle, condition, experiment, variation, uniformity,' and a host of similar ideas, are all universal ideas. Take these ideas and their validity out of science and it vanishes into nothing. Such ideas are essential to all sciences, and without them the sciences lose all meaning and value. Remove the

universal ideas from the pages of scientific books and nothing but the covers would be left.

The same is true of the *scientific laws* formulated by science as the result of its inductive research into the phenomena of nature. These laws can never be expressed in language except with the aid of universal ideas. Consider, for example, Ohm's law: 'The currents furnished by different galvanic cells, or combinations of cells, are always directly proportional to the electromotive forces existing in the circuits in which the currents flow, and inversely proportional to the total resistances of these circuits.' Here again the essential ideas of the law are universals: 'current,' 'cell,' 'combination,' 'force,' 'circuit,' 'resistance.' Or, take the formula of the index of refraction: 'The ratio of the speed of light in air to its speed in any other medium is called the index of refraction of that medium.' 'Ratio,' 'speed,' 'light,' 'air,' 'medium,' 'index,' 'refraction' – these are all universal ideas. We thus see that the laws of science are expressed by means of universals.

Now, the sciences are supposed to be a true representation of *reality*. If they fail in this, they are useless as a source of knowledge. But they cannot be a true representation of reality, unless the universal ideas, which they constantly employ, themselves *represent reality* in a valid manner. The sciences, then, stand and fall with the universals. The problem of the universals, therefore, is not an idle speculation of idle minds, as many scientists and philosophers have asserted, but a vital issue involving the very existence and validity of science itself.

This brings us again to the question: Is there a *reality in nature* which corresponds to our universal idea? If so, how can our universal idea be a correct representation of this reality, considering the fact that it expresses a common nature or attribute which can be applied to a *class as a whole* and *to each individual* of that class? Since the universal has a thought-content which is one-in-many, does this mean that the reality represented by it is also 'one-in-many,' so that all members of a class share in a single nature or attribute common to them all together? And if this is not the case, can the universal be said to interpret reality correctly? How can we harmonize the *individual things* with the *common* essence expressed in the universal idea?

The problem is not simple. On the one hand, we have the apparently obvious fact that the things in the world are *individuals* and possess a single essence of their own. Every individual is a distinct being in itself, having a nature which is not shared by any other being; there are, then, as many distinct natures as there are individuals in existence. There may be two billion men on the globe; but each man is an individual human being in his own right, complete in every respect in his nature, so that we have two billion distinct human natures existing as separate realities, and not merely one single human nature shared by the two billion men in common. This *singularity* of the individual must be upheld. On the other hand, our universal idea is conceived as something which represents a nature or attribute which is one in the individual and yet *common to all* as a class. This would seem to be in contradiction to reality as just

pointed out. The world consists of 'individuals,' not of 'universal essences.' But if there are not 'universal essences' in the world, common to all the members of a class, the universal idea seems manifestly false. And yet, we must maintain the essential validity of the universal idea, otherwise we will undermine the foundations of our intellectual knowledge and of the sciences. How can we reconcile the seeming antinomy between reality and the universal idea?

HISTORY OF THE PROBLEM

The problem of the universals has vexed the minds of thinkers from the beginning of philosophy in Greece up to the present time. *Plato* (427 or 428 to about 348 B.C.) brought the problem into prominence by his doctrine of the *Ideas*. *Socrates* (469—399 B.C.) had taught that the 'concept' of a thing is necessary in order to know the reality of a thing. *Plato* concluded that the 'concept' or Idea is the only reality which is permanent and unchangeable in the continuous flux of concrete phenomena. The Idea is thus the very essence of the reality of 'being' and of the reality of scientific 'knowledge.' The ideas are, therefore, not only *objects of thought*, but also *realities in themselves*; they not only exist as universals in the mind, but also as universals in *nature*. Subjectively and objectively they are truly universal. The concepts of our intellect are universal, because they represent the universal Ideas which exist independently of the mind in a world of their own. The Ideas are real things, beings, essences, which subsist entirely outside the physical

world of concrete phenomena which we see around us, in a *transcendental world* of their own, in a heavenly sphere of unchangeable existence, where they have an eternal being.

The physical objects of the material universe are nothing but faint copies of these eternal Ideas, and such objects, since they are singular in essence and in a continual state of change, cannot account for the permanent and universal concepts in our minds; our universal concepts, and the scientific knowledge based on them, can derive their origin only from the eternal and universal Ideas. Man, therefore, must have had a *previous* existence in which he possessed a direct intuition of these Ideas, and his present universal concepts are but the products of a *reminiscence* of his former contemplation of these Ideas in the transcendental realm. There are, then, three distinct worlds for Plato: the world of absolute and eternal Ideas, the world of concrete, ever-changing phenomena (the universe), and the world of universal concepts in our mind. For every single universal concept in our mind there exists a corresponding universal Idea which has its own being in this noumenal world, because our concepts are merely intellectual copies or reproductions of them. These Ideas are *the original* universals, prior in existence to the physical world and to our universal concepts. Our universal concepts are valid, therefore, because they are a faithful representation of reality, namely of the reality of the Ideas which are themselves universal and eternal. By means of this unique theory Plato attempted to show that our universal concepts or ideas have objective value and can give us true scientific knowledge.

Aristotle (384—322 B.C.) realized that Plato's theory was without any basis in fact and that his 'world of Ideas' was pure fiction. The problem would have to be solved without the aid of such a fanciful dreamland of isolated Ideas, because it removed the universals completely from the sense-world to which they are supposed to apply. The reality to which our universal ideas correspond must be present in the things of the sense-world in *some manner*. Plato maintained that our intellect first acquires a knowledge of the Ideas and from them acquires a knowledge of the individual objects in nature; Aristotle reversed the process, claiming that we form our universal ideas from the *sense-impressions* of the external phenomena. Plato considered the Ideas as possessing an existence independent of the sense-world; Aristotle denied such a separate world of Ideas and placed the objective content of our universal concepts in the individual objects existing in nature. Plato attributed a formal universality to the Ideas in their very being; Aristotle taught that there is no universality of being in nature but only individual essences, and the 'universality' of the universal is merely a *logical mode* of our concepts existing *in the mind alone*. In other words, the universal *as a universal* exists only in the mind; the things themselves, of which our concepts are a representation and which the mind universalizes, are individual beings.

Each individual being has its own individual essence, endowed with numerous properties and attributes not found in the others in the same way, so that it is numerically single and separate; but each individual of a certain class or

type possesses an essence which is *similar* to that of every other member of that class or type with the similarity of a perfect likeness, so that the intellect grasps this perfectly similar essence, leaving the individualizing characteristics aside, and *universalizes* it in a single idea. The intellect considers this similar essence as being 'one-in-many,' as being a common class-nature, although it realizes that in reality itself these essences are all individual and distinct. The foundation for this universality of the universal idea is thus seen to consist in the perfect *similarity* of the essences, after they have been divested of the individualizing differences existing between them. This mental process of 'universalizing' the individual essences is, then, not an arbitrary process of the mind, but is grounded in the similarity of these individual essences themselves; being similar, they are expressed in a universal idea. The content of the universal idea is real in nature, because it represents the reality of each individual essence; but the universality of the universal idea is mental, because the individual essence is itself not universal in nature. While Plato advocated an *extreme realism*, Aristotle proposed a *moderate realism*, thereby safeguarding both the validity of the universal idea and the reality of the individual essences.

The problem now rested until the beginning of medieval philosophy. Except for a few sections, the writings of Plato and Aristotle were unknown to Western Europe, having been lost in the disintegration and downfall of the Roman Empire. A passage in the *Isagoge of Porphyry* (233—304), the Neo-Platonist, aroused the interest of medieval thinkers concerning the universal ideas and the reality

corresponding to them. Porphyry proposed a *triple problem*: Do the generic and specific concepts (universals) exist in the real world, or are they mere products of the intellect? If they are extra-mentally real, are they corporeal or incorporeal things? Are they realized in the concrete individuals of the sense-world or outside and separate from them?² It was the first of these questions of Porphyry which the early medieval philosophers tried to answer. Once the question was raised, a controversy ensued which lasted three hundred years before a conclusive answer was found.

From the very outset the tendency of thought was toward *extreme realism*, but it was not always toward the Platonic type. The Ideas of Plato were universal realities which existed in a separate world of their own, entirely distinct from the individual essences or things in nature. *Empiric* ultra-realism placed the universal reality *in the things themselves*, in physical nature around us. All members of a class possess *one single essence* which is common to them all and in which all share equally, so that they actually have a common class-essence. The individuals no longer possess their own distinct essence, numerically different from that of the other members of the class, but all together possess a single identical essence which is strictly a *universal essence*. The difference between individuals consists merely in *accidentals*, in 'individuating notes' (*notae individuanes*), such as form, figure, place, time, ancestry, country, and name. All men, for instance, form together a single universal essence, humanity; in strict truth, there are no 'men' but only a 'universal man.' Pressed to its logical conclusion, it would lead to the

doctrine that all things and persons are a single 'universal being', since 'being' is also a universal idea; and this would be *pantheism*. If medieval empiric ultra-realists refused to take this final step, it was mainly due to their religious beliefs. *John Scotus Eriugena* (born between 800 and 815; died after 877), however, passed the boundary line and taught an undisguised pantheism. *William of Champeaux* (1070—1120), was an empiric ultra-realist, while *Bernard of Chartres* (died about 1130), *Theoderic of Chartres* (died 1155) and *William of Conches* (1080—1154) were ultra-realists of a type which resembled Plato.

Some of the advocates of modern *critical realism* are ultra-realistic in their interpretation of the 'essences' we perceive. These 'essences' are considered as 'universal,' independent of the thinking mind; they bear a close resemblance to Plato's Ideas. Another type of extreme realism is found in *monism*. According to monism, there exists but a single principle of being, constituting all things. Monism, in the strict sense, considers this principle of being as numerically one, uncreated, eternal, and real. It is frequently called the *Absolute*; whether in a pantheistic or naturalistic sense, depends upon the interpretations of the individual philosopher. Others speak of the 'absolute Ego,' 'absolute universal consciousness,' 'cosmic universal idea,' 'universal energy,' 'universal actuality,' 'universal will,' 'the unknown,' and so forth. The Absolute embraces within itself everything that exists: the ideal and the real, thought and thing, mind and matter, spirit and nature, the logical and the ontological. These things are not really distinct and different entities; they are but parts, forms, modes,

manifestations, or appearances of the Absolute; they are identified in the Absolute, and the Absolute is self-identical in them all. The Absolute undergoes an eternal and necessary *evolution* by means of a process of self-determination, which makes it assume these various forms or modes. Monism is thus opposed to *dualism*, which affirms the essential distinction between God and world, mind and matter, living and non-living beings, and to *pluralism*, which asserts that reality consists of numerous individual substances and not of one sole absolute being. *Spinoza, Fichte, Schelling, Hegel, Schopenhauer, v. Hartmann, Bradley*, and many others, were monists. In as much as the Absolute is a nature which is 'one-in-many,' it is universal; and since this universality is extra-mental, monism is a form of extreme realism.

Nominalists deny that the reality corresponding to our universal ideas is in any way universal in *nature* and even deny that our ideas themselves are universal; only the names are universal. We have collective ideas or images and give them common names, so that we merely designate or 'label' the individuals with the same name; but there are no universal ideas in the intellect which correspond to these universal names. This theory, as will be noted, is the very opposite of extreme realism. Representative medieval nominalists are *Roscelin* (born about the middle of the eleventh century, and died about 1100), *Berengar of Tours* (999—1088), *Adelard of Bath* (beginning of twelfth century), and *Walter of Mortagne* (died 1174). It is more than doubtful, however, whether these men should be classed as nominalists in the present meaning of the term

and in the sense as outlined above. Their position was *negative*; they opposed the extreme realism advocated by many of their contemporaries without making much of an attempt to give a positive solution of the problem. The phrasing of their thoughts sounded nominalistic, but they scarcely intended more than a refutation of the doctrine of extreme realism. Their views were only a tentative groping for a solution, pointing future philosophers in the right direction; they themselves were content with showing the deficiencies of ultra-realism.

Nominalism proper is the outgrowth of sensism, empiricism, and materialism, in as much as these theories assert that intellectual knowledge is only a refined sense-knowledge. Since the senses can perceive nothing but the individuals in the sense-world, our intellect can fashion ideas only of individual things; hence, our ideas are really singular, not universal. We indeed have 'general images' of a dog, of a man, of a tree, of a fish, and our so-called universal ideas express such 'general images'; but strictly 'universal' ideas which would represent a common element or attribute as one-in-many, are non-existent in the mind. They maintained a universality in the name and nothing more. This theory was upheld by *Hobbes* (1588—1679), *Locke* (1632—1704), *Berkeley* (1685—1753), *Hume* (1711—1776), *John Stuart Mill* (1806—1873), *Bain* (1818—1903), *Spencer* (1820—1903), *Huxley* (1825—1895), *Sully* (1842—1923), *Herbart* (1776-1841), *Wundt* (1832—1920), *Condillac* (1715—1780), *Comte* (1798—1857), *Taine* (1828—1893), and many others up to our present day. Since many *neo-realists* and *critical realists* are materialists,

identifying mind with brain, their theory is more or less nominalistic. While the theories propounded by these thinkers differ on many points, they all agree in considering our intellectual knowledge as nothing more than a mere piecing together of sense-images to which we give a common name or 'label.' The intellect possesses no higher power of 'abstraction,' enabling it to grasp the essences underlying the external phenomena of things and expressing them in universal ideas.

Conceptualism is another theory which developed out of the problem of the universals. It is closer to the correct solution than nominalism, but it falls short of the goal. In opposition to the nominalists, conceptualists defend the universality of ideas in the mind. Like the nominalists they deny the external reality of the universals in nature; but, unlike the nominalists, they maintain that our universal 'names' are expressions of genuinely universal 'ideas,' so that the latter actually represent to the mind an essence which is one-common-to-many. The main point in conceptualism, however, is the contention that the content of our universal ideas is *not realized* in any form whatever in the *individual sense-objects*: there is no foundation in the things themselves which would justify the intellect in forming universal ideas. Our universal ideas are thus purely subjective products of the mind without a correlative in nature in other words, there is nothing in the individuals in nature which is genuinely represented by these universal ideas. This, of course, gives to the universals only a strictly intra-mental significance; as 'universals' they have no objective value. Among the medieval philosophers it is

customary to class *Peter Abelard* (1079—1142) and *Gilbert de la Porrée* (1076—1154) as conceptualists. But here again, the defective phrasing of their thoughts and the lack of a complete understanding of the implications contained in their expressions urge historians³ to class them rather as precursors of moderate realism than defenders of conceptualism proper. The case is different with *William of Ockam* (died about 1347). The problem of the universals had already been solved in his day, and he opposed this solution with a doctrine of his own which was really conceptualistic.

Modern conceptualism is the offspring of idealism. *Kant* (1724—1804) and his followers are the protagonists of this theory. Kant actually tried to prove the validity of our universal ideas by showing that the categories of the understanding are applicable to the data of sense-intuitions; but his interpretation of the manner in which our universal ideas are formed from these intuitions of sense make them invalid as representations of reality. According to him the data of sense are united with the pure categories of the understanding. These categories, however, are *innate a priori forms* of the understanding and are in no way derived from sense-intuitions. The mind superimposes these categories upon the data of sense, and now we apprehend in these combined products of sense-data and categories relations which are ‘universal.’ We do not derive our universal ideas by means of abstraction from the sense-data themselves; the universality of the idea is exclusively the product of the intellect, without a foundation in the extra-mental reality of the things in nature. In fact, the things in

nature are noumena which are forever unknown and unknowable to us. Our universal ideas thus have no reality corresponding to them in the outside world and are mere creations of the mind; and that is the theory of conceptualism.

Pragmatists are also to a great extent conceptualists. For many of them the things of the physical world are not 'independent realities,' and we can never know reality as it is in itself; the 'category of transperceptual reality' is after all only 'an intra-experiential affair.' Our abstract concepts are looked upon as 'man-made products' and as 'artificial mental things.' Truth is relative to the individual mind, and all knowledge is valid so far as it satisfies human needs. That there can be *no objective value* to our universal ideas in such a system is obvious, *James, Schiller, Bergson, Dewey*, and their followers all subscribe to this personal 'cash-value' theory of truth and reality. This, however, is the viewpoint of conceptualism, since it robs our universal ideas of an objective foundation in outside reality.

Due to the constant friction of minds in the controversy over universals, a theory of moderate realism gradually emerged toward the end of the twelfth century which satisfied everyone as the correct solution. *John of Salisbury* (died 1180) explained the validity of the universals in its essentials according to the spirit of Aristotle. *Albert the Great* (born 1193 [or 1206, or 1207]; died 1280) formulated a complete solution along aristotelian lines. It remained, however, for *St. Thomas Aquinas* (1225—1274) to search into the problem with such penetration, clarity, and brilliance of thought that this vexing question was

considered to have received its conclusive and ultimate answer. Against *extreme realism* he maintained that the universals do not exist as 'realities' outside the mind, neither in a world of their own nor in the universe of sense-objects. If extreme realism were correct, we could not explain the 'individuality' of the physical things. Against *nominalism* he maintained that the universals are more than universal 'names'; our ideas are genuinely universal in the mind. If nominalism were correct, our intellectual knowledge would not differ from sense-knowledge. In giving his solution, he maintained that our universal ideas have more than a 'subjective value' for the mind; they are really representations of 'extra-mental reality.' He agreed with extreme realism that there must be *some objective reality* outside the mind which the universals represent; and he agreed with conceptualism that this objective reality could not consist in *universal essences* outside the mind.

Each of these other systems has an element of truth and an element of error. *Moderate realism* retains the truth and eliminates the error of all. The separate essence and existence of every individual being in nature must be upheld inviolably, because nothing exists in nature but *individuals*; this excludes all universal essences. But while nature consists of individual essences, these individuals form *natural classes*, for instance, fishes, birds, mammals, men, animals, plants, bodies, substances.

The mind apprehends that which the senses cannot perceive, namely the essence which is *not identical* (as the extreme realists claim) but *similar with a perfect likeness* in each individual of a natural class. It is because of this

perfect likeness that the intellect recognizes the individuals as belonging to a class and groups them together in a 'universal' idea. This *similarity* of the individual essences constitutes the objective reason or foundation for the *universality* of the class-idea in the mind, so that the mind is entitled to 'universalize' the individual essence. St. Thomas summed up his doctrine in the famous principle: 'Universals are *formally* (i.e., strictly, as universals) in the mind, but *fundamentally* in the things themselves.' As will be noted, this solution of the problem is in full accord with the original interpretation of Aristotle, and henceforth historians have called it the 'aristotelian-thomistic,' or moderate, realism. It is opposed to ultra-realism, nominalism, and conceptualism.

There are, then, four systems of thought which claim to give an adequate account of the universals: ultra-realism (extreme realism), nominalism, conceptualism, and moderate realism. We must now investigate them.

SUMMARY OF CHAPTER XIII

Our intellectual knowledge consists of ideas, judgments, and reasoning. In establishing their truth-value, we must begin with the validity of ideas.

1. *The Problem of the Universals.* Our intellect derives its knowledge originally from the senses: concepts follow percepts. Concepts or ideas are intellectual representations or images of things. While the sense-image is singular, individual, and concrete, *the idea is universal, general, and abstract*; it is not restricted, like the sense-image, by conditions of time and place, but is *fixed, unchangeable, and necessary* in its content. The content of the idea is 'one-in-many,' i.e., it represents some common nature or attribute which can be applied to a class as a whole and to each individual of that class.

But therein lies the problem of its validity. Since universal ideas are predicated of individuals and also represent the *class-essence*, it would seem to follow that class-essences as such must either exist in nature or that the universals do not faithfully represent reality. Either alternative involves serious difficulties.

2. *Importance of the Problem.* If our universal ideas are not a faithful representation of reality, the foundation of *reason* and of our *reasoning processes* is destroyed. *Science* is concerned with general truths, permanent facts, necessary relations, and universal laws; all this presupposes the validity of universal ideas. The value of science as a true representation of reality thus depends upon the truth-value

of the universals. But how can we harmonize the *individual* things of nature with the *necessary* and common essence expressed in the universal idea?

3. *History of the Problem.* To safeguard the necessary and universal character of scientific knowledge, *Plato* maintained that for each universal concept of the mind there exists a corresponding universal Idea as a reality in a noumenal world outside the mind and outside the physical universe. *Aristotle* claimed that the mind derives its universal ideas from the individual sense-natures, due to their similarity; he thus advocated a *moderate realism* in opposition to *Plato's extreme realism*.

Medieval *empiric ultra-realism*, in contradistinction to *Plato*, placed the universal essences in the physical world, so that all individuals of a class share in this common nature or essence this again was ultra-realism. Others disputed this, by disclaiming all universality; they were nominalists, since only the name or word was considered universal. Conceptualists, on the other hand, asserted that our ideas are truly universal, but there is nothing in the individual things to justify this 'universalization' on the part of the mind. *St. Thomas Aquinas*, following *Aristotle*, found the justification for the process of universalizing in the *similarity of nature* existing in the individuals and formulated the solution in the principle: 'Universals are formally in the mind, but fundamentally in the things themselves.'

We thus have four theories concerning the universals: ultrarealism, nominalism, conceptualism, and moderate realism.

READINGS

M. De Wulf, *History of Medieval Philosophy*, 1909, Vol. I, pp. 150-198; 321, 322; Will. Turner, *History of Philosophy*, 1903, pp. 264-380; I. Rickaby, *op. cit.*, Part II, Ch. IV; P. Coffey, *op. cit.*, Vol. I, Chs. IX-XII.

1 For a more detailed differentiation between sense-image and intellectual image, see the author's *Science of Correct Thinking* (Bruce, Milwaukee), pp. 24 ff

2 “de generibus et speciebus illud quidem sive subsistant, sive in solis nudis intellectibus posita sint, sive subsistentia corporalia sint an incorporalia, et utrum separata a sensibilibus an in sensibilibus posita et circa haec consistentia, dicere recusabo: altissimum enim negotium est hujusmodi et majoris egens inquisitionis.”

3 See M. de Wulf, *History of Medieval Philosophy*, tr. by P. Coffey, third ed. (Longmans, Green, and Co.), pp. 191—195. 118

Chapter 14

THE TRUTH-VALUE OF THE UNIVERSALS

THE VALIDITY OF OUR INTELLECTUAL KNOWLEDGE DEPENDS ON THE truth-value of the universals. The problem is based on the apparently evident principle that, when we know an object, we must know the object as it is, or our knowledge is false. If this principle is interpreted rigidly, there must exist an extra-mental universal object corresponding to our universal idea; that would mean *extreme realism*. If we deny not only the extra-mental universal object but also the existence of the universal idea in the intellect, we have *nominalism*. In order to avoid the difficulties of extreme realism and nominalism, we may reject the principle that our knowledge must correspond in every way to the object. If we deny the principle of correspondence altogether and assert that we have universal ideas, but that they are pure fictions of the mind, without any foundation whatever in the extra-mental objects, we subscribe to *conceptualism*. We may, however, accept the principle that an extra-mental object must exist with which our universal idea corresponds, but that it need not exist in the same 'manner' in which the mind knows it; this view, which accepts universal ideas in the mind, with a foundation in the extra-

mental individual objects to account for their universality in cognition, is *moderate realism*. We maintain that moderate realism alone correctly solves the problem.

CRITIQUE OF EXTREME REALISM

According to the ultra-realistic view, our universal ideas are representations of objects which are *as such* objectively, extra-mentally, *formally* universal *in themselves*. Universal ideas are supposed to have a content which is 'one-in-many,' because the objects themselves are essences which are 'one-in-many.' This theory rests on the principle that our ideas must correspond in every respect to the objects in order to be true knowledge. For this theory of extreme realism to be correct it would be necessary for the ultra-realists to prove that an *absolute* correspondence between thought and thing is required for the truth of knowledge. This, however, they cannot prove.

As a matter of fact, all knowledge is in the knower according to the nature of the knower. In sense-perception knowledge is obtained according to the character of the individual sense-organ which perceives the object, and each sense reacts in its own way to its respective stimulus. The eye, for instance, reacts to light waves, but not to sounds or flavors or odors or temperature; the ear reacts only to sound waves, but not to other stimuli; and the same is true of the other senses. No single sense conveys a complete picture of the object to the mind; nor do all the senses taken together. Furthermore, in our inquiry into the truth-value of sense-perception we have noticed that the objects

do not correspond in absolute fashion to the perceptions of them which take place in our sense-organs. The *manner* in which objects *exist* is somewhat different from the *manner* in which they are *perceived*. This is simply due to the fact that the percept is a 'vital' similitude of the object, and it must conform to the nature of the perceiver. Just as a photograph, while it does not resemble the object in every respect, is a true representation of the thing photographed, so sense-knowledge is a true, though an inadequate and incomplete, representation of the thing perceived. But if sense-knowledge is true, without the necessity of an absolute correspondence between its manner of representation and the object's manner of existence, there is no reason for demanding such an absolute correspondence between the intellectual idea and the object it represents. The intellect could thus group a number of similar individuals under the class-notion of a universal idea, although these objects do not exist as *universals* outside the mind; the manner of representation would be different from the manner of existence, but the *content* of the idea would bear a faithful resemblance to the object itself as it exists in nature. Correspondence between idea and object there must be; but it need not be a complete and absolute correspondence *in every respect*. Hence, the reason which prompted the ultra-realists to postulate the existence of universal objects or essences is seen to be erroneous.

Again, there is *no empirical evidence* whatever for the existence of universal objects or essences outside the mind; it is a pure assumption. The data neither of internal nor of

external experience reveal in any way the existence of an object or essence which could be said to be 'one-common-to-many.' Our experience tells us clearly that individual men, trees, animals, stones, metals, and similar objects, exist in nature; but nowhere do we find anything that would correspond to our idea of a universal man, or of a universal tree, or of a universal animal, or of a universal stone, or of a universal metal, and so on. The only actual things we know are single, *individual* objects, not universal natures and essences; and there is nothing in nature to indicate the existence of such universal entities. Not only do the objects in nature appear as individuals; they also *act* as such. Nothing is clearer to us 'through our experience than the fact that we are individual men in our own right; but of universal beings, for instance, of a universal man or humanity, we have no experience at all. Then why accept something for which no objective evidence can be discovered within or outside us?

After this general argument, we must turn our attention to the various types of ultra-realism.

Platonic ultra-realism leads to evident absurdities; hence, it must be false.

We must bear in mind that, according to this theory, the universal essences are *in reality* as our universal ideas are *in the intellect*; in other words, they *really exist* in the same manner as we *conceive* them. Let us see just what this means.

We possess generic universal ideas, like 'animal,' 'organism,' 'body,' 'substance.' By 'animal' we mean 'a sentient organism.' Our idea does not state whether this

sentient organism is 'rational' or 'non-rational'; the distinction is omitted, so that the definition applies to both the rational and non-rational animals, to men and brutes, but the idea of 'animal' is *conceived as being neither rational nor non-rational*. And that is precisely the way in which the Platonic Idea or essence of 'animal' must exist: it is neither rational nor non-rational, but indifferent. That, however, is impossible. The terms 'rational' and 'non-rational' are contradictory and mutually exclusive. An existent thing must be either one or the other; it cannot be both nor can it be neither. If it is 'rational,' it cannot be 'non-rational,' and if it is 'non-rational,' it cannot be 'rational'; and if it is anything at all, it must be either 'rational' or 'non-rational': otherwise the Principle of Contradiction would be violated. Since, then, the Platonic Idea or essence of 'animal' would be neither a rational nor a non-rational entity, it violates the Principle of Contradiction and is thus an absurdity. And if it is stated that this essence is both rational and non-rational, because our idea of 'animal' applies to rational men and non-rational brutes, it would again violate the Principle of Contradiction, because no entity can be both rational and non-rational at the same time. To state that the universal essence of 'animal' is 'rational' (but not 'non-rational'), would exclude all brutes from this universal essence; and that is inadmissible, because the universal idea of 'animal' in our intellect applies also to the brutes. And it would be equally inadmissible to accept this universal essence as 'non-rational' (but not 'rational'), because then all men would be excluded, although they are included in the universal idea

of 'animal' in our intellect. We thus see that the Platonic Ideas or essences either do not correspond to the universal ideas as we have them or they violate the Principle of Contradiction.

Besides, many Platonic essences would exist as realities although they possess *no positive entity*. 'Sickness,' for instance, is a universal idea, applying to all sicknesses as a class and to each particular sickness as an individual case. But 'sickness' is nothing positive; it is a non-entity, a mere privation, because it is the absence of health in someone who should normally be healthy. Although it lacks reality and entity, it would have to exist as a positive essence in the Platonic world of Ideas. But a non-entity cannot exist without being an entity; a nonentity, however, which is an entity, is a contradiction in itself. What has been said here of 'sickness' applies with equal force to all negative and privative ideas, as 'darkness,' 'lameness,' 'insanity,' 'death,' 'absent-mindedness,' 'blindness,' and the like.

Platonic ultra-realism is thus seen to be untenable, because it is self-contradictory. The noumenal world of Ideas is a fiction. Since the 'essence' or 'datum' of *critical realism*, as interpreted by some of its proponents, is extra-mentally 'universal,' outside the conditions of time and space, it is similar to Plato's Idea and as such is also self-contradictory.

EMPIRIC ULTRA-REALISM, AND ANY EXTREME REALISM WHICH follows its fundamental principle, cannot escape absurd consequences. It maintains that the universal essences

exist, not in a Platonic noumenal world, but *in the individuals themselves*. The consequences are fatal to the theory.

According to this view, a numerically single universal nature, corresponding to the universal idea in our intellect, exists in the individual members of a class; this universal nature or essence is thus a being which is really and actually 'one-in-many.' However, this universal nature must be either *really and only one* (universal) in all the individuals, so that they differ in nothing but accidentals, like color, shape, acts, etc.; or this nature must be *individuated* in each member of the class, so that the individuals are different from each other by possessing a complete individual nature distinct from that of the others.

Suppose we accept the first alternative. It would follow, for instance, that there are no 'individual men' in the world, but only a single 'universal man': we would have 'man-in-general,' but no 'individual human natures.' In that case the 'universal man' would indeed be one and universal, but it would not be '*one-in-many*'; as such there would be no correspondence between our idea and this nature, because our idea represents the nature as being present in all and in each. Besides, such a view is contrary to all our *experience*. Our experience testifies beyond any doubt that we possess a distinct human nature of our own. Each of us has his own body, his own mind, his own thoughts and volitions and emotions and perceptions and loves and hates and ailments. We are conscious that we do not possess a single universal human nature in common with all other men, so that together we are a numerically single 'universal

man.' To assert the contrary is to make our most intimate experience nothing but an illusion.

Then let us accept the second alternative, namely, that this universal nature or essence is *individuated* in each member of the class, giving to each a complete individual nature distinct from that of the others. In that case the *unity and universality* of the supposedly 'universal nature' would be destroyed. There would indeed be *many* individual natures, but there would not be 'one-in-many.' No matter which way the universal nature or essence is viewed and interpreted, it can never be '*one-in-many*' as an existing reality: it will either be 'one' and not 'many'; or it will be 'many' and not 'one.' To assert that it could be 'one' and 'many,' universal and individual, at the same time, is a contradiction in terms.

Logically, this form of ultra-realism, like any form of extreme realism, leads to *monism* and *pantheism*. If the specific nature of man is really universal and one in all men, then the generic nature of 'animal' must be one for all men and brutes taken together; men and brutes would no longer be distinct in nature, but form one 'universal animal.' Animals and plants would form one 'universal living being.' All living beings and inorganic substances would form one 'universal material substance. All material and immaterial substances would form one 'universal substance.' All substances and accidents would form one 'universal being.' There would be no *individuals or classes* at all, but a single reality and being: that is monism. And since God and the world agree in the concept of 'being,' either God must be identical with the world, or the world identical with God:

that is pantheism. All individuality of things is destroyed in this way; and thus the fundamental tenet of this form of ultra-realism, namely that the universal essences are found *in the individuals*, is abandoned. The theory has destroyed itself.

NOR IS *MONISTIC ULTRA-REALISM* CAPABLE OF AVOIDING ABSURDITY and contradiction within its theory. Monism, as a theory of being, belongs to ontology and cosmology, separate departments of philosophy; here it will be treated merely as a possible explanation of the validity of our universal ideas.

Monism, whether pantheistic or naturalistic, states that there exists but 'one sole reality,' common to all things; the things in the world are but parts, modes, or manifestations of the Absolute in its process of evolution. This, however, is contrary *to experience*. For one thing, we ourselves are conscious that we are *individuals* and subsisting *substances* in our own right, and not mere parts or modes or appearances or manifestations of one single reality. We are unitary beings, closed off in our entity from other beings, the subjects and causes of our own actions and reactions, and our personal Ego is clearly perceived to be distinct in its consciousness from that of other Egos. Our body, too, manifests itself to our minds as being different in entity from other bodies in the universe; it acts upon them and is acted upon by them, and in no way is it ever perceived to be one in being with them. This is unintelligible and inexplicable in the theory that all things form a single absolute being in which all are identified.

If monism were true, the electron, the stone, the amoeba, the elm, the mosquito, the whale, man, the sun, in fact *all mundane objects*, would consist of one self-identical reality, forming a single being and a single nature. In that case, however, our *consciousness* should reveal this absolute identity of nature between ourselves and the things in the universe, and it should be incapable of making an objective distinction between mind and matter, thought and thing, man and the world, the Ego and the non-Ego. Our empirical knowledge, whether obtained through external or internal experience, testifies that the world consists of a *plurality* of individual beings and not of a universal and absolute reality which is one in them all. *E. G. Spaulding* rightly observes that the empirical method “is a procedure that leads to the conclusion that monism of any kind can be grounded only artificially, and that a pluralism of many entities, of many kinds, in many different *loci*, is the only ontology which stands the test of empirical investigation.”¹ Either the Absolute, then, does not exist as monism claims, or our entire knowledge is essentially an illusion. The latter alternative we cannot accept without falling into skepticism. Consequently, the monistic Absolute must be rejected as a mere assumption.

Ultra-realism, in whatever form, is thus seen to be utterly at variance with experience and reason; as such it fails to solve the problem of the universals.

CRITIQUE OF NOMINALISM

Nominalism is the reverse of ultra-realism: it denies the universal altogether. The essences or natures are not extra-mentally universal, nor are our ideas intra-mentally universal. Our ideas are as individual as the things we perceive with our senses. Modern empiricists consider our intellectual knowledge to be nothing more than a refined sort of sense-knowledge; this being so, it is obvious that our ideas cannot really be 'universal,' representing a content which is strictly 'one-in-many,' but must be as individual in character as the sense-image itself. At best, we can have 'general images' or 'composite images,' a product of several singular sense-images fused together into a vague, indefinite representation, something like the composite photograph resulting from a number of superimposed plates. The only thing that is strictly universal is the *name*, or *word*, and that is used merely as a 'label' to designate a number of objects grouped according to some arbitrary pattern. Thus names or words, nominalists say, designate and represent *individuals or a collection of individuals*, but never represent anything which is mentally applicable to a class as a whole and to each individual belonging to that class. But in this they are wrong. A little reflection will prove this.

Names and words are *signs* and have a *meaning*; they are signs of *ideas* and they derive their meaning from the *content* of the ideas for which they stand. And since the ideas stand for things, names and words are also used to designate things. Now, if we can show that names and words are used to designate something which is conceived by the intellect as being 'one-common-to-many,' we thereby

prove that we really have *universal* ideas. And that is precisely what takes place.

We have names which stand for *singular* objects: 'Peter is a man,' 'Homer was a poet,' 'Plato was a philosopher.' Here the subjects represent a single thing. Other names stand for collective objects: 'The library is large,' 'the army marches on,' 'the herd is scattered,' 'the nation is in revolt,' 'the city is celebrating.' Here the subjects represent a number of individuals taken together *as a group*, but the statements do not apply to the individual members of the group. We have, however, many names and words which apply to a *class* and to *each member* of the class. Take the word 'man.' By 'man' we mean a 'rational animal.' This word represents the class as a class and the individual human beings belonging to the class. If we say 'Man is mortal,' just what do we mean? We mean that 'all men' taken together as a class 'are mortal' and 'each individual man' taken separately 'is mortal.' So, too, when science states that 'The living cell has immanent action,' it does not mean that a single cell or a mere collection of cells, but 'all cells' as a class and as individuals 'have immanent action.' Again, zoology tells us that 'the horse is a mammal.' The word 'horse' here does not designate a single animal like Man-O'-War, nor a collection of animals like a herd, but the whole class of equines and each member of that class. Such statements show plainly that these subjects have a content which are conceived as 'one-common-to-many.' And since words and names stand for ideas, our *ideas* have a content which is conceived as 'one-common-to-many.' That, however, is what is meant by a *universal idea*. We have,

then, ideas which are not merely singular or collective, but truly universal.

Nominalists admit the universality of our names and words, but deny the universality of the ideas for which they stand. *N.O. Losskū* refutes the contention of the nominalists that the name gives rise to the class. He says: "The contention is that the grouping of things into classes is not in any way determined by the properties of the things themselves, but is due to names. The name gives rise to a class of things, and it is not the class of things that attracts a name to itself. A rejoinder at once suggests itself, which, in spite of its seeming to be almost ironical, is nevertheless very much to the point. If the grouping of things into classes is determined by names — understanding by a name not a universal element but something created afresh in every single act of utterance — how is it that a name is never associated with groups of *heterogeneous* things, such as tiger, coffee pot, candle, and birch tree, but always with groups of *homogeneous* objects — homogeneous not merely in the sense of being connected with one and the same word? The only answer is that we associate with a name not anything which we choose, but only things which *resemble* one another. This, however, means that the name merely assists in the final crystallization of a general idea, and that the essential condition of things being grouped into classes is the *resemblance* between them."²

The fact is, that the intellect recognizes this resemblance of objects among themselves, groups the *many* into one idea, which is now universal, and uses a word or name to designate the idea. Only because we have universal *ideas*,

have we also universal *names*. If nominalism were correct, we should have no universal names, since we have no universal ideas. To have universal names without universal ideas for which they stand, is contradictory. But we have universal names; consequently, we have universal ideas. Nominalism must be rejected, because it maintains that names and words can have a universal significance without deriving this significance from the only source from which it can be derived, namely, from the universal ideas of which they are the signs. The significance of any sign depends on the significance of the thing signified. Hence, the *universal* significance of the *name* depends on the *universal* significance of the *idea*. Ideas are thus universal, and nominalism is false.

CRITIQUE OF CONCEPTUALISM

Extreme realists admit that we have ideas which are universal and claim that the things to which they apply are also universal. Nominalists deny the existence of universal entities and also deny that we have genuinely universal ideas in the mind. *Conceptualists* deny the universality of extra-mental entities as existing in nature and they admit that the intellect has genuinely universal ideas which are expressed in universal names or words. However, because the objects in the world are singular and not universal, they claim that our universal ideas can have *no objective value*. In other words, since the objects are singular while the ideas are universal, there is nothing in the objects themselves which would correspond in any way to the

content of the universal as 'one-common-to-many.' The universality of the idea is a *purely subjective product* of the mind, *without a foundation* in the things themselves which would entitle the mind to group a number of individuals under one (universal) idea. Hence, the universal idea can give us no genuine knowledge of the real nature of the things.

Conceptualists go too far when they assert that there is *no foundation* in things for our universal ideas and consequently that the content of these ideas as 'one-common-to-many' is purely subjective in character. If this were so, then the content of the universal idea would neither be *derived from* the individual things nor applied to the individual things. If we can show that they are derived from the individual things through sense-perception and are really applied to individual things as they exist in nature, then we have proved that universals have a *foundation* in these things and possess objective value. That indeed is the case.

This is clearly demonstrated by the fact that our intellect can form no universal idea of sense-qualities proper to a certain sense-faculty, if this sense-faculty has always been absent. A person born blind, for instance, cannot form a genuine, universal idea of light or color; and a person born deaf has no idea of what is meant by sound or music. The same is true of any other sense-quality. Whence do we derive our universal ideas of 'man,' 'plant,' 'dog,' 'star,' 'table,' and other objects, except from a previous perception of these things? Our ideas are based ultimately on sense-perception, not on purely intellectual activity; that

is why our ideas of *immaterial* things, like the soul, God, spirit, will, and the like, are so inadequate. Hence, conceptualists are wrong when they state that our universal ideas have no foundation in the reality of the objects; we *derive* them from these objects as they exist in nature.

That our universal ideas can be *applied* according to their content as 'one-common-to-many' to objects, is a matter of everyday *experience*. When I state 'Man is an animal,' I most certainly do apply the content 'animal' as a 'sentient organism' to each and every human being and to all human beings who live in this world; and that in a true, genuine sense. The statement has not merely value in my mind, but also in the order of *reality*: men actually *are* 'sentient organisms.' And so with statements like 'The rose is red,' 'the gnat is an insect,' 'the table is round,' and with innumerable other statements which contain universal ideas: they represent facts and objects of the real order. Such statements could never be true, if our universal ideas had no foundation in the reality of the things themselves.

That the *natural sciences* apply the universal ideas incorporated in their *classifications* and *laws* to the physical world is too obvious for serious dispute. The classifications of animals, plants, and inorganic substances have not only a subjective value for the mind; they really fit, as classes and types, the things of nature. And how could it be otherwise? Science derives its universal ideas of classes and types from its research into the beings which exist in the material world. The only reason why it groups such beings into classes and types is because it finds something 'common-to-many' in them; there is thus a foundation or ground *in the*

things for the formation of its universal ideas. So, too, with its *laws*. They represent generalizations based on the behavior of physical bodies. If these bodies did not act uniformly and constantly, science could never formulate such laws, nor would the laws of science apply to them in their respective fields. If scientists can and do predict the actions of physical bodies in nature, this is possible only because these laws have a foundation in the reality of these bodies and actually apply to them independently of the universalizing function of the mind. To deny this is tantamount to denying the validity of all science; and that would be ruinous of all knowledge of the physical world. Skepticism must inevitably follow.

Many conceptualists accept the conclusion that intellectual knowledge is practically an illusion. *Bergson* and *William James* do this in consequence of their anti-intellectualist doctrine of pragmatism.³ *Kant* and his disciples, although they attempt to establish the validity and necessity of scientific knowledge, are compelled to admit that all scientific classifications and laws have no objective, but only subjective, value. This follows, of course, with logical consistency from their theory that the reality of things-in-themselves is unknown and unknowable; the only objects we can know are the phenomena. The universality of our ideas is due to certain innate *a priori* forms or categories of the intellect, which are purely subjective in character and are imposed by the mind upon the manifold of sense; as such, then, they can have no objective value.⁴ But if the natural sciences are invalid as objective representations of the physical world and are nothing more

than subjective constructions of a fictionizing intellect, all knowledge and philosophy is doomed as illusory. That is the logical outcome of a consistent conceptualism; and that we cannot accept, because it means intellectual bankruptcy. Conceptualism must, therefore, be rejected as a false theory.

CRITIQUE OF MODERATE REALISM

A number of conclusions can now be drawn. Extreme realism is correct in asserting the presence of universal ideas in the mind; but it is wrong in assuming that realities exist in the world which are objectively universal as entities. Nominalism is correct in denying the existence of universal entities in the world; but wrong in denying the existence of universal ideas in the mind. Conceptualism is right in denying the universality of entities in the world and in affirming the universality of ideas in the mind; but it is wrong in asserting that there is no foundation for our universal ideas in the objects of the world. The final conclusion, then, must be that we have universal ideas in our mind and that they have a foundation in things themselves. This last is the teaching of *moderate realism*, and the truth of moderate realism is thus established. A more positive proof, however, is required. With experience and reflection as guide, it will be necessary to show how universal ideas are developed from sense-perception through a process of abstraction.

It is in this process of *abstraction* that we find the solution of the problem of the universals. In order to

understand it properly, we must begin with sense-perception. The things in this world are *single* beings, *individual* natures. Universal entities do not exist outside the mind in the material universe or anywhere else; this was proved against extreme realism. These individual beings possess many characteristics peculiar to themselves, so that one differs from the other to such an extent that no two are totally alike in *every* respect; each nature is thus individualized, numerically one, and incommunicable to others. Consider man. Each person has his own individual nature, concretely determined by color, weight, size, shape, etc., so that he is distinguishable from every other person. Our senses perceive these individuals in their concrete determinations, and the phantasm or sense-image represents them with all their concrete similarities and differences.

Once the phantasm or sense-image is made, the *intellect* begins to operate. It gives its attention to this and that trait and attribute and perceives their *what-ness*, i.e., that which makes them to be 'what' they are and without which they could not remain 'what' they are; it is the essence of these things. This applies to substances and accidents; in fact, to everything that exists. Take again the example of man. Amid all the characteristics of individual human beings, the intellect is aware that the elements of 'a bodily, living, sentient, rational substance' are present in each individual all the time and *must* be there. A man would cease to be a 'man,' if a single one of them were missing; these elements, therefore, constitute man's essence or 'what-ness.' The other characteristics, like weight, color, size, shape, etc.,

are not necessary; they could be missing in some or all individuals, without a man ceasing to be a 'man'; in other words, these determinations, though present in the individual, are not part of his 'essence' as such.

Here, then, we have the basis for the origin and validity of *universal ideas*. From the sense-image, representing the individuals in all their concrete similarities and differences, the intellect *abstracts* or draws forth an intellectual image of the essence, leaving out of consideration the nonessential characteristics which distinguish one individual from the other. This essence, as will be noted, is a *reality*, and it is actually present in the individuals independent of our thinking, though *not in that abstract form* in which it is represented by the intellect. The real individual, as it exists in the physical world, has all the elements of this essence *plus* its concrete, nonessential, differentiating characteristics, while the intellect leaves the latter aside and selects only the essential elements or essence. This essence, as it exists in the intellect, is thus stripped of everything which is not necessary to the 'what-ness' of the thing and is now *abstract*. This abstract representation or *idea* in the intellect is, as far as it goes, a true representation of the essence of the thing existing in the objective world, even though it leaves out of consideration the various differentiating characteristics which accompany this individual essence in reality. And since this essence (for instance, man as 'a bodily, living, sentient, rational substance') is recognized by the intellect as being the same with *the sameness of a perfect likeness* in each individual taken singly and in all individuals taken as a class, this

comprehension or content of the abstract idea is such that it will apply to the class as a whole and to each individual as a member of that class. In other words, the content, though one, is applicable to many: the content is 'one-common-to-many.' And that is what we mean by a universal idea, namely, an idea whose content represents an essence which is found to be present in many, so that all, individually and collectively, possess the same (not identical, but *like*) common essence. Such an abstract idea is, therefore, a *true universal*.

There are two kinds of universal ideas: *direct* and *reflex*. A consideration of what has just been said will show the difference between these two types of universals. When the intellect abstracts the 'essence' from the sense-image, it considers at first *nothing but the essential elements* which constitute the thing: this and nothing more is before the intellect through the process of abstraction. At this stage the intellect does not consider whether this essence is 'one' or 'many'; it is interested merely in the 'essential elements' *as such*, without reference to the number of individuals to which they can or cannot be applied. The intellect contemplates the essence in an *absolute* fashion, as it is in itself, simply as the 'what-ness' of the thing. Since, however, the essence or 'what-ness' represented by the idea is such that it *could be applied* by the intellect to one and many at the very moment the abstraction is made, this idea is already a true universal; but the intellect does not *as yet* reflect on this possibility, nor does it make the actual application. Hence, this idea, considered as the immediate product of abstraction, is called a 'direct,' or 'potential,' or

‘metaphysical,’ or ‘fundamental’ universal. This type of universal, therefore, expresses merely the essence or ‘what-ness’ of a thing as it is *in itself*, prescinding for the time being from its singularity or multiplicity.

After having formed the abstract idea of the essence, the intellect *compares* this essence with the essences of *similar* objects; and by means of this act of comparison it becomes aware that this essence is not only found in this one object, but is *predicable of many* similar objects. The content of the idea representing this essence is recognized to be such that it is capable of being realized in any number of individuals: it is ‘one-common-to-many.’ In this manner the intellect now *formally universalizes* the original idea of the essence abstracted from the sense-image, after having seen that it is applicable to the whole class and to every individual member of the class. This type of universal idea is called a ‘logical,’ or ‘formal,’ or ‘reflex’ universal. It will be noted that the ‘direct’ universal refers merely to the *comprehension* of the idea, i.e., it expresses an essence which, though in itself ‘common-to-many,’ is not considered as common to many; while the logical’ or ‘formal’ universal refers to the *extension* of the idea, i.e., it expresses an essence which is ‘common-to-many’ and is considered precisely in so far as it is common to many. In other words, the ‘direct’ universal possesses a *potential* universality, while the ‘logical’ universal possesses a *formal* universality in the intellect. The former represents the essence considered *in itself alone* as expressing the ‘what-ness’ of the thing thought about, without regard to whether it is singular or multiple; the latter represents the essence as

formally universal, as something which is applied or is at least applicable to 'one-and-many.'

It is important to realize this distinction between the direct and reflex universal, because it enables us to understand how universals can be predicated of individuals and still furnish us with a true knowledge of the things in their objective reality. In predicating a universal of the individual things, we apply the *content* expressed in the *direct* universal to the object, because that content represents the essence as such *without the mode of universality* attached to it. In the reflex universal the mode of universality always accompanies the abstract essence, for the reflex universal considers this essence precisely as universal, as 'one-common-to-many.' In other words, we predicate the absolute essence of the individual, and not the 'universalized' essence, so that the *universality* of the idea is not applied to the absolute at all. This idea of the essence, considered in itself alone and absolutely, is a true representation of the essence as it exists in the individual and can, therefore, be truly applied to it. Error would enter into our predication, if we applied the content of the abstract essence and *also* its universality to the individual things, because these things are not universal but singular in reality. We thus safeguard both the singularity of the individual and the truth-value of our universal ideas. That we 'universalize' the essence and consider it (in the reflex universal) as 'one-common-to-many,' is merely a *logical mode* of our thought-process and does not change the content in any way: the *content* remains *real*, while the

universality is a *logical mode* (*ens rationis*) superadded to it.

While the 'universality' of the abstract essence is thus a product of the mind and is not found in the real essence as it exists in nature, the intellect observes a *foundation or reason* in the things themselves which entitles it to universalize the abstract essence in this manner. This universality is founded on the real *similarity* of essence existing between different things, so that the intellect can group them into a *class*. These objects are really alike in their essential elements; all men, for instance, are really 'bodily, living, sentient, rational substances.' After comparing them and seeing the complete likeness of their essences, the intellect groups them into a class and expresses the whole class by means of a *single* (universal) idea; and this idea is now capable of being applied to the whole and to every member of the class - for example, to John, James, Plato, Napoleon, and to all men taken together. Their essences are not identical, but they are really and truly similar; consequently, the objective ground or foundation for the formally universalized idea lies in the similarity of the essences embodied in all the members of the same class. Therefore, the intellect is justified in stating 'John is a man,' applying the universal idea 'man' to the individual 'John,' because it thereby predicates, not the universality, but the content of the idea 'man' to 'John,' and this content is perceived to be *actually realized* in him. While, then, the 'universality' of the abstract idea is thus seen to be a product of the mind, there is a real foundation in the things themselves entitling the intellect to

universalize this idea and make it 'one-common-to-many.' Both the *things* and the *intellect* contribute their share in the formation of universal ideas: the things contribute the *material or content*, namely the 'what-ness' or 'essence,' and the intellect contributes the *form or mode*, namely the 'universality.' Hence, the universals are real from the standpoint of their material or content, but not according to their form or mode; the form or mode, however, has a foundation in the things themselves. The whole situation can be summed up as follows: In the real order the essence is actually many, but potentially one; in the intellectual order it is actually one, but potentially many.

Reflection and introspection thus prove that the universal as such is a product of the mind with a foundation in the things. Or, as St. Thomas Aquinas expresses it: 'Universals are *formally* (as such, i.e., as universals) in the mind, *fundamentally* in the things themselves.' That is the solution of the problem of the universals as offered by *moderate realism*. If we compare this solution with that offered by the opposing theories of ultra-realism, nominalism, and conceptualism, we will find that it alone explains the obvious singularity of the individual things in nature and the objective value of our intellectual knowledge as applied to these things. Moderate realism is the only correct theory of the universals.⁵

From the above it will be clear that our universal ideas give us a true and genuine (though naturally incomplete and inadequate) insight into reality; they are a valid source of scientific knowledge, and the truth-value of our

intellectual ideas is thus critically and philosophically established.

SUMMARY OF CHAPTER XIV

The validity of our intellectual knowledge depends on the validity of the universals, because our knowledge, to be true, must conform to reality. Different theories have been devised to solve the problem: extreme realism (ultra-realism), nominalism, conceptualism, and moderate realism.

1. *Critique of Extreme Realism.* As a general refutation of ultra-realism, it may be noted, first, that our knowledge need not correspond with reality in *every respect*, and, second, that there is *no empirical evidence* of any kind to show that universal essences exist.

Against *Platonic* ultra-realism. If generic universals actually existed, we would have 'animals' which are neither rational nor non-rational, 'organisms' which are neither sentient nor non-sentient, etc. There would also be universal realities *without entity*, such as are expressed in privative ideas, like sickness, lameness, insanity, etc.

Against *empiric* ultra-realism. If the universal essence is considered to be *really and only one*, it would mean, for instance, that there are no individual men, but only a 'universal man' or 'man-in-general'; that is contrary to our experience, since we are conscious of our own individual nature. If this essence is considered as *individuated* in each member of the class, it would not be universal. Every form of ultra-realism leads logically to *monism* and *pantheism* through the universalization of 'being.'

Against *monistic* ultra-realism. It is contrary to our experience, since we are individual substances with an

individual *consciousness*.

2. *Critique of Nominalism.* Names are signs of ideas. But our names are universal, applying to a class and to each member of a class. Consequently, we have universal ideas for which these names stand. If the name, and not the property of things, determined the grouping of objects into classes, we could not explain why only *homogeneous* things are thus grouped.

3. *Critique of Conceptualism.* Universal ideas must have a foundation in the reality of things, because they are *derived* from individual things and *apply* to them. A person born blind has no genuine idea of color or light; this shows that our ideas have a foundation in the things. Experience proves that we really apply these ideas to things, as when we say that 'man is an animal'; we actually mean that the content of the idea 'animal' is found in 'man.' The *classifications* and *laws of science* really apply to things, because they are derived from the things in nature.

4. *Critique of Moderate Realism.* From the above it must be clear that universal essences do not exist; but we have universal ideas in the mind and they have a foundation in the individual things: that is moderate realism. Through our senses we obtain a *phantasm* of the individual essence in all its concrete determinations. The intellect now makes a vital similitude of the object, by *abstracting* the essence or 'what-ness' of a thing, leaving out of consideration the nonessential characteristics. This 'essence' is actually present in the individuals, but not in this abstract form; individuals are alike through *similarity* of essential elements. The content (abstract essence) is expressed in

the *direct* universal and is predicated of the individual objects. The *universality* ('one-common-to-many') is expressed in the reflex universal and is not predicated of the individual objects. The 'content' is *real*, but the 'universality' is a *logical mode* (*ens rationis*). The similarity of things is the foundation or ground which entitles the intellect to universalize' the abstract essence, considering it as 'one-common-to-many.' Hence, the axiom: Universals are formally in the mind, fundamentally in the things.

I am an ontological nominalist, I recognize the objective reality of structure and relations. This flows from my physical realism. Similar things have similar properties and structures. And, when we think them, we can think them in terms of the same predicates. The predicate which will disclose one will disclose the other. It has a one-many capacity of disclosure. I am an ontological nominalist because I see no adequate reason to postulate a peculiar entity called a universal to account for these similarities. To me, the ultimate ontological fact is the existence of a multitude of similar substances able to combine in similar patterns and have, in such combinations, similar properties. And this, I take it, is the path science has actually chosen." This is moderate realism. Although Sellars impugns the teaching of Aristotelianism and Thomism, his own theory of knowledge, as given in the *Essays in Critical Realism* (pp. 217 and 218), is closely akin to these systems. (See Edward F. Talbot, *Knowledge and Object*, Catholic University,

Washington, D. C.) Universals thus give us a true insight into reality and are a valid source of knowledge.

READINGS

P. Coffey, *op. cit.*, Vol. I, Chs. IX, X, XI, XII; J. Rickaby, *op. cit.*, Part II, Ch. IV; J. Barron, *op. cit.*, Ch. XVII; T. Pesch, *op. cit.*, Vol. II pp. 168-220; 428-486; R. Clarke, *Logic*, Chs. VIII, IX; J. Donat, *Critica*, cap. IV, art. I; A. K. Rogers, *What is Truth?* pp. 106—122; 128—158.

1 *The New Rationalism* (Henry Holt Co., 1918), p. 437

2 Nicolai Onufrievich Losskū, *The Intuitive Basis of Knowledge*, tr. by N. A. Duddington (Macmillan, 1919), p. 287. (Italics mine. — Author.)

3 H. Bergson, *L'Evolution créatrice*, Ch. IV. W. James, A Pluralistic Universe

4 For a detailed critique of Kant's conceptualism, see Coffey, *Epistemology*, Vol. I. Ch. XII

5 Roy Wood Sellars, in *The Philosophy of Physical Realism* (Macmillan Co., 1932), calls himself a 'logical conceptualist' and an 'ontological nominalist.' It is unfortunate that his use of the terms 'conceptualism' and 'nominalism' is at variance with the standard definitions of these theories as given in history, because as a matter of fact the expression of his own views and of the views of some other critical realists in this matter is identical in substance with the 'moderate realism' of Aristotle and St. Thomas (see pp. 155, 156; 173-175). The following quotation from page 175 shows this plainly: "It will be noted that, while I am an ontological nominalist, I recognize the objective reality of structure and relations. This flows from my physical realism. Similar things have similar properties and structures. And, when we think them, we can think them in terms of the same predicates. The predicate which will disclose one will disclose the other. It has a one-many capacity of disclosure. I am an ontological nominalist because I see no adequate reason to postulate a peculiar entity called a universal to account for these similarities. To me, the ultimate ontological fact is the existence of a multitude of similar substances able to combine in similar patterns and have, in such combinations, similar properties. And this, I take it, is the path science has actually chosen." This is moderate realism. Although Sellars impugns the teaching of Aristotelianism and Thomism, his own theory of knowledge, as given in the *Essays in Critical*

Realism (pp. 217 and 218), is closely akin so these systems. (See Edward F. Talbot, *Knowledge and Object*, Catholic University, Washington, D. C.)

Chapter 15

THE TRUTH-VALUE OF NECESSARY JUDGMENTS

WE HAVE ESTABLISHED THE OBJECTIVE VALUE OF OUR IDEAS. THEY have a 'mode of universality' in the intellect, but they express a 'content of reality'; that which they represent actually exists in the things represented. This naturally leads us to inquire into the validity of our intellectual *judgments*. Judgments consist of ideas. A judgment is a mental act whereby we assert the agreement or disagreement between two ideas. And since our ideas stand for things, what the judgment asserts of ideas it actually means to assert of the things represented by the ideas. When I say, 'This table is square,' I claim that the two ideas 'table' and 'square' are in agreement with each other; but I also claim that the *reality* expressed by the idea 'square' is actually found in the *object* expressed by the idea 'table,' so that the extra-mental 'table' is extra-mentally 'square' in the domain of physical nature. And when I say that 'Gold is not iron,' I not only disunite these two ideas in my intellect, but I also assert that 'gold' and 'iron' are not identical in their physical reality. The truth of such a judgment will depend upon the agreement of the judgment with the *fact* enunciated.

There is no real problem in this. As long as the intellect can acquire a knowledge of the reality of things and represent them by means of its ideas, it can pass a judgment upon the identity or non-identity of things by means of ideas used as subject and predicate. But there is one phase of the judgment which involves a real problem for the philosopher. We derive our ideas from sensible objects. And sensible objects are concrete, individual, changing, temporal, and contingent; they are neither eternal, immutable, nor necessary. However, many of our judgments have the characteristic that they appear to us to be *eternally, immutably, and necessarily true*. Whence do they obtain this character? And how can they be a true representation of reality?

STATEMENT OF THE PROBLEM

We form various kinds of judgments. For example: 'The sun is shining today'; 'three boys are skating on the pond'; 'I took a stroll this afternoon.' These statements express facts known through *experience*; they are true, but they *need not* be true and *could be different*. There is no necessary connection between the subject and predicate of these statements: the sky could be overcast; the boys need not go skating; I did not have to go for a stroll. That we connect these particular predicates with these particular subjects, is simply because the facts happen to be so and not because they must be. The facts are contingent and could easily be otherwise.

Other judgments are such that their truth must be so and can absolutely not be different. Take these arithmetical statements: ' $2 + 2 = 4$ '; ' $5 + 4 = 6 + 3$ '; ' $7 + 3 = 15 - 5$ '; and the like. Or geometrical axioms, such as: 'Two parallel lines can never meet'; 'the whole is greater than any of its parts'; 'the sum of the angles of a triangle are equal to two right angles'; and so on. And also the philosophical principles: 'A thing can-not be and not be the same thing at the same time' (Principle of Contradiction); 'a thing either is or is not something' (Principle of Excluded Middle); 'a thing must have a sufficient reason for its being and existence' (Principle of Sufficient Reason); 'whatever happens or becomes must have a cause for its happening or becoming' (Principle of Causality). Such principles are adjudged to be true independently of all existential conditions and experience. They are not only true here and there, now and then, for this and that mind; they are *eternally, immutably, necessarily true*, everywhere, always, and for every mind. The connection between these subjects and predicates is adjudged to be *absolute* and *universal*, removed from any possibility of change or error. Our intellect has no choice in the matter; it must give an unequivocal assent to these so-called *first principles*, without being able to prove them by anything like a strict demonstration.

Now, why must the intellect assent to them this way? What is it that influences and *forces* the mind to assent to these judgments? Does the motive which constrains our intellect lie within the *subjective* constitution of the intellect itself, so that it must judge in this fashion simply because its laws of thinking are made that way; or does the motive lie

in the *objective* nature of these truths themselves, so that they reveal themselves with evident clarity to our intellect and thus force it to make these judgments? In the first alternative, first principles are true merely for *our* minds and need not be true in themselves; in the second alternative, these principles are true everywhere, always, and for *all* minds without exception, because they are objectively true in themselves independently of our own thinking. In the first alternative, we 'make' them to be true; in the second alternative, we 'discover' them to be true. In the first alternative, their truth-value is restricted to our *intellect* and is purely subjective; in the second alternative, their truth-value applies to *reality* and is objective.

This shows the *importance* of the problem involved in the knowledge of such principles. These principles form the foundation of all scientific and philosophic knowledge, as will be readily observed. Without the objective truth of the Principles of Contradiction, Excluded Middle, Sufficient Reason, and Causality, our entire knowledge of physics, chemistry, astronomy, biology, and all other natural sciences would be without a rational basis in *reality*; they would be subjective constructions of our mind and as such might or might not correspond to the facts of physical nature. Without the objective truth of the axioms of arithmetic and geometry, these sciences would be a mere figment of the mind and might be inapplicable to real things. If these principles were subjective in character, the structure of our intellectual knowledge would lack necessity and universality as a representation of reality; as such they would cease to be real science and real philosophy, because science and

philosophy are supposed to give us certain knowledge of ourselves and of the world. It is, therefore, of prime importance for us to know whether the *necessity* which we perceive in the logical connection between the subject and predicate of first principles is objective or subjective, i.e., whether their logical connection and truth is due fundamentally to our *intellect* or to the *reality expressed* in them.

THE THEORY OF ASSOCIATIONISM

The *empiricists*, as we have seen, admit nothing but sense-knowledge of phenomena. For them there is no such thing as a supra-sensible intellectual knowledge. Ideas are but refined sense-images; consciousness is a 'bundle' or 'series' or 'stream' of perceptions. The mind is nothing permanent and abiding, and it can never transcend its own internal states. Since the mind itself and all phenomena are but passing, changing, contingent realities, it is obvious that there can be no permanent and necessary knowledge in any form. Their theory of sensism precludes all knowledge which would possess a universal and necessary character. Yet it cannot be denied that we consider these axioms to be necessarily and absolutely true. What is the origin and explanation of this general conviction? It is a fact and must be accounted for.

Hume finds its origin and explanation in the *association* of our ideas. Certain ideas or images are always experienced as going together; certain phenomena always appear in a regular sequence of time or in a definite

contiguity in space. Thereupon we uniformly and continuously associate these things together in our mind. This is done in virtue of the *law of association* inherent in the mind itself, because the mind is so constituted; and this is a subjective law with a purely subjective result. Consequently, the 'necessity' which we experience relative to the logical connection between subject and predicate in these principles is not due to anything coming from the reality represented in these judgments, but solely to the *associating force* existing in the mind. It is a subjective and *psychological*, not an objective and *ontological* necessity. The mind does not judge these principles to be true, because it *sees* that they cannot be otherwise; it *cannot see* them to be otherwise, because the mind in its present constitution must judge them to be true. There is nothing *intrinsically* impossible in $2 + 2$ being 5 or 3, or in a circle being square or hexagonal, or in parallel lines meeting in a point, or in a triangle having six right angles, or in an object having contradictory properties, or in a thing coming into existence without a cause. As a matter of fact, according to Hume, Mill, and empiricists generally, the Principle of Causality is nothing but a mental expression of 'invariable sequence': because we observe things following each other invariably in time, we simply judge that the preceding object 'causes' the one following. This, however, is solely due to the fact that they are invariably 'associated' in our sensations as prior and posterior. If we think that an absolute necessity exists in the connection between these subjects and predicates, so that these principles *must* be true for all times and in all places and for all minds, we are

harboring an illusion. There is no such objective necessity. For other minds, in other places, at other times, and under other conditions, such principles and axioms may have no truth-value at all; we, of course, according to the present constitution of our mind in its laws of association, must consider them as necessarily true and valid. Such is the theory of associationism in its attempt to explain the character of necessity which we perceive to exist in first principles and axioms.

This theory is false and fails to give an adequate account of the logical necessity existing in these judgments. If the theory were correct, we should perforce experience the same psychological necessity of judgment in *every case* where we observe a uniform and constant association of objects or ideas in our consciousness. This, however, is patently wrong. For instance, day follows night in an invariable sequence; but nobody would dream of asserting that the night is the 'cause' of the day. Here we see plainly that constant and uniform association does not in any way force us to the necessary judgment that night 'produces' day. So, too, we perceive that spring invariably follows winter; nevertheless, we do not judge for that reason that winter is the 'cause' of spring. Every time we lift our eyelids during the day, we invariably see; yet we do not think that the lifting of the eyelids 'causes' our actual 'seeing,' since we ascribe it to the power of sight residing in the organ itself. Hence, the necessity inherent in our judgment expressing the Principle of Causality is not derived from the subjective influence of the association of our ideas.

Even when we do assert the necessity of a causal interaction in physical phenomena, this *factual* necessity based on experience is very different from the *absolute* necessity we judge to exist in our first principles and axioms. We always observe, for instance, that water at sea level expands and solidifies at $+32^{\circ}$ F. and vaporizes to steam at $+212^{\circ}$ F. We say that water 'necessarily' does this. But we also know that this necessity is not absolute; water *could* act otherwise without destroying the nature of water or the foundations of our knowledge. But compare this judgment with the judgments 'A circle is round,' ' $2 + 2 = 4$,' 'everything must have a sufficient reason,' or with any other first principle, and the difference between the respective 'necessity' of these two types will immediately be apparent: the judgment about water freezing or vaporizing at these temperatures is factually and physically necessary, while the latter judgments are absolutely and metaphysically necessary, because we realize that the latter admit of no exceptions and *must* be true under *all* circumstances. But why the difference for our mind? We certainly never experience any exceptions to water freezing at $+32^{\circ}$ F. and vaporizing to steam at $+212^{\circ}$ F. Then, according to the law of the association of ideas, both types of judgments should exhibit the same sort of necessity. That, however, is not the case. Consequently, the association of ideas resulting from constant and uniform contiguity or sequence does not account for the necessity we perceive to exist in our judgments expressing first principles and axioms. Associationism thus fails in its attempt to explain the mental facts of our necessary judgments.

Moreover, it takes but a moment's reflection to see that this theory must *destroy all science*. The very foundation of science lies in the Principles of Contradiction, Sufficient Reason, and Causality. If these principles are valid only for our mind and do not apply with inviolable necessity to physical objects in nature, the scientist has no means of knowing whether his conclusions are objectively valid. And if he cannot be sure of this, the knowledge he acquires is nothing but a *purely mental construction* which may or may not agree with extra-mental reality. But science treats of physical systems, not mental constructions. If associationism were a true interpretation of the fact of mental necessity in our judgments about nature, science would be valueless as an explanation of physical phenomena. A theory, however, which destroys science must be intrinsically wrong.

THE THEORY OF FORMALISM

Kant was shocked by Hume's sensism and skepticism, since it destroyed the truth-value of science; it awoke him, as he himself says, from his "dogmatic slumbers." He felt he was called upon to save science. Kant was convinced that science gives us true knowledge, and the judgments resulting from true knowledge are genuinely universal and necessary. Since, however, true science must have an empirical content (i.e., be derived from experience), and since the empirical is only contingent and constantly changing, he naturally put to himself the question: How account for the *universality* and *necessity* so manifestly

exhibited in our scientific knowledge? Since the things of experience are only individual and contingent, Kant felt that the 'universality' and 'necessity' of knowledge could not be derived from the things of experience as such. Whatever, then, is 'universal' and 'necessary' in our knowledge cannot come from experience; it can come only from the *mind itself*. Kant considers all knowledge derived from experience as *a posteriori*, and all knowledge supplied by the mind itself as *a priori*; the latter is innate in the mind and independent of all experience. Even scientific induction cannot give us true and strict, but only assumed and relative, universality; a judgment of strict universality, in which no exception is admitted as possible, cannot be derived from experience, but must receive this strict universality from the mind. How, then, does scientific knowledge come about?

As our sensibility gives us objects to perceive, so our understanding gives us ideas or *concepts* of these objects of our sense-intuition. In order to have intellectual knowledge, therefore, our intuitions or phenomena must be brought under certain concepts or *categories* of the understanding; thereby these intuitions become intelligible. In this union of intuitions and concepts knowledge is produced. Just as 'space' and 'time' are the *a priori* mental forms which must be united to the *a posteriori* impressions in order to make intuition possible, so the 'concepts' or 'categories' are the *a priori* forms of the understanding which must be united to the phenomena or sense-representations in order to make judgment and thought possible. These 'concepts' or 'categories,' like 'space' and 'time' with regard to sense-

impressions, give *universality* and *necessity* to our thoughts and judgments and must, therefore, be in the mind prior to all experience and independent of all experience. There are twelve such 'categories,' according to Kant, and for each there is a specific type of judgment. They are:

<i>Categories</i>	<i>Judgments</i>	<i>Example</i>
Quantity:	Quantity:	
(1) Unity	(1) Singular	This S is P.
(2) Plurality	(2) Particular	Some S is P.
(3) Totality	(3) Universal	All S is P.
Quality:	Quality:	
(4) Affirmation	(4) Affirmative	S is P.
(5) Negation	(5) Negative	S is not P.
(6) Limitation	(6) Infinite	S is not -P.
Relation:	Relation:	
(7) Substantiality	(7) Categorical	S is P.
(8) Causality	(8) Hypothetical	If A is B, S is P.
(9) Reciprocity	(9) Disjunctive	S is either P or Q.
Modality:	Modality:	
(10) Possibility	(10) Problematic	S may be P.
(11) Existence	(11) Assertoric	S is P.
(12) Necessity	(12) Apodictic	S must be P.

These categories, of course, do not apply to the extra-mental things-in-themselves; they apply merely to the *phenomena* which are, as we have seen, subjective products of the union between the sense-impressions and the space-and-time forms. These categories are also *a priori* subjective mental *forms*, innate in the mind, and as such their application to the representations contained in the phenomena is the result of a subjective *law* of the mind;

they are not derived from experience in any way, but are in the mind prior to all experience. When we, therefore, make the judgment that 'The whole is greater than any of its parts' and consider that this judgment must be true in a strictly universal and necessary manner, then this absolute 'universality' and 'necessity' indeed transcends all experience and is valid for all times and places and minds; but this is only true of the 'phenomena' as a subjective mental product existing in the mind and does not apply to the extra-mental world of *things-in-themselves*. Our knowledge simply cannot reach to the noumena or things-in-themselves; they remain forever an unknown and unknowable X.

And therein lies the *fallacy of Kant's theory*. He does not succeed in saving science from Hume's skepticism. Science treats of the physical objects of the extra-mental world and not of mental constructions; Kant's world, however, is a world of phenomena, and these phenomena are mental constructions which give us no insight whatever into the nature and reality of things as they are *in themselves*. According to the ultimate findings of Kant's system, we can know nothing whatever about physical nature. He presupposes that physical nature exists in some form or other, because he postulates the existence of 'things-in-themselves' in order to account for our original chaotic sense-impressions; but what this physical world is like is an insoluble mystery. Such, however, is not the view of science. Science is convinced that it reaches *real things* outside the mind; according to Kant, this is impossible. The *laws* which science establishes are considered by scientists to be real

laws operating in physical bodies independent of our thinking; according to Kant, these laws merely relate to phenomena within the mind and not to nature at all. That Kant really drew this conclusion, can be seen from his *Critique*: "It sounds no doubt very strange and absurd that nature should have to conform to our subjective ground of apperception, nay, be dependent on it, with respect to her laws. But if we consider that what we call nature is nothing but a whole [*Inbegriff*] of phenomena, not a thing by itself, we shall no longer be surprised."¹ That this destroys the validity of science in its very foundations, must be obvious. While treating of the validity of sense-perception, we proved that our mind really transcends its own conscious states and perceives the external world; in this we proved that science is correct and Kant is wrong.

Kant distinguishes between 'synthetic,' 'analytic,' and 'synthetic *a priori* judgments. The *synthetic* judgments are based on experience, such as 'Bodies are heavy,' 'fire burns,' 'this circle is green,' 'the boy runs.' In these the predicate adds a new idea to the subject, and this idea is derived from experience; hence, they are styled 'synthetic *a posteriori*.' Some of these judgments express singular and contingent facts, like the last two examples. Others may express a universal and necessary fact, like the first two, but this is only an empirical, not a strict or absolute, universality and necessity, because exceptions are at least conceivable. The analytic judgments are not based on experience, but are always *a priori*. In them the predicate is always found to be contained in the subject, and an analysis of the subject will reveal the presence of the predicate; for

instance, 'Bodies have extension,' 'a circle is round.' These predicates do not increase our knowledge of the subject, because they are only 'explicative'; for this reason they are without value for science. In this they differ from 'synthetic' judgments, for the latter add a new idea (contained in the predicate) to the subject with a consequent amplification of knowledge. Not all 'synthetic' judgments, however, are valuable for science, because not all of them possess that *absolutely* 'universal' and 'necessary' character which is required for *scientific* knowledge. Some 'synthetic' judgments are entirely *a posteriori*; for instance, 'This circle is green,' 'the boy is running.' Others, though, express a universality and necessity which is *absolute*, and these admit of no exceptions even in thought; such are judgments like ' $7 + 5 = 12$,' 'action and reaction are equal,' 'a straight line is the shortest distance between two points,' 'whatever becomes must have a cause,' etc. Whence the absolute character of the universality and necessity of these 'synthetic' judgments? It cannot come from the contingent things, because these things are singular and transitory in nature. Consequently, it must be *a priori* and arise from the *intellect* itself: the intellect communicates this absolute universality and necessity out of itself to these judgments. These are, then, *synthetic a priori* and as such have absolute value for science. Thus Kant.

Many critics² have shown that Kant was not justified in designating these judgments as synthetic *a priori*: they are all synthetic (*a posteriori*) or analytic (*a priori*). But that does not concern us. We are here interested in his explanation of the *necessity* we attach to these judgments.

Even though the existence of such judgments be admitted, Kant fails to solve the problem of their absolute necessity. Of course, he asserts that this necessity imposed on the judgment by the intellect is absolute and therefore binding at all times, in all places, and on *all minds*. But we must not forget that it is *the individual mind*, according to his explanation, which contributes this necessity to the judgments; and this individual mind is as *contingent, singular, and transitory* as any other thing in the world. My mind could thus impose this necessity on my judgments *for me*, so that I could not think differently; but that would not mean that these judgments possess an absolute necessity *in themselves or for other minds*. According to Kant's own principles, my mind cannot transcend the phenomena of its own making; it is imprisoned within its own subjective world of phenomena. This being the case, it is impossible for me to know even the *existence* of 'other minds,' much less their *nature* and *operations*; they belong to the world of noumena, of things-in-themselves, and are forever excluded from my domain of knowledge. This being the case, I cannot know how these 'other minds' are constituted, nor whether they operate as my own mind does. They may, therefore, for all I can know about them, have an entirely different view of such judgments, because they may be differently constituted. What is the result, then, of Kant's theory? Simply this, that the absolute necessity of first principles and axioms is the product of my own individual subjective mind and is without any value, as far as I can know, for other minds. There would be indeed a *subjective, psychological* compulsion for my mind to think in this

manner, but I have no way of knowing whether this necessity applies to *all* other minds. That, however, is the precise character we observe in these judgments: they are valid for *all* minds. Since my own mind is singular, it cannot make these judgments absolutely necessary for all other minds. Kant's explanation, like Hume's, makes of this necessity a purely *relative and subjective* thing; and such a necessity destroys the objective character and value of all science.

Besides, of what value are judgments, and in particular the most *fundamental* judgments, such as the first principles and axioms are, unless they rest upon an *intelligent insight* into their truth? To accept them blindly, is assuredly not certain knowledge: we 'know' something when we 'see' or 'understand' it, and to 'know' the truth of a judgment means to grasp intelligently the exact relation between the subject and the predicate. If one denies that such an insight is required and asserts that a blind, subjective *necessitation* is sufficient to accept the truth of judgments, then *certitude has no rational foundation*, and we must despair of all knowledge and truth. Such is the logical outcome of Kant's theory of judgment. We do not make these judgments because we perceive the objective relation of subject and predicate, but because a blind, necessitating law of our mental constitution draws certain sense-intuitions under certain intellectually empty categories *prior* to our judgment, and we do not know why these particular categories were imposed by the mind on these sense-intuitions. Our 'knowledge' is thus as blind as the law that produces it. If this should be *scientific* and

philosophic knowledge, it is valueless, because it gives us no intellectual insight into the nature of the reality our judgments are supposed to represent. Kant might have saved himself the trouble of writing his *Critique*, for who knows under what subjective, blind, unknown, and unknowable necessity and law of his mind he was laboring when he wrote it.

THE THEORY OF EVOLUTIONISM

Spencer, realizing the weaknesses inherent in the associationism of the older empiricists and in the formalism of Kant and his followers, sought the solution for the obvious necessity of axiomatic truths in *evolution*. This necessity cannot be explained by the ordinary action of mental associations or mental forms, because the individual who makes these judgments under their influence is a singular, contingent being whose span of life is far too brief to acquire associations and mental forms valid for all times and for all minds. Spencer was convinced that long ages were required to mold the human mind in such a way that it accumulated certain *fixed forms of thought* through a process of *innumerable associations* repeated with *incalculable frequency*. In this manner the experiences of the race were crystallized into definite principles and axioms which now express an absolutely necessary relation between certain subjects and predicates in our judgments. Evolution, therefore, can produce what the individual cannot acquire. Heredity, of course, is the source of transmission for these accumulated individual experiences

and modifications for we must remember that, according to Spencer and the vast majority of evolutionists, the mind is only a mode of neural matter and thought a mode of neural action. In the field of knowledge they are empiricists and sensists. It is but natural, then, that they would turn to evolution for an answer to the problem.

This explanation is *inadequate*. At best, we would again have nothing more than a *subjective, psychological* necessity for making such judgments, while we clearly observe that these axiomatic truths are valid not only for the ideal order of the mind but also for the *objective order of reality*. They are thus seen to be based, not on the instinctive, habitual character of hereditary traits of subjective nerve-processes, but on the rational insight into the objective relations existing between the *abstract* concepts expressed by the subject and predicate. We have seen in the foregoing chapter that sensism cannot account for the abstractness and universality of our universal ideas; our ideas are more than mere 'generic images' of sense-perception. A higher process is involved in their formation. If sensism were correct, evolution could never do more than *fix concrete, individual sense-images* within the tissues of our neural matter; and such images could never account for the immutable, universal, necessary character of our abstract ideas as used in our judgments; much less could they account for the universality and absolute necessity of these principles and axioms under all conditions and circumstances.

Again, as Coffey points out: "The theory proves too much. If it were true that the necessity which characterizes

ideal judgments is a product of accumulated ancestral experience, there is no reason why such necessity should not be found to characterize such judgments as 'fire burns,' 'wood floats,' 'sugar is sweet,' 'day follows night,' etc. — in as much as the connections in these judgments must have been the subject matter of a uniform ancestral experience stretching infinitely backward. Yet such judgments are apprehended as *contingent*, not *absolutely* necessary. On the other hand, the theory does not prove enough; for we recognize an absolute necessity in such judgments as ' $7 + 5 = 3 + 9$,' 'equilateral triangles are equi-angular,' although, as Maher observes, the occasions on which such objects were 'found to be conjoined in experience cannot in the pre-mathematical age have been very frequent.'³

Finally, Spencer teaches that all our knowledge is restricted *to* our internal conscious states. His theory of knowledge is a *trans figured realism*, and all our ideas are but representations and symbols of the unknown and unknowable reality lying beyond the phenomena of sense. Our knowledge thus gives us no insight whatever into physical nature; it is subjectivistic and relativistic. As 'science' this knowledge is useless, if we understand by 'science' a demonstrable understanding of real things and real beings. All we would have is a science of 'symbols' and mental constructions engendered in our mind through the countless repetitions of purely subjective sense-processes, which reveal no more of the reality of things than the chemical symbols reveal the physical properties of the elements for which they stand. Such a theory destroys the

foundations of science as a rational explanation and interpretation of nature.

THE THEORY OF OBJECTIVE EVIDENCE

Neither the associationism of empiricists, nor the formalism of Kantians, nor the evolutionism of Spencerian scientists can give an adequate account of the universality and necessity inherent in the axiomatic truths or first principles. None of these theories pass beyond a subjective and psychological necessity which compels the individual mind to judge that such first principles are universally and necessarily true. That, however, is not sufficient; because we clearly perceive that these principles are not merely true for us, but for all minds and, what is far more important, they apply to all things. The reason why we judge that the subject and predicate of first principles are logically connected with an absolute necessity must lie in something else than an internal, subjective law or form proceeding from the constitution of the mind itself. What, then, forces the intellect to place such an absolute necessity in these judgments? We are here face to face with a primary fact and an ultimate experience present within our consciousness. Because of this, introspection and reflection alone can answer the question. We must give careful attention to what takes place in making such judgments, in order to discover what prompts and compels the intellect to consider such judgments absolutely necessary in their validity. And in doing this we find that the reason or ground for this necessity is seen to lie in the *cogent objective*

evidence of the *logical relation* which exists between the concepts of these judgments, and not in any subjective necessitation arising from the constitution of the mind.

Coffey has given a very lucid and succinct proof in the following words: "When I reflect on my spontaneous assent to such a judgment as that $7 + 5 = 12$, I observe the following facts: (a) that I affirm a necessary identity between predicate and subject; (b) that I affirm the identity *after having seen it intellectually* through comparison of the concept of '12' with the concept of '7 + 5' (c) that I affirm it *because I have seen it*. Moreover, I observe that (d) I see the necessary identity because I see that the concepts *necessarily involve such identity*; that (e) I do not assert it until I see them involve it and then only because I see them involve it; (f) that in order to see them involve it I analyze each concept into its simplest elements: the predicate into a total sum of units (1+1+1+1+1+1+1+1+1+1+1+1) and the subject into two lesser sums (1+1+1+1+1+1+1) and (1+1+1+1+1), whereby I see the former as a whole to be identical with the two latter as its constituent parts. On the one hand I see the parts of a whole; on the other hand I see the whole itself composed of these parts. The identity, therefore, manifests itself to me: I affirm it because it manifests itself to me: it is there objectively revealing itself to my intellect; and this objective manifestation of the *nexus* I call the *objective evidence of the truth of the judgment*. Hence I am conscious that I form such judgments, that I apprehend relations between their constituent concepts, *because I see intuitively* these relations *objectively evident, objectively revealing themselves to me*. Hence I reject as

false the assertion that I establish any such relation *without seeing why I do so*; that I synthesize mental terms or concepts *a priori* and *unconsciously* into a complex representation of which I become conscious as a necessary product or unity, without seeing why it is so. I reject such a doctrine as false because introspection convinces me that I *do* see the reason of my mental assertion of the nexus."⁴

We, therefore, perceive the necessity of such judgments on the grounds of *objective evidence* and *intellectual insight*. The same applies to other first principles: they rest on ultimate concepts whose truth is objectively evident. They can all be reduced to the fundamental concept of 'being.' A 'being' is something 'that is or can be.' Hence, 'Whatever is, is'; and that is identical with 'A being is a being.' Reversely, 'Whatever is not, is not'; and that is the same as 'A not-being is a not-being.' This is the expression of the Principle of Identity. And these concepts are so simple and objectively self-evident that the intellect has an immediate *insight* into the truth of their mutual relation, so that it intuitively perceives that these judgments possess an absolute universality and necessity for both the order of thought and the order of reality. In this principle we merely compare 'being' with itself and 'not-being' with itself and perceive the identity of each with itself.

But when we compare 'being' with 'not-being,' we intuitively behold that the one is not the other. We see the evident truth that 'Being is not not-being,' and that these concepts mutually exclude each other with *absolute necessity*: something 'that is' can never, under any and all conditions, be something 'that is not.' Since 'being' and

'not-being' can never be conceived as identical, but must be universally and necessarily in opposition to each other as contradictories, we express this self-evident truth in the Principle of Contradiction: 'A thing cannot be and not be something at the same time.'

Furthermore, a comparison of 'being' and 'not-being' reveals the evident fact that *there can be no middle thing* between the two. What could such a thing possibly be? Such a middle thing either 'is' or 'is not': if it 'is,' then it is a 'being'; if it 'is not,' then it is a 'not-being.' Consequently, it will be either a 'being' or a 'not-being,' but not a middle thing *between* the two. It certainly cannot be both a 'being' and a 'not-being' at the same time, because that would be impossible in virtue of the Principle of Contradiction as just explained. Hence, it is evident that 'A thing either is or is not,' and that is called the Principle of Excluded Middle.

From these principles to the Principle of Sufficient Reason is but a step. If a thing is a 'being,' it has its being either from itself (i.e., it is un-produced) or from another (i.e., it is produced by this other): in either case it has a *sufficient reason* for its being. If it is not a 'being,' it is so because it has its being neither from itself nor from another: in both cases it is a 'not-being' because it has *no sufficient reason* for its being. Hence, it must be evident that 'every thing must have a sufficient reason for its being'; if this were not so, then there would be no difference between 'being' and 'not-being.'

This last principle leads necessarily to the Principle of Causality. If a thing is a *contingent being*, i.e., if it has not the sufficient reason for its being in itself, it must have it *in*

another; that is to say, this *other* must give being to it. This follows from the Principle of Sufficient Reason. But to 'give being' to another means to 'produce' or 'cause' it. It is, therefore, self-evident that 'every contingent being, i.e., every thing that becomes or happens, must be the effect of a cause.' And so the Principle of Causality is established.

All these principles rest upon the ultimate and absolutely simple concepts of 'being' and 'not-being'; or, to be more exact, upon the one concept of 'being.' Since 'being' is the first and most fundamental concept, these principles based immediately on the concept of 'being' are called in a special sense the *First Principles*. They rest on the fundamental judgment that 'Being is being.' Their universal and necessary truth is thus intuitively perceived to flow from the *objectively* clear and valid concepts of 'being' and 'not-being'; and the intellect does not 'make' their necessary truth, but simply 'perceives' and 'discovers' it. To put their truth into a judgment, then, is nothing more than to express mentally what the intellect perceives to be true objectively. Our conviction as to the absolute necessity and validity of these principles is, therefore, not the result of a blind, instinctive, psychological necessitation due to some hidden law of the mind, but to the objective evidence involved in the concepts and in the logical connection existing between them, so that the intellect is forced by this evidence to assent to their manifest truth in a conscious and intelligent affirmation.

What is the *objective source* of these concepts and principles? The physical world; because our intellect derives its materials from the sensible universe. But how

can the individual, contingent things of the world give rise to principles that are universal, absolutely necessary, immutable, and eternal in truth and validity? The answer is the same as the answer for the truth and validity of universal ideas: they are based on the *abstract essences* of things. Through *abstraction* 'being' is divested of all individuality, contingency, actual existence, space-time conditions, and experience-relations. As such, then, the concept of 'being' and the principles based upon it possess a universality and necessity transcending all contingent existence and are valid for all times, for all places, and for all minds.

Our necessary judgments are thus seen to be objectively valid, and their truth-value is now critically and philosophically vindicated.

SUMMARY OF CHAPTER XV

Judgments consist of ideas. Since ideas represent things, judgments must also apply to reality. Some judgments are considered to be *eternally, immutably, and necessarily true*.

This presents a problem, because judgments, like ideas, are derived from the concrete, individual, and contingent world of objects.

1. *The Problem*. Many judgments express experiential facts, and it is clearly perceived that these facts could be different; they 'happen' to be so, but they 'must' not be so. Other judgments are considered to be eternally, immutably, and *necessarily true*, independent of all experience. Such are the *first principles*.

Whence do these first principles derive their absolute necessity? Why is the intellect *forced* to assent to them? Without the objective truth of these principles science would have no rational basis in reality. Does the logical connection between the subject and predicate of these judgments proceed from our *intellect* or from the *reality* expressed in the judgments?

2. *Empiricists*, like Hume and Mill, find the source of this mental compulsion and necessity in the power of mental *association*; there is merely a subjective, *psychological* necessity for making these judgments. This is false. If it were so, we should experience the same compulsion in every case where facts or events are uniformly and constantly associated in the mind; but this is contrary to all experience. Moreover, this theory of associationism

destroys science, because our knowledge would then be but a purely mental construction which may or may not agree with extra-mental reality.

3. *Kant* considered everything that is universal and necessary in our knowledge to be the result of certain *a priori forms* innate in the mind and antecedent to all experience. Consequently, the absolute necessity of these judgments must come from the *mind alone*. These judgments are the result of a union between the phenomena of sense-intuitions and certain *a priori categories* of the understanding; and these categories are applied to the phenomena according to the workings of an innate, blind law. Our judgments are valid for phenomena, but give us no insight into the reality of the things-in-themselves. This view is destructive of science, because science is convinced that it reaches *real things* outside the mind.

Besides, this necessitation to judge is due to a blind, subjective law of the mind. Science and philosophy, however, demand an intelligent *insight* into the logical connection between subject and predicate, otherwise our certitude has *no rational foundation*; without this insight we would have no real knowledge.

4. *Spencer* and the evolutionists seek the necessity of our judgments in *evolution*. Innumerable associations repeated with countless frequency through long ages produce certain fixed forms of thought, and this accounts for our necessary judgments. This theory cannot explain our *abstract* ideas; because only concrete, individual sense-images could thus be transmitted, not principles with an *absolute* necessity valid under all conditions and

circumstances. Again, all uniform experiences, like 'Fire burns,' etc., should then have the same absolute necessity in our judgments; but that is not the case. Finally, Spencer's 'transfigured realism' destroys the validity of *science*, because reality is considered to be unknown and unknowable.

5. *Objective evidence* alone explains the absolute necessity of these principles. The mind intuitively perceives this necessity of its judgments to proceed from the *objectively evident relation* existing between the subject and predicate of these judgments. The first principles are clearly seen to rest on the concepts of 'being' and 'not-being' and the relation between them. This gives rise to the fundamental Principles of Identity, Contradiction, Excluded Middle, Sufficient Reason, and Causality; and these principles underlie all thought and reality. The mind does not make, but discovers, them.

The *objective source* of these principles lies in the contingent things existing in the physical world. But the mind, through abstraction, divests 'being' of all contingency, actual existence, space-time conditions, and experience-relations; thereby the concept of 'being' and the first principles obtain universality and absolute necessity.

Our necessary judgments are thus seen to be *objectively valid*.

READINGS

P. Coffey, op. cit., Vol. I, Chs. V—VIII; J. Barron, op. cit., pp. 202—206; T. Pesch, op. cit., Vol. II, pp. 220—228; 486—

522; J. Donat, op. cit., cap. IV, art. 2; R. W. Sellars, *Critical Realism*, Ch. VI.

1 *Critique of Pure Reason*, tr. by Max Müller, 2nd ed. (Macmillan, 1900), p. 94

2 See for example, Coffey, *Epistemology*, Ch. VIII

3 Coffey, *Epistemology*, Vol. I, p. 156 (Longmans, Green and Co.). 139

4 *Epistemology*, Vol. I, pp. 234—235

Chapter 16

THE CRITERION OF TRUTH

OUR INVESTIGATION SO FAR HAS SHOWN THAT WE HAVE A knowledge of reality. The senses present reality to the mind through the medium of percepts. The intellect, then, fashions concepts or ideas which are representations of reality in an abstract and universal manner. Mere percepts and concepts do not as yet constitute knowledge; they are the raw materials, rather than the finished product, of knowledge. We have knowledge when we affirm or deny something of something; and that takes place in the *interpretative judgment*. A judgment is always a mental pronouncement about reality in some form or other, and this pronouncement represents the actual condition of reality as it is in itself. Judgments, therefore, possess a *truth-claim*.

Unfortunately, however, our judgments are not always true; quite frequently we discover that they are erroneous. Now what constitutes *truth* and *error*? And how can we *discriminate* between true and erroneous judgments? What is the test or *criterion* of truth? And what is the *ultimate criterion* for distinguishing truth from error? These are important questions that will now have to be answered.

TRUTH AND ERROR

An *idea* is the intellectual representation of a thing. Due to the limited power and capacity of our intellect, we are incapable of grasping the full reality of an object within the content of a single idea. In consequence of this, the intellect turns its attention first to this, then to that property or attribute, and makes a separate concept for each one. In nature, the thing is actually undivided and one, but potentially divisible and many; in the intellect, the concepts of the thing are actually divided and many, but potentially undivided and one. The intellect recognizes this fact. None of these ideas represents the full reality, but each represents an aspect, a phase, a portion of it. The *material* object of the idea is the total object in all its properties and attributes; the *formal* object of the idea is the thing in its single property or attribute, in so far as it is represented by the single idea. In order that the idea be a true representation of the thing, it must agree with its formal object. While the idea is thus seen to be a piecemeal representation, it is *true as far as it goes*: to be incomplete is not the same as to be incorrect.

Just as the intellect acquires a more or less complete grasp of a thing by means of a *mental division* of its reality into a number of concepts, so it subsequently makes a mental synthesis of the object and its attributes in the *judgment*. What was divided in the process of abstraction again becomes united in the act of judgment: the attribute (predicate) is referred back to the thing (subject), as when we say that 'the rose is red,' 'the rose is beautiful,' 'the rose

is fragrant,' 'the rose is fresh.' It will be noted that the subject ('rose') stands for the thing in a general way, while the predicate ('red,' 'beautiful,' 'fragrant,' 'fresh') stands for the particular attribute which belongs to the thing and which was recognized as belonging to the thing in its *objective existence*. Thus, what the judgment pronounces of its ideas is meant to be pronounced of the reality itself, because ideas are (partial, but true) representations of objective reality. Every judgment implicitly expresses a correspondence between the thing as it is in itself and as it exists ideally in my intellect, although explicitly the judgment merely pronounces an identity between the predicate-concept and the subject-concept. Such is the nature of the *affirmative* judgment.

The negative judgment is similar in import. Here I take an attribute *not* found in the thing and *deny* its presence in the thing. Judgmentally, I exclude the predicate-concept from the subject-concept; and in doing this I mean to assert that the reality signified by the predicate is lacking in the thing signified by the subject. Again I express a conformity between the reality as it exists in the real order of nature and as it exists in the ideal order of my mind. When I say that 'The rose is not blue,' 'the rose is not a cabbage,' 'the rose is not dead,' I pronounce the non-identity between subject and predicate as valid in the logical and ontological domain. In the affirmative and negative judgments, therefore, I claim that there exists an agreement between thought and thing.

Therein lies *truth or error*. If I judge that an attribute belongs to a thing, and it actually does, then I have truth;

so, too, if I judge that an attribute does not belong to a thing, and it actually does not, I have truth. But if I judge that an attribute belongs to it, while it actually does not, or if I judge that an attribute does not belong to it, while it actually does, I have error. For example, I state that 'The rose is red,' 'the rose is not yellow'; if this is so as stated, my judgment is true. If, however, I were to state that 'The rose is yellow,' 'the rose is not red,' while as a matter of fact it is red and not yellow, my judgment would be erroneous.

Truth and error, then, reside formally in the judgment, and not in the ideas taken alone for themselves. Truth must, therefore, be defined as the *conformity of judgment to reality*; and *error*, as the *disconformity of judgment to reality*. Common usage and reflective analysis agree in considering truth to be an agreement between mind and thing, and error to be its opposite. Any other definition would be confusing and unwarranted, unless it consist merely in a difference of wording.

CRITERION OF TRUTH, MOTIVE OF CERTITUDE

Since knowledge is useless, if it does not agree with reality, i.e., if it is not true, it is of prime importance to know whether we possess a 'criterion' of truth. By criterion in general we understand a means or rule of discrimination, whereby we can distinguish one thing from another. A *criterion of truth* is a rule, or norm, or standard, or *test by which we distinguish true judgments from those which are false*. The application of this norm or test to a judgment will then enable us to decide whether the judgment is true or

false. Since the judgment is a natural mental process, the criterion of truth must be a *natural* norm or test, well within the reach of every individual; and since the judgment is an intellectual process, the criterion of truth must be discoverable by the *intellect*. If there are a number of criteria, there must be one which is final and fundamental and beyond which there is no appeal; because, if every criterion demanded another criterion to establish its worth and validity, we would have an infinite regress and would never be able to come to a definite decision concerning the truth or error of a particular judgment. This final and fundamental criterion, beyond which there is no appeal, is the *ultimate criterion of truth*.

That such a criterion is necessary, must be obvious. Things in nature are at times extremely complicated in their reality. To obtain a more or less complete knowledge of them is a difficult and laborious task, depending on a multitude of conditions relative to the thing itself, to the organs of sense perceiving them, and to the intellect fashioning its concepts and judgments. That error can and does occur in our judgments is too clear to be disputed. Without some criterion of truth we could never detect error and distinguish it from truth; it would then be impossible to correct or change our judgment once it is made. As a result, our knowledge of reality might in many instances be totally at variance with the objective status of things, and we would be completely unaware of the fact; indeed, without such a criterion it would be absolutely impossible for us to become aware of any error in our judgments.

That we actually possess a criterion of truth, must be obvious. This is proved by the very fact that we *change* and *correct* our judgments after having become conscious of error. We could not correct an error, were we not conscious of error; and we could not be conscious of error, if we were not able to distinguish it from truth; and we could not distinguish it from truth, if there were no means or rule or test enabling us to discover both and discriminate them. The *fact of discrimination*, then, proves that we possess a criterion of truth and actually use it. Whoever acknowledges that we have natural certitude in our judgments thereby admits the existence of a natural criterion of truth; and only a universal skeptic will deny that we have certitude.

Certitude is that state of the mind in which the mind gives a *firm assent* to a judgment *without fear of error, due to recognized valid reasons*. The absence of fear is the 'negative' factor in certitude, and all judgments of whose truth we are convinced are alike in this respect. The valid reasons are the 'positive' factor, and according to their convincing strength we distinguish between *moral, physical, and metaphysical certitude* (see Chapter 2). That we have these different degrees of certitude in our judgments is clear from our internal experience. *Moral certitude* is based on the customary action of human beings, and exceptions to the law are recognized as *physically possible*; as when we are sure that 'Parents love their children.' *Physical certitude* rests on the physical laws of the world, and exceptions here are impossible in the ordinary course of nature, though possible to the Creator;

as when we are convinced that 'Iron will sink in water.' *Metaphysical certitude* has its foundation in the metaphysical laws of being, so that an exception is intrinsically impossible, because it would involve an internal contradiction; such is the absolute certainty of ideal principles, as 'The whole is greater than any of its parts.'

Whenever we are certain in such judgments, we are conscious of a motive of certitude. The motive of certitude is the ground which determines us to assent with firmness to a judgment as true without fear of its contradictory being true. We never assent to a judgment without some positive reason which we consider a good or valid reason. Valid reasons are the 'motive' of certitude. If we 'doubt' the truth of a judgment, it is because we realize that we either have no reason or motive for its acceptance or because the reasons or motives are about equally balanced for and against its acceptance. If we have a 'probable' judgment, we are conscious that we accept the judgment, but with fear of its contradictory, because the reason or motive for our assent is not of such a nature as to exclude fear of error. Our conscious experience is a daily and hourly witness to these different states of mind, and the mere mention of this fact should be sufficient to prove the truth of the statement that certitude is grounded on the motive of valid reasons.

We distinguish between *subjective* and *objective* certitude. The former consists in the mere *firmness* of our assent, and it does not exclude error in our judgment; it does, however, exclude the *fear* of error, considered solely as a subjective state of the mind itself. Objective certitude

consists in the *reasons* contained in the *terms of the judgment*, in virtue of which the judgment is considered to be a true representation of reality. Our judgment being an intellectual act, the grounds or motives, which determine the intellect to give a firm assent to it as true, must possess an 'intellectual' character; that is, they must be such that they appeal to the intellect within the judgment itself. Now, the intellectual element in the judgment which appeals to the intellect is precisely the *truth-value* of the judgment as an interpretation of reality; hence, the same reasons which determine the truth of the judgment also determine the certitude of the intellectual assent. The criterion of truth and the motive of certitude are thus seen to be *conceptually different*, but *objectively identical*. It follows from the very nature of the intellect as a 'cognitive' faculty that the element which constitutes the test or criterion of truth will also be the motive *why* the intellect gives a firm assent to the truth. And just as we must have an ultimate criterion of truth, beyond which there is no appeal, so, too, there must be an *ultimate motive* of certitude which is the foundation for all secondary motives. because at bottom the criterion of truth and the motive of certitude are objectively identical.

The question before us, then, is this: *What is the ultimate criterion of truth?* The answer to that question will also be the answer to the further question as to what constitutes the ultimate motive of certitude, since the 'reasons' of the truth of the judgment are also the 'motive' for our intellectual certitude that the judgment is true. And here again, as in all problems which reach down into the roots of knowledge, a strict demonstration is impossible, because

primary facts are a matter of ultimate *experience*. The only course open to us is to scrutinize our mental acts closely and carefully and observe just what the intellect uses as its criterion of truth and what is its motive of certitude, when it gives its firm assent to a judgment. Doing this, we will see that this criterion and motive is the *objective evidence of reality*.

NATURE OF OBJECTIVE EVIDENCE

By *objective evidence* we understand that characteristic of reality whereby it becomes *objectively manifest to the perceiving faculty*. What the luminosity of a shining body is to the eye, making it clearly visible, that the evidence of reality is for the mind: it makes reality cognitively clear and intelligibly apparent to the intellect. In virtue of this objective evidence or clear self-revelation of reality in the presence of the intellect, the intellect is capable of forming a judgment which is a correct interpretation of this reality as it exists in its objective being. The intellect sees the reason or ground for its judgment in the reality as it reveals or manifests itself to the mind, and it makes this judgment *precisely because the reality* is thus *seen* to reveal or manifest itself with such clarity. The reason or ground for accepting this judgment as true and the motive for assenting to it with the firmness of certitude have their source, not in the judging subject, but in the evidence of the *object*; in other words, it is the *objective evidence* of reality which determines the judging subject to interpret this

reality in the way it does and thereby makes the judgment to be true and certain.

Objective evidence is in relation to the truth and certitude of the judgment what the cause is to its effect. There are various *kinds of evidence*, according to the manner in which the objective truth of reality becomes apparent to the mind. Objective evidence will be either 'internal' or 'external.'

Internal evidence exists, when the ground for our judgment is clearly perceived to lie *in the reality* affirmed by the judgments. Such, for example, would be the judgments, 'The sun is shining this afternoon,' ' $2 + 2 = 4$,' 'a circle is round.' Internal objective evidence will be *immediate*, when the reality interpreted in the judgment is directly presented either to the intellect or to the senses. That ' $2 + 2 = 4$ ' and that 'A circle is round' and that 'The whole is greater than any of its parts,' are true judgments based on the evidence of the relations existing between these concepts as immediately perceived by the intellect in contemplating them. And that 'The sun is shining' and that 'This paper is white,' are true judgments based on the immediate evidence of my experience as revealed through my senses. In both cases reality becomes evident to me by being directly presented to my faculty. On the other hand, internal objective evidence will be *mediate*, when the reality manifests itself to my mind, not by means of a direct presentation, but by means of a *process of reasoning* which leads ultimately to reality which is immediately evident. For instance, when I ride over the highway and see the whole countryside drenched with water, I have mediate evidence

that 'It rained.' I did not see the rain fall, but it is evident that rain must have fallen; had I seen it fall, I would have immediate evidence of the fact. So, too, the judgment that '15,486 is evenly divisible by 5162' is only mediately evident to most people, until they make the actual division. When a ballistic expert proves that a particular bullet was discharged from a particular gun, it is mediate evidence; had he seen the gun fired, it would be immediate evidence.

External evidence exists, when the ground for our judgment does not lie in the reality itself affirmed by the judgment, but in some *other reality outside it*, and this external reason is clearly perceived to be of such a nature as to guarantee the truth of the judgment and to exclude the fear of error from our assent. This may be twofold: the evidence of *authority* and the evidence of the *imprudence of doubt*. The former rests on the evidence of the motives of *credibility*, in virtue of which the intellect is convinced that the witness deserves credence because of his knowledge and veracity. I may not have been present at the battle of the Argonne; but when I consider the number and character of the many witnesses who claim to have participated in this battle, I have reliable evidence that such an event actually occurred. Our knowledge of history is thus based to a great extent on the external evidence of authority. And so is much of our knowledge of persons, localities, and scientific discoveries; most of these things we accept on the authority of others who witnessed them and are trustworthy in their testimony. This is the rational basis of 'belief.' The evidence of the *imprudence of doubt* is such that it is not sufficient to compel our assent, but is clearly

perceived to be sufficient to *exclude all unreasonable doubt*. In this case the absence of compulsion is frequently due to our lack of insight in consequence of the limited character of our personal faculties. For me to doubt the truth of some abstruse and complicated mathematical proof, simply because I am not capable of following the argument, would be unreasonable; provided, of course, that mathematicians of repute all agree as to its truth and validity. Similarly, it would be unreasonable to doubt that the one who claims to be my mother is really my parent, even though I cannot adduce any positive proof to substantiate the fact. Or, it would be imprudent on my part to doubt the reality of an extra-Ego world, merely because some obscurities can be found in the theory of direct and immediate sense-perception.

Such is the nature of objective evidence. When we say that the criterion of truth and the motive of certitude is 'objective evidence,' we mean the objective evidence of reality (internal and external evidence) revealing itself to the mind. But when we speak of the 'ultimate' criterion of truth and the 'ultimate' motive of certitude, we claim that both consist in *internal, immediate, objective evidence*. 'External' and 'mediate' evidence are, of course, sufficient to give us certitude, but only because they presuppose internal, immediate evidence to support them. It will be necessary, then, to show, first, that objective evidence in general constitutes our criterion of truth and motive of certitude, and, second, that internal, immediate evidence is our 'ultimate' criterion and 'ultimate' motive, giving validity in the last instance to all truths and *all* certitude.

EVIDENCE THE CRITERION OF TRUTH

In proposing this proof, we must bear in mind that a strict demonstration is impossible. Primary facts cannot be demonstrated, but are shown to be true by an appeal to fundamental experience and reflection; what can be shown to be true by a mere exposition of the facts needs no strict demonstration. I cannot demonstrate, for instance, that I actually can see; the fact of seeing is its own proof. Similarly, I cannot 'demonstrate' that evidence is the criterion of truth, because such a demonstration would require the criterion of truth to prove that it is true: that means that I would prove a thing by itself, which would be a begging of the question. Nor can I disprove with a strict demonstration that evidence is not the criterion of truth, because in that case I would have to use evidence to disprove evidence: and that would again amount to a begging of the question. It is only by seeing what actually induces the intellect to accept judgments as true and what actually determines it to give a firm assent to the judgments as true, that I can decide what constitutes this criterion and motive. Now, *experience and reflection* clearly show that as a matter of *fact* objective evidence is our criterion of truth and our motive of certitude.

Why do we affirm some predicates of subjects, while we deny other predicates of these same subjects? Because we are convinced that some predicates really *belong* to these subjects and others *do not belong* to them. We certainly do not act arbitrarily in this matter of applying predicates to subjects. Frequently we would prefer to make a judgment

one way rather than the other; but we cannot honestly do so, because we know that such a judgment would not be true. This shows plainly that the reason why we consider judgments to be true and assent to them with certitude does not proceed primarily from the mind itself. Why is this? Because the intellect needs a *ground or reason outside itself* in order to make a judgment one way rather than the other. If our intellect had the ground or reason for its judgments solely in itself, then our judgments would have no objective value and would not be an interpretation of the objective reality designated by the subject and predicate.

Our judgments, however, are clearly perceived to be an interpretation of extra-mental *things, objects, realities*; in other words, judgments represent a conformity of our intellect to objective reality, and our intellect judges this reality to be so-and-so or not-so-and-so because it is the 'thing' which influences the intellect to judge about it as it does. And *why* and *how* does the thing influence and determine our intellect in judgment? Because the thing *presents itself* with such clarity to the contemplating intellect that the latter plainly sees that the reality of the thing is so-and-so or not-so-and-so and judges accordingly. It is the thing itself which produces in the mind a *clear insight* into its objective reality as being precisely 'this' and 'not that.' But this characteristic of objective reality, whereby it presents itself with unquestionable clarity to the contemplating intellect, is what we understand by 'objective evidence.' In making a judgment, then, which corresponds to this evident reality, the intellect *recognizes* the fact that

the judgment is *true* and cannot be otherwise than true; and that is also the ground or reason for its certitude about the truth of the judgment. Consequently, objective evidence is the criterion of truth and the motive of certitude in our judgments.

A consideration of the various *types of truths* confirms this general analysis. In sense-perception the criterion and motive is the clear *presentation* of external objects. In consciousness it is the immediate *union* between consciousness and the presented internal fact or event. In first principles or ideal judgments, as we have seen in the preceding chapter, it is the objective evidence of the *identity* or *non-identity* existing between the subject and predicate manifesting itself in the concepts. In mediate judgments, as we have them in discursive reasoning, it is the obvious *identity or non-identity* of two objective concepts with a third, based on the Principles of Contradiction and Identity. In judgments made on the authority of others, it is the clearly perceived *moral impossibility* of error due to the knowledge and veracity of the witnesses relating their immediate experience. In judgments resting on the imprudence of doubt, it is the objective clarity of the *facts* which enables the intellect to see that doubt would be unreasonable under the circumstances.

All these types have this in common that they induce the intellect to adhere to them with an assent of certitude, and the reason for this is that the presented and interpreted *reality* contained in them manifests itself to the intellect with a *clarity* that excludes doubt as to its existence and

nature. That, however, is the 'objective evidence' of reality revealing itself to the mind. If this were not so, the only alternative left would be that the *intellect makes* these judgments true: but in that case it would be inconceivable how any judgment could ever be *false*.

We obtain the same result when we compare the attitude of the mind in certitude, doubt, and opinion. When is the mind in 'doubt'? When it is uncertain whether the predicate really belongs to the subject and should be identified with it. But why is it uncertain? If the reason or ground for identifying the predicate with the subject resided primarily in the mind, there should be no difficulty in identifying or not identifying the predicate with the subject and thereby attaining truth and certitude, because in that case the judgment would *always* correspond with the mind, and there should never be any state of doubt. Doubt, as experience and reflection clearly show, arises out of the inability of the intellect to discover whether the aspect of reality contained in the predicate actually belongs to the object represented by the subject. And this is due to the fact that the reality itself is not clearly manifested to the intellect; in other words, it has insufficient 'objective evidence.' When we have an *opinion*, we actually judge that something is 'so-and-so' or 'not-so-and-so'; but we are not free from the fear of error in this judgment. Why? Because we are *not sure* that the thing is *really* as it is judged to be. And why are we not sure? Because the *reality itself is not clear* to the intellect; if it were, there would be neither doubt nor opinion, but certitude, in the mind. It is, therefore, the lack of 'objective evidence' which creates the

state of doubt and opinion in the mind; and, reversely, it is the 'objective evidence' of reality which guarantees the truth of the judgment and produces the firm assent of certitude.

Our analysis of truth and certitude thus shows that objective evidence of reality, or reality itself as clearly manifested to the intellect, is the criterion of truth and the motive of our certitude. Without it, the intellect must remain in doubt or, at the very best, can only form a probable opinion, and then the fear of error will always be present.

THE ULTIMATE CRITERION AND MOTIVE

Objective evidence in general is the criterion of truth and the motive of certitude. But not all evidence is equally valuable in establishing the truth of a judgment and in producing the firm assent of certitude. For instance, the external evidence of human authority and of the mere imprudence of doubt is the weakest kind of evidence, because here reality manifests itself to the intellect only indirectly and secondarily. Such evidence always rests on some other evidence which is direct and primary. But it is obvious that we cannot refer one sort of evidence back to another indefinitely, otherwise we would become involved in an 'infinite regress,' and thus nothing would ever be sufficiently evident to give us truth and certitude in our judgments. There must be some criterion of truth and motive of certitude beyond which there is no need of appeal and for which there is no need of further evidence; in other

words, there must exist an *ultimate criterion of truth* which is also the ultimate motive of certitude. What is it? It is *internal, immediate, objective evidence*, or, in one word, *self-evidence*.

That we cannot give a strict demonstration for this claim, has been pointed out above, when we spoke of evidence in general. We can only make an appeal to intelligence and to primary experience. Now, that evidence will have to be the 'ultimate' criterion of truth and the 'ultimate' motive of certitude which is of such a nature that there can be *no possibility of doubt or error* in the mind as to the conformity of its judgment to the reality it interprets. In order that there be no possibility of doubt, the reality must be so clear and luminous before the intellect that there can be no danger of error in its judgment. And in order that there be no possibility of *error*, the reality must again be so clear and luminous that the intellect must see that the reality is actually 'so-and-so' and cannot be otherwise. But this condition is fulfilled only when the reality expressed in our judgments is *self-evident*; that is, when reality manifests itself to the intellect with an evidence which is 'internal' and 'immediate.'

Introspection and experience show this plainly. Let us glance at 'external' evidence. Such evidence may be based either on authority or on the imprudence of doubt. *Authority* cannot be the ultimate criterion of truth and motive of certitude, for the simple reason that it does not exclude the possibility of doubt. The person on whose authority I accept the truth might be mistaken. And if he cannot be mistaken, it is only because *he* has had

‘immediate’ and ‘internal’ evidence of the truth. After all, then, I am not relying on my evidence, nor on his word of authority, but on the immediate and internal evidence of the reality manifested to *him*; and that implies that the external evidence of authority must be based ultimately on internal, immediate evidence. The same is true of the evidence of the *imprudence of doubt*. What is evident here to me is that doubt is ‘imprudent’; therefore I reject it as unreasonable, and by an effect of the will I induce the intellect to give a firm assent to the judgment. Such an assent does not exclude the possibility of doubt and error; that possibility always remains in judgments of this kind. Consequently, the evidence which merely shows that doubt is imprudent cannot be the ‘ultimate’ criterion, because the ultimate criterion must exclude the very *possibility* of doubt and error.

And now let us consider *mediate* internal evidence. Such evidence must always have its foundation in ‘immediate’ evidence. The very fact that it is only ‘mediate’ shows clearly that it refers to other evidence beyond itself; if it were not so, it would itself be ‘immediate.’ We have mediate evidence in the various processes of reasoning. But why do we ‘reason’ to the truth of the conclusion of an argumentation, except for the fact that this conclusion must be *proved* by the evidence contained in the premises from which it is drawn? And if these premises are not self-evident, they must also be proved by other premises which are immediately evident; and if the latter are not self-evident we must continue proving premises until we finally arrive at premises which need no proof, because they are

self-evident. Hence, mediate evidence cannot be the 'ultimate' criterion of truth and the 'ultimate' motive of certitude, because it always presupposes immediate, internal evidence to guarantee its own truth.

The only sort of evidence left, then, as the ultimate criterion and ultimate motive, is the immediate, internal, objective evidence, or the *self-evidence*, of reality manifesting itself to the intellect.

EXPERIENCE SHOWS CONCLUSIVELY THAT ALL KNOWLEDGE IS BASED ultimately on the self-evidence of reality. The structure of our common, scientific, and philosophic knowledge is a very complex thing, built up gradually and laboriously from previous judgments that have been recognized as true. But if we trace our knowledge back to its origin, we will find that it is based on immediate sense-perception, immediate consciousness, and immediate insight into first principles. And if we examine the truths acquired from these sources, we will observe that they *reveal reality* to us in such a manner that the intellect *clearly perceives* that this reality is so *self-evident* as to exclude the very possibility of doubt and error. And this self-evidence of reality is seen by the intellect to be the final and ultimate ground for its judgments and certitude. We have but to consider that all our knowledge derives its validity from the necessary and universal truth of a few first principles, in order to see for ourselves that self-evidence is the ultimate criterion and motive. Such principles are, as we have seen in the foregoing chapter, the Principles of Identity, Contradiction,

Excluded Middle, Sufficient Reason, and Causality. They underlie all science and all knowledge. A little reflection will convince us of this.

There are certain general principles which are the foundation of science and knowledge in all their ramifications. Such are the judgments, 'The whole is greater than any of its parts,' 'two things identical with a third are identical with each other,' 'what is true of a logical whole must be true of the logical parts of that whole,' ' $2 + 2 = 4$,' etc. Once the meaning of these concepts is understood, the necessary truth of these judgments becomes self-evident and needs no demonstration. Take, for example, the judgment that 'The whole is greater than any of its parts.' By 'whole' I mean 'a sum of constituent units' and by 'part' I mean 'one of a number of units constituting a sum.' Since the 'whole' is thus seen to be a 'sum,' and a 'part' is seen to be one of the 'units' of this sum, my understanding of these concepts reveals to me the self-evident truth *beyond the possibility of doubt or error* that 'The whole must be greater than any of its parts.' Because, if this were not so, the 'whole' would not be a 'whole' and the 'part' would not be a 'part'; and that would involve the contradiction that 'being' would not be 'being' but would be identical with 'not-being.' Thus, the truth of this judgment is seen to run through the Principles of Contradiction and Identity down to the fundamental and absolutely simple concepts of 'being' and 'not-being.' If there could be a possibility of doubt and error in this, then truth and certitude is simply impossible of attainment.

And so it is with all principles and all knowledge, whether of the existential or of the ideal order: they rest on the self-evident Principles of Identity, Contradiction, Excluded Middle, Sufficient Reason, and Causality. In other words, the ultimate criterion of all truth and the ultimate motive of all certitude lie in the *self-evidence* (internal, immediate, objective evidence) *of reality* as it manifests itself to the intellect and is recognized by the intellect as such.

But if this is so, how is error possible? It would seem that error should never occur in our judgments. Error, however, is an undeniable fact. What, then, is the cause of error?

THE CAUSES OF ERROR

We have seen above wherein error consists. It is the non-correspondence or disconformity of the intellect with the thing. Just as truth is in the judgment, so is error. It always involves the *affirmation of what is not true and the denial of what is true*. Since truth is the result of evidence, error must have its origin in the lack of *real* and in the presence of *apparent* evidence.

Reality as such cannot be false; it reveals itself to the mind as it is. Error, therefore cannot come from reality itself. But if it cannot come from reality, it must have its origin *in the mind*. Now, the mind as such tends toward truth and not toward error; the mind, therefore, is not inherently false. And yet it is evident that the mind does actually assent to judgments which are erroneous. How is this possible? The fact is simply that error is in the mind,

but does not proceed *from* the mind. It has its cause in the *will*. This needs explanation.

We have seen that in the presence of 'self-evident' reality there is no possibility of doubt or error for the intellect. Unfortunately, however, reality is not always self-evident. Conditions are often such that the reality cannot reveal itself with self-evident clarity to the mind. This clarity is frequently obscured, partly through the *complexity of reality* itself, partly through the *limitations and imperfections* inherent in the organs which serve the intellect and furnish it with the materials necessary for knowledge. In consequence of such conditions reality will sometimes appear to the mind other than it really is. In many instances the mind *could* discover what the reality 'really is' by means of a close and exact analysis of all the circumstances, but it is here that the influence of the will enters as a deciding factor and induces the intellect to give its assent to a judgment for which it has no *sufficient evidence*.

But why should the will urge the intellect to assent to a judgment for which there is insufficient evidence? At times the *exigencies of life* and the *need of immediate action* require a definite decision and a definite acceptance of one side of a question. The will then compels the intellect to be satisfied with the limited evidence at hand and to give its firm assent. That error is not only possible, but probable and frequently actual, in such circumstances, is but natural. Again, in many cases, the only evidence available under existing conditions of time, place, educational facilities, etc., is *mediate or external*. Rather than refrain from a decision

entirely, the will influences the intellect to give its assent. The motives are really *sufficient* for the ordinary purposes of ordinary life; since, however, they do not rest on the 'self-evidence' of reality, they do not exclude all possibility of error, and the intellect may thus pass a judgment which is a faulty interpretation of reality.

In very many instances the will is swayed by *partisanship and prejudice*. Likes and dislikes, loves and hates, pleasure and pain strongly influence the will in its decisions and these decisions exert a corresponding influence on the judgments of the intellect. There are even such things as *scientific prejudices*. Since the reality of the universe is so vast and complex, preventing a complete unification and systematization in the limited mind of man, various hypotheses and theories obtain plausibility in the course of time among scientists. All scientists are human, and absolute impartiality in the search for truth is a morally unattainable ideal. Eager to substantiate their own views, they unconsciously favor all partial evidence which seems to prove their hypothesis or theory. They frequently overlook real contrary evidence. Here indeed 'the wish is father to the thought,' and error is the result. That religious prejudices frequently color judgments and lead to errors, needs hardly be mentioned.

Emotional instability and the desire to *shirk* protracted *labor* are also prolific causes of error. We want short-cuts to results. Our hectic haste of living, our love of ease and indolence, our proneness to distractions of all kinds make us impatient of the drudgery of long and arduous study and research, and that hinders the intellect from bending all its

energies to the proper sifting of evidence. All this, added to faulty methods and defective information in our preliminary education, has the tendency to make us slipshod in our search for truth. Many errors could be avoided through greater care and effort in our thinking.

From the above analysis of the causes and occasions of error, we see that error is not an inherent characteristic either of reality or of intellect; it is the result of the determining influence of our will. Error as such is *incidental* and *accidental* to judgments; proper attention to the objective evidence of reality makes it avoidable. And this shows that our judgments are *essentially valid* as true interpretations of reality.

SUMMARY OF CHAPTER XVI

A judgment is always a mental pronouncement about reality; as such, it possesses a truth-claim. What constitutes truth and error? How can we discriminate between them? What is the criterion of truth?

1. *Truth and Error.* Judgments refer to reality. Therein lies truth or error. If judgments correctly interpret reality, they are true; if incorrectly, they are false. Truth, therefore, is the *conformity of judgment to reality*; error, the *disconformity of judgment to reality*.

2. *Criterion of Truth; Motive of Certitude.* A criterion of truth is the rule or test by which we distinguish true judgments from false; the final criterion, beyond which there is no appeal, is the *ultimate* criterion. Such a criterion is necessary, otherwise we could not distinguish truth from error. That we possess a criterion, is clear from the fact that we correct erroneous judgments.

Certitude is that state of the mind in which it gives a firm assent to a judgment *without fear of error*, due to recognized valid reasons. The *motive* of certitude is the ground or reason which determines us to assent with firmness to a judgment as true; it is the recognized *truth-value* of the judgment. The same reasons which determine the truth of the judgment determine also the certitude of the assent; hence, the criterion of truth and the motive of certitude are objectively identical, though conceptually different. The criterion of truth is *objective evidence*.

3. *Nature of Objective Evidence.* It is that characteristic of reality whereby it becomes *objectively manifest to the perceiving faculty*. There are various kinds of objective evidence.

Internal evidence exists, when the ground for our judgment is clearly perceived to *lie in the reality* affirmed by the judgment. If this interpreted reality is directly presented to the intellect or the senses, this evidence is *immediate*; otherwise it is *mediate*. *External* evidence exists, when the ground for our judgment lies, not in the reality itself affirmed by the judgment, but in some other reality *outside* it. Such is the evidence of *authority* and of the *imprudence of doubt*. Objective evidence, whether internal or external, is the criterion of truth and the motive of certitude; but the *ultimate* criterion and the *ultimate* motive is internal, immediate evidence, or self-evidence.

4. *Evidence the Criterion of Truth.* Experience and reflection prove this. We do not arbitrarily apply predicates to subjects and consider such judgments true. The intellect needs a ground or reason outside itself, because judgments are clearly perceived to be interpretations of extra-mental *reality*. Hence, the clear presentation of reality is the ground for considering judgments to be true and worthy of a firm assent; but that is the 'objective evidence' of reality. All *types* of truths reveal this same fact. The difference between the attitudes of the intellect in *certitude*, *doubt*, and *opinion* is due to the difference of reality in its self-revelation to the mind.

5. *Ultimate Criterion and Motive.* The ultimate criterion and ultimate motive must be such as to exclude the

possibility of doubt or error. To do this, reality must be *self-evident*; the 'external' evidence of authority and of the imprudence of doubt does not exclude the possibility of doubt and error, and 'mediate' always rests on 'immediate' evidence. *Experience* proves that all knowledge derives its validity from a few fundamental principles which are self-evident, because they are based on the self—evident concepts of 'being' and 'not—being.

6. *The Causes of Error.* Error is not caused by reality, because reality reveals itself as it is; nor by the mind directly, because it tends toward truth. Error is the result of the influence of the *will* on the intellect, inducing the latter to assent to a judgment without sufficient objective evidence on the part of reality. The *factors* which move the will in this are manifold: the complexity of reality, imperfections in the organs, necessity of action, partisanship and prejudice, emotional instability and the desire to shirk protracted labor.

Error is thus *incidental* and *accidental*. Our judgments are, therefore, essentially valid as true interpretations of reality.

READINGS

P. Coffey, *op. cit.*, Vol. II, Ch. XXIII; J. Barron, *op. cit.*, Chs. XV, XVI, XVIII; J. Rickaby, *op. cit.*, Chs. XIII, XIV; J. G. Vance, *op. cit.*, Ch. X; T. Pesch, *op. cit.*, pp. 281-349; J. Donat, *op. cit.*, Ch. II; A. K. Rogers, *What is Truth?*, pp. 1-44; G. F. Stout, "Error," in *Personal Idealism*, ed. by H. Sturt; R. W.

Sellars, *Critical Realism*, Ch. X; J. B. Pratt, *What is Pragmatism?*, Lect. II.

Chapter 17

FALSE CRITERIA OF TRUTH

IN THEIR ENDEAVOR TO DISCOVER A CRITERION OF TRUTH, philosophers advance various theories. Quite naturally, their views are influenced to a very great extent, if not completely, by their general theory of knowledge. Scientists as a rule, when engaged in the practical work of research, submit to the guidance of the objective evidence of reality; they demand that every hypothesis and discovery be tested by 'experiment,' and that is nothing less nor more than an appeal to objective evidence. But even scientists, when they enter the speculative field of philosophy, at times advocate theories at variance with their practical views. Professional philosophers, of course, attempt the solution of the problem of truth and certitude by reasoning from the principles of knowledge in general. As a result, diverse theories have arisen, and these now demand our attention. Some criteria are *intellectual*, and some are *non-intellectual*, in character. By showing their inadequacy, 'objective evidence' as the criterion of truth will be indirectly confirmed.

DESCARTES, MALEBRANCHE, ROSMINI

According to *Descartes* the things of which we have a *clear* and *distinct idea* are true. He accepted his own existence as true, because he had a 'clear' and 'distinct' idea of it. This, then, became for him the criterion of truth.

Now, the 'clearness' and 'distinctness' of our ideas can be taken subjectively and objectively. Taken *subjectively*, it means that the idea as a subjective product of the intellect is clearly and distinctly conceived; it is clear and distinct to the intellect. But this does not give us a guarantee that this idea corresponds to reality, and that the reality represented in the idea actually exists. I can have, for instance, a very clear and distinct idea of a centaur or a fairy or a mythological deity; but does that mean that such beings exist? To distinguish between such beings and 'real' beings I need some criterion different from the subjectively clear and distinct ideas of them. Taken *objectively*, it means that the idea is clear and distinct as an interpretative representation of reality; the idea is such, because the *reality itself* is clear and distinct before the mind. In that case, however, we have immediate, objective evidence of reality as the criterion of truth, and not the mere clearness and distinctness of the idea as such. Descartes, however, took this criterion in a subjective sense, because he maintained that the external world cannot be presented to the spiritual mind. As such, his criterion of a 'clear and distinct idea' is inadequate, since it can never show us whether our judgments agree with reality.

Malebranche, accepting Descartes' view that we cannot acquire a direct knowledge of the material world through sense-perception, tried to explain this knowledge by

assuming that we have an *intuition* of reality *in the Mind of God*: we see all things in God. The Mind of God, then, is our criterion of truth. This, of course, is contrary to experience. We have absolutely no consciousness of an intuition of God in any form. And if we had, *error* would be utterly *impossible*, otherwise God Himself would have erroneous ideas of things.

Though *Rosmini* (1797—1855) differs from Malebranche in details, fundamentally his view is the same. We have a direct intuition of *Being* in its transcendental ideality, and this innate concept or intuition makes the soul intelligent. Real knowledge, therefore, is derived from this intuition of Ideal Being. The objection against Malebranche's view applies here also: we have no consciousness of such an intuition, and error would be unaccountable, because impossible.

The theories of Malebranche and Rosmini are a form of *ontologism*. *Gioberti* (1801—1852) maintained a similar doctrine.

THE THEORY OF COHERENCE

Idealistic monism of the Hegelian type does not accept the view that, in order to be true, judgments must correspond with extra-mental reality. There is a simple reason for this: since thought and thing, ideal and real, Ego and non-Ego, are fundamentally identical in the Absolute, there exists no extra-mental reality with which judgments could correspond. The truth of a judgment, then, must be its *coherence*, or consistency, with the *whole system of*

knowledge previously recognized as true. When the whole system of accepted judgments is true, any particular judgment in harmony with it will be true; otherwise it will be false. After all, reality is reality for us only in so far as it is known by us; and this knowledge is expressed by us in a systematic body of judgments acknowledged to be a correct interpretation of our experiences.

This criterion of truth, namely the *coherence* of a particular judgment with our general system of knowledge, is *inadequate* and therefore of little value for judging the truth of our mental pronouncements. It is, of course, correct that 'All true judgments are mutually coherent'; but for that reason we cannot simply turn the statement around and say that 'All mutually coherent judgments are true.' Even the tyro in the science of correct thinking knows that a simple conversion of this sort is bad logic; the only permissible conversion must state that '*Some* mutually coherent judgments are true.' But this means that consistency or coherence as such is not necessarily a guarantee of all truth. Idealism, for instance, as a system of thought may have coherence *in itself*, but we have already shown that idealism is based on the initial fallacy of the 'idealist postulate' that we cannot transcend our mental states; of what value, then, is its internal coherence as a 'system'? The Ptolemaic theory of a geocentric planet-system was also coherent, but astronomy has definitely established that it is false and that the Copernican theory of a heliocentric system is correct. Consequently, the mere coherence of a particular judgment with a general system of knowledge is not in itself sufficient to establish its

particular truth. Since idealism as a system is false, the criterion of coherence, based on it, is also false.

Furthermore, ordinary *existential judgments* cannot be distinguished as true or false by their coherence with a general system of co-ordinated judgments. Consider judgments like the following: 'It is snowing today'; 'I feel chilly'; 'this paper is white'; 'my pen is out of order.' In what possible way could such mental pronouncements be judged to be true or false by examining their coherence with the systematic body of truths contained in physics, chemistry, biology, astro-physics, or philosophy? Yet they must be true or false. The criterion of coherence, however, will never enable me to decide whether they are true or not. Now, the greatest number of our judgments concern everyday matters like the above; they are inconsequential in themselves, but we must be able to decide whether they agree with reality and as such are true or false. The criterion of coherence is thus seen to be useless.

If driven to its logical conclusion, the theory of coherence will demand that we must have an almost *omniscient knowledge*, otherwise a particular judgment might be in coherence with one system and not in coherence with another. Or shall we say that it must only be consistent with *our own system*? Then the criterion is purely *subjectivistic* and *relativistic*, but that is precisely what a criterion of truth is not supposed to be, because its function should be to tell us whether our judgment is in accordance with the *reality* we are interpreting and not merely with our preconceived and subjective idea of it.

Coherence, therefore, is inadequate as the criterion of truth.

FIDEISM AND TRADITIONALISM

Some thinkers, anxious to stem the tide of mental anarchy resulting from the philosophy of Descartes, discredited the power of human reason to reach truth without the aid of some external criterion. They defended the theory that faith or tradition must furnish the ultimate guarantee of the truth of our knowledge.

Pascal (1623—1662), though not a skeptic, maintained that reason was too impotent to arrive at any certitude regarding the great truths which shape the destiny of man, like the existence of God, the immortality of the soul, revelation, and Christianity; we must begin our knowledge with an act of *faith*. *Huet* (1630—1721) demanded the acceptance of Divine Revelation as a basis of certitude; reason can give nothing more than probability in knowledge. That is traditional or historical *fideism*.

This view is extreme. Concerning *supernatural* truths it is indeed correct to say that a revelation is required in order to be certain of them; but it is absurd to think that a divine manifestation is necessary for *natural* truths of the ordinary kind. Why should we need revelation to obtain certitude that 'Wood floats,' 'water freezes,' 'light travels with a speed of over 186,000 miles a second,' 'fire burns,' and a thousand similar facts of the material and natural order? Besides, if we are to believe in a Divine Revelation, we must have *prior certitude* that God really exists and that

He has actually revealed certain truths; otherwise our act of faith would be blind and lack a rational foundation. The existence of God, however, cannot be clear to our intellect except through a process of reasoning based on the objective evidence of the Principle of Causality as applied to the world around us. Consequently, objective evidence, not faith, is the ultimate criterion of truth in the order of natural knowledge.

Traditionalism owes its origin to *De Bonald* (1754—1840). According to his view God gave a primitive Revelation to mankind which is handed down as a *tradition* from generation to generation. This belief of mankind reveals itself particularly in *language*, which is not the product of man's rational thinking, but a direct gift from God. Without tradition man can know nothing; all knowledge is derived from it. The ultimate criterion is, therefore, the revelation and authority of God. *De Lamennais* (1782—1854) sought the criterion of truth in the *general agreement of mankind (le consentement universel)*, because that is the voice of God transmitting the primitive Revelation to the individual mind. *Bautain* (1795—1867), *Bannetty* (1798—1879), *Ventura* (1792—1861), and *Ubaghs* (1800—1875), held similar views. All agree in this that the fundamental act of knowledge consists in belief.

Such a belief, however, cannot be the ultimate criterion of truth. The argument against fideism applies here also: we must first have *evidence* that God exists, that He has revealed truths, that these truths have reached us unchanged, and that the instrument of its transmission is tradition or the universal agreement of mankind. Authority,

whether it be that of faith in revelation, tradition, or the general verdict of mankind, is an *external* criterion, and its validity must first be proved by *independent reasons* before it can be accepted as trustworthy and true. But this means that 'objective evidence' is the real criterion of truth.

THE TEST OF INCONCEIVABILITY

Spencer, Mill, and their followers, maintained that evolution produced in man's mind certain fixed modes of thought in virtue of which the mind makes necessary judgments, such as ' $2 + 2 = 4$,' 'the whole is greater than any of its parts,' 'every effect must have a cause,' 'a circle is round,' and so forth. In consequence of this fixed grooving of the mind in a definite direction, such judgments are considered to be necessarily true *because their opposites are inconceivable*. ' $2 + 2$ ' must be judged to be ' 4 ,' not because the terms of this judgment are self-evident in themselves, but because we cannot conceive that ' $2 + 2$ ' would be ' 3 ' or ' 5 ' or any other number. If evolution had developed our minds in a different way, ' $2 + 2$ ' might be ' 3 ' or ' 5 ' or any other number; but it so happened that now the inconceivability of ' $2 + 2 = 3$ ' or ' $2 + 2 = 5$ ' makes the judgment ' $2 + 2 = 4$ ' to be true. And the same applies to every 'true' judgment: it is true because its opposite is 'inconceivable.'

This inconceivability of the opposite is, then, the ultimate criterion of truth.

This theory hardly needs refutation after what has been said before. Evolution, as we have seen, cannot give an adequate explanation of the *absolute* necessity of our

axiomatic judgments. We have shown that it is the intellectual *insight* into the self-evident relation existing between the ideas of such judgments in themselves which compels our assent to them as necessarily true. Consequently, it is not through their *opposites* that we perceive them to be true. Take the judgment, 'A circle is round.' If and when I know that 'A circle is a plane figure, comprehended by a single curved line, each part of which is equidistant from a common center,' then I know also that it *must* be 'round,' because that is what is meant by the concept 'round.' I do not need to compare the figure of a circle with a triangle, or a square, or a parallelogram, or a hexagon, or a parallelopipedon; all that is required is that I understand the terms contained in the judgment 'A circle is round,' in order to see that it is true. Were Spencer's criterion correct, I would first have to compare the figure of a circle with *every other* geometrical figure and see that it is 'inconceivable' that the circle be this or that or the other figure, before I could know that the circle *itself* is round. The reverse is true: I perceive clearly that the judgment 'A circle is square' is inconceivable, because I see it to be self-evident that 'A circle *must* be round'; it is only *after* I know that 'roundness' is contained in the idea of 'circle' that I realize that any other figure, like a square, triangle, etc., is not contained in the idea of 'circle.' In other words, the Principle of Contradiction is based on the Principle of Identity, and not vice versa. Hence, the self-evidence of the judgments themselves, and not the inconceivability of their contradictories, is the ultimate criterion of truth.

EPISTEMOLOGICAL MONISM

Neo-realism, in its effort to escape from idealism, went to the opposite extreme: it advocated an epistemological monism which is pan-objectivistic, because it ends by *identifying* the knowing *mind* with the known *object*. "When things are known, they *are* ideas of the mind. . . . Ideas are only things in a certain relation; or, things, in respect of being known, are ideas.... The difference between knowledge and things, like that between mind and body, is a relational and functional difference, and not a difference of content. . . . We have become wedded or indeed welded to the phrase — my thought is of an object — when we ought to say and mean — my thought is a portion of the object — or better still — a portion of the object is my thought: — exactly as a portion of the sky is the zenith."¹ Consciousness itself is merely a 'class of things'; consciousness is not of things, but things themselves are conscious by the mere fact that they are responded to by another entity. In this manner, according to the neo-realists, consciousness is numerically identical with the object of which we are conscious, the Ego with the non-Ego, the mind with nature, the ideas with the things thought of.

This makes the problem of knowledge extremely simple, because it eliminates the mind entirely from the process of knowledge; the only existent realities are the things themselves. Knowledge must always correspond to reality in this theory, because they are both identical. But therein neo-realism *refutes itself*. If we are certain of anything through our consciousness, it is of the fact that we are *not*

identical with the objects of which we are conscious. When I am aware of the photograph or paper on my desk, it is futile for me to think that it is not I who am conscious of the photograph and paper, but that it is the *photograph* itself and the *paper* itself which is conscious. We have proved elsewhere that mind and matter, Ego and non-Ego, the mental and extra-mental, are distinct realities which are not identical in being; to eliminate the mind will never solve the problem of knowledge.

If our consciousness is identical with the objects of which we are conscious, then, of course, our judgments should *always* correspond to reality and be true. But that is not the whole of the problem of knowledge; we must also explain the possibility and fact of *error*. When, however, we assert that the knowledge of objects and the objects of knowledge are identical in being, there is simply *no possibility of error* in judgments; and that is contrary to *fact and experience*. Neo-realists are not always consistent in their teachings. They frequently speak of the mind and the world as really distinct in being. When, however, they explain the nature of the mind and identify it with the objects known (as they do), they deprive both truth and error of all meaning; because under such circumstances any conformity or disconformity between mind and *reality* is out of the question. A theory that can give no intelligible explanation of truth and error is false and untenable.

THE CRITERION OF COMMON SENSE

The criteria investigated above are of the intellectual type. Others are non-intellectual in character, in as much as they are not founded on the intellectual nature of man.

The Scottish School places the criterion of truth in the common sense of man. *Thomas Reid* (1710—1796), the real founder of this school of thought, insisted that our knowledge is based on principles which are evident and are recognized as such by the 'common sense' of man; from these principles man derives a body of primordial 'truths of common sense' which serve as a sort of general fund of knowledge for mankind. So far no objection can be raised against him and his followers, because this view conforms to the doctrine of 'objective evidence' as the criterion of truth. At times, however, the Scottish philosophers seem to teach very plainly that these fundamental principles are accepted through an *instinctive impulse* of human nature, rather than through an *intellectual insight* into the objective truth. In that case, then, the ultimate criterion would consist in some sort of *belief* in the rationality of this impulse, and not in the self-evidence of reality manifesting itself to the mind. Other adherents of the 'common sense' doctrine are *James Oswald* (1727—1793), *James Beattie* (1735—1803), *Dugald Stewart* (1753—1828), and *Thomas Brown* (1778—1820).

If 'common sense' be interpreted as a kind of instinctive belief, it is obviously only a *subjective* criterion of truth and motive of certitude, and as such it is inadequate. Belief necessarily presupposes an *insight* into the *grounds* of this belief, before it can be used as an intelligent guide. We must be sure *beforehand* on indisputable evidence that such an

instinct exists in our nature, that it is reliable and not prone to error, and that it can give us intellectual certitude. If these conditions are not present and known to be present, we can have no assurance that our knowledge is true; we would indeed feel the subjective necessity to judge as we do, but we could never verify our judgments and see whether they agree with reality. Now, either we know the grounds of this belief, or we are ignorant of them. If we are *ignorant* of them, our instinctive belief is blind and without rational foundation; and then it is useless as a criterion of truth, because it is contrary to the nature of the mind as an essentially 'cognitive' faculty to be determined in its knowledge by a blind instinct. And if we know the grounds of this belief, then the 'objective evidence' of these grounds, and not the belief itself, is the ultimate criterion.

CRITICAL REALISM

Critical realists make a clear distinction between the knowing mind and the objects known: mind and world are diverse realities. The world is known by the mind by means of certain 'characters' or 'essences.' These latter imply "a reference to, and an acceptance of, a real, extra-experiential universe of existents. It is not that we reason to, or infer, such a fact beyond experience. The *belief* is rather an *assumption* which we make by *instinct*, since it is only by *taking for granted* that we are in relation to realities on which the needs of life depend that we are able to maintain ourselves alive at all. . . . An 'object,' therefore, is constituted by a group of characters with which

psychological experience makes us familiar, *plus the instinctive sense* that there is something present of which we have to take account, the latter aspect being the outcome of that state of muscular tension which is conditioned by our nature as active beings dependent on an enviroing world, while the characters are used, also *instinctively*, to give this a specific form.”² We intuit the ‘characters’ or essences directly, and these we refer to a physically existing object by means of an *instinctive impulse* of our nature. The ultimate criterion of truth is, therefore, not the ‘objective evidence’ of reality as such, but a belief and an assumption, made by instinct, that these ‘characters’ or ‘essences’ reveal reality as it is.

J.E. Turner very pointedly sums up the situation for critical realism as follows: “All realisms . . . must finally rest, exactly as naive realism does, upon the process and content of perception — upon this content as more keenly criticized and more rigidly tested; and this analysis must be pursued to a final verdict. If then this content is regarded as not in itself physical, two alternatives arise: either physical reality is never ontologically identical with perceived content, and therefore, since there is no other mode of directly apprehending it, this reality is noumenal; or realism must fall back on an instinctive, but non-philosophic, belief in the known existence of physical reality. This dilemma faces critical realism. If it maintains its universal distinction between physical things themselves beyond our consciousness, and their perceived or apparent sense-characters, then it becomes a noumenalism. But if, on the other hand, it founds its affirmations on instinctive belief, it

forfeits all title to be regarded as a philosophic system, whatever other merits it may possess. Or at best it can become a philosophy only of the content of perception as distinct from physical reality itself."³ In neither alternative can we have a *rational* foundation for our certitude that our judgments correspond to reality; our ultimate criterion of truth would be either *blind instinct* or an unproved and unprovable *assumption*. But such a criterion is *subjectivistic* and useless.

PRAGMATISM AND HUMANISM

Pragmatism, or *Humanism*, is a system of thought which is voluntaristic. The truth of judgments does not arise from their correspondence to reality. The pragmatist criterion of truth consists in the *utility* of a belief in satisfying *human needs* in a social way. That is true which 'works,' which has practical value, which leads to beneficial results for human progress, which promotes the best interest of mankind through living experience. Results *make* a belief true or false for the time being. Beliefs *become* true, when they function for the social welfare of humanity; and false, when they cease to function along these lines. Truth is, therefore, nothing static and immutable, but something dynamic and perpetually changing. Consequently, a belief may be true at one stage of development, and the same belief may be false at a different stage; something may be true under one set of conditions and false under another; a theory may be true for one class of people and false for another class, depending on the intellectual and cultural conditions

prevailing at a particular time and in a particular locality. Truth, as will be seen, is entirely *subjective* in character.

This interpretation of truth is contrary to the accepted *meaning* attached to the word by all men, whether educated or uneducated, and amounts to a *perversion of language*. To identify 'truth' with 'utility' is nothing less than to reduce the 'true' to the 'good.' The 'good,' however, is the object of the *will*, not of the intellect, while the 'true' has been considered by men at all times to be the proper object of the *intellect*. A lamentable confusion of thought must result from this identification of the 'true' with the 'good.' If both are identical, so that 'truth' is the object of the will, what can possibly be the *object of the intellect*? As a natural faculty of man it must have a natural object, just as well as the will; but if we remove 'truth' from the intellect, the latter is without a proper object with which to exercise its power. The exercise of any power or faculty involves the striving to *realize something*, and that demands an object within its own proper sphere of activity. Every power or faculty of the human organism, internal as well as external, has its proper object; the will, for instance, strives toward the realization of the 'good.' But what could possibly be the object of the intellect except the realization and acquisition of 'truth'? There is no other object assignable or discoverable. Pragmatists may *assert* that the 'true' is identical with the 'good,' but that will never *really* identify such totally disparate things. Their attitude is unjustifiable, because contrary to the fundamental conceptions of men.

Besides, in identifying the 'true' with the 'good, pragmatists *do not solve the epistemological problem of knowledge*. The problem of 'knowledge' remains just as acute as before: it cannot be solved by transferring the concept of 'truth' from the field of knowledge to the field of action and then denying that a 'problem of knowledge' exists. We must still answer the questions: Is there an objective reality which is extra-mental? Can this reality be known? How is it known? How do our judgments interpret this reality? Do they correspond with it? How can we have certitude about this? These questions constitute the 'problem of knowledge' and the mind of man will not be satisfied, and will continue to exert its powers of reasoning, until these questions are answered or until the mind sinks in despair into skepticism. But ignore this problem the mind cannot. Whether we call the answers to these questions 'truth' or whether we give it another name, makes little difference: it is the problem and its solution that count, and they pertain to the province of the *intellect* and must be solved by the intellect and not by the will. Pragmatism, therefore, does not solve the problem of knowledge by dubbing it 'metaphysics' and then ignoring its existence.

And pragmatists are *inconsistent*. They identify 'truth' with 'utility' and thus transfer it to the province of the will. Nevertheless, they appeal to the *intellect* with a great array of arguments, to prove that 'truth' is to be judged according to its beneficial results. Thereby they surreptitiously substitute the intellect for the will as the arbiter of truth and error and unconsciously admit after all that it is the *intellect*, and not the will, which must decide whether their

theory or opposite theories give the correct (or 'true') solution of the problem of knowledge and truth. Since they appeal to the reasoning intellect, they must abide by its verdict. Now, it is the verdict of the reasoning intellect, as we have shown, that truth is found in the *judgment interpreting reality* and not in the results which flow from a certain belief. It is not 'utility' which determines the 'truth' of judgments, beliefs, and theories, but the objective evidence of reality. In fact, when pragmatists attempt to prove their own theory, they marshal numerous facts and reasons in order to show that 'utility' and not 'objective evidence' is the criterion of truth and the motive of certitude; and in doing so, they appeal to the *objective evidence* of these facts and reasons to establish their case. Their own attitude and action is their best refutation.

Moreover, pragmatists claim that those beliefs are 'true' which satisfy human needs and produce beneficial results for man in a social way. What needs, and what *beneficial results*? We must know them, so as to be able to ascertain which beliefs contain 'truth' and which 'error.' In order to know whether needs are real or apparent and whether results are beneficial or harmful, it is necessary for the intellect to discover the *facts* regarding these needs and results and then pass *judgment* on the truth or error of the beliefs. But here again, if any judgment corresponds to the facts at issue, it is 'true'; and if it does not, it is 'false.' Thus it can be seen that truth and error reside in the judgment and their presence is determined by the objective evidence of the facts. The good results may be taken as an index or *sign* of truth, but the ultimate *criterion* of truth lies in the

objective evidence before the mind. As long as it is necessary to have a criterion to discriminate between 'real' and 'apparent' needs, between 'beneficial' and 'harmful' results, between beliefs which 'work' and those which 'do not work,' results cannot be considered the ultimate criterion. Results do not appear with labels attached; they can be discerned only by the intellect. Even from a pragmatist standpoint, then, the truth or error of beliefs cannot be decided without the judging power of the intellect. The ultimate criterion for the intellect, however, as has been seen, consists in the clear self-manifestation of reality or *self-evidence*. Hence, pragmatism does not satisfy the 'needs' of the intellect as a theory of truth and knowledge and, judged by its own criterion, is unsatisfactory and therefore false.

Finally, how can I apply the pragmatist criterion to everyday *existential judgments*? I judge that 'My watch is slow,' 'a car is passing,' 'my feet are cold,' and so on. These statements contain truth or error. By what possible results for human progress and welfare am I to decide whether they are true or false? Or will a pragmatist seriously assert that there is no truth or error in these and similar judgments? If he claims there is not, we must dissent; if he agrees that there is, he must admit that his criterion does not apply. A criterion, however, which fails in its essential function, is *worthless*, because it is no criterion at all: it does not 'work.'

RELATIVISM AND TRUTH

There is *relativity in all knowledge*. By the very fact that a thing becomes known, a relation is established between it and the knowing subject. In order that an object be 'known,' it must be cognitively present *to* the knower and be consciously apprehended by the knower; thereby both object and subject obtain a 'reference to,' or 'relation toward,' each other. To say that the mind could know an object without any relation existing between them, would be the same as to say that an object could be known without being 'known' and a subject could know without 'knowing'; but that would be absurd. When we say that the mind can know reality 'as it is in itself independent of the mind,' we do not mean to claim that reality, when known, is independent of the mind in the act of *knowledge*, but that it is independent of the mind in its extra-mental *existence*.

Maher has given a true and succinct expression of the relativity of knowledge, when he states — "(A) that we can only know as much as our faculties, limited in number and range, can reveal to us; (B) that these faculties can inform us of objects only so far, and according as the latter manifest themselves; (C) that accordingly (a) there may remain always an indefinite number of qualities which we do not know, and (b) what is known must be set in relation to the mind, and can only be known in such relation."⁴ This, however, is not the usual meaning attached to the phrase in modern philosophy. *Relativity of knowledge* there means that character of knowledge in virtue of which it has only *relative value*, i.e., knowledge is not immutably and absolutely true in itself, but is true only according to the mental laws and conditions of the knowing subject. The

theory which teaches this doctrine, is called *relativism*. Since knowledge is true only for the individual subject who possesses it and is determined by his peculiar mental constitution, it is also subjective in character. Relativism is thus equivalent to *subjectivism*.

According to relativism, then, knowledge and truth have no absolute and permanent validity: they are valid only for man as he is at present constituted, because they are the immediate product of his cognitional processes, and these processes operate according to the laws which govern his particular organism. Our knowledge of the extra-mental universe, for instance, is valid for man, but that does not mean that this knowledge corresponds to *reality as it is*. All forms of idealism and representative realism are thus seen to be relativistic, in as much as these theories subscribe to the doctrine that we can know nothing but our internal *subjective* states of the mind. Mentalists deny the existence of extra-mental reality altogether; representational realists, like Kant, Spencer, Mill, Huxley, and the adherents of sensism, positivism, and pragmatism, admit the existence of extra-mental reality, but they maintain that the knowledge of this reality is so transformed and transfigured in perception and intellection as to give no insight into what reality *actually is*. Such is the nature of all human knowledge and truth — it is relative and subjective, without objective validity. *Protagoras* (born about 480 B.C.) already defended this doctrine, asserting that “man is the measure of all things.”

Relativism attacks the very nature of knowledge and truth in their foundation. It would be next to impossible to

convince a confirmed relativist of the erroneousness of his position, because, like the universal skeptic, he admits no fixed and objectively valid laws of reasoning. But for those who still have an open mind it must be clear that *relativism is false*. If there are no truths which are absolutely valid, then even the Principles of Identity, Contradiction, Excluded Middle, and Sufficient Reason possess only relative, temporary, ephemeral value. They are true *now* for *us*, due to the subjective constitution of our mind; but they need not be true in *themselves*, nor need they have been true always in the past, nor need they be always true in the *future*. But the consequences of such a doctrine are absurd in the extreme. There could then have been a time, or a time may come, when it would be possible 'to exist' and 'not to exist' at the same moment; to be an 'entity' and also a 'non-entity' at the same moment; in fact, it would be possible to be *neither* an 'entity' *nor* a 'non-entity,' but something between 'entity' and 'non-entity,' at the same moment. And it would also be possible for knowledge to be 'true' and 'false' simultaneously. These are the inevitable consequences of relativism, if consistently carried to its logical conclusions.

That relativism actually leads to the renunciation of the Principle of Contradiction, at least by implication, can be seen in the most recent of epistemological theories, that of *objective relativism*. According to this theory, knowledge is relative, but this relativity is objective in the datum or character-quality of the thing as perceived. What I am aware of in perceiving a thing is its *quality* or its set of qualities; it is this that I perceive, and not the thing itself. "The qualities are not the existent, to be sure, but they are

its whole nature, and it has no other.”⁵ When perceiving an orange, I perceive the qualities ‘yellowness’ and ‘roundness’; these qualities “are its whole nature, and it has no other”; as such, then, these qualities constitute the objective essence of the orange. The result of this doctrine is that these qualities will be *objectively* that what they *appear* to be, *relative* to each individual from his particular *point of view*. The classic example is that of the penny. You and I look at it from different points of view. From where I stand, it appears as ‘circular’; from where you stand, it appears as ‘elliptical.’ Since our knowledge of these qualities is relatively true to each of us, and since these qualities are objectively the only thing we know of the penny, it follows (according to the theory of objective relativism) that the penny is really and *objectively circular and elliptical at the same time*, since we both look at it at the same time.

The implication of such a relativistic theory is obvious. Things can really have a different size, shape, color, temperature, etc., at one and the same moment; because as things *appear*, they *are*, i.e., to us. As Edward F. Talbot justly observes: “A knowledge of reality becomes an impossibility, since we know things not as they are, but as they appear. Appearances become all; reality vanishes. In becoming all, appearance becomes nothing. There is no common appearance, no unity of perception. Each appearance is proper to a particular point of view and the content present to the different subjects varies not only numerically but qualitatively. Thus we know not reality, and

appearance finally fades into the projection of a point of view.”⁶

Objective relativism, and every other theory of relativism, thus involves a denial of the most fundamental laws of being and thought — the Principles of Identity, Contradiction, and Excluded Middle. But to destroy their validity means to destroy the very possibility of valid knowledge. The truth of relativism and the truth of the First Principles are *incompatible*. If the First Principles are allowed to stand in their objective validity, relativism is false; but if relativism is accepted, the First Principles must fall as invalid illusions, and all knowledge, *including relativism* as a theory of knowledge, must fall with them. But that would be the suicide of reason and the triumph of universal skepticism. Relativism, therefore, must be rejected, and truth must be taken as something absolute in an objective sense.

So far as the criterion of objective relativism is concerned, it must consist in the *appearance* of the ‘character or essence. This being the only thing we can know about an object, it is plain that our judgments must *always* correspond to it. As such, then, our judgments will always be relatively and subjectively true. But here again the criterion fails as a criterion because it will never enable the mind to discriminate between ‘true’ and ‘false’ appearances. In fact, there can be no such thing as *error* in this system, because every appearance is ‘true’ for each individual according to his subjective point of view. This, however, contradicts experience; error is a fact, and it must be accounted for. Since the objective difference between

truth and error is obliterated in relativism, it is a false system of knowledge.

By exposing the inadequacies and absurdities contained in these various theories regarding the nature of truth and the criterion of truth, we have confirmed the doctrine that the

ultimate criterion of truth and motive of certitude consist in the internal, immediate objective evidence of reality manifesting itself to the intellect. And thereby another spontaneous conviction of man has been critically examined and philosophically vindicated, namely, that the *judgments* of the intellect are a true and valid source of knowledge in interpreting reality.

SUMMARY OF CHAPTER XVII

Various philosophers have advanced different criteria of truth, depending on their general theory of knowledge.

1. *Descartes* considered 'clear and distinct ideas' to be the criterion. This would not guarantee the correspondence of the idea with reality. *Malebranche* contended that we know all things through an intuition of them in the Mind of God; *Rosmini* claimed that we know all things through an intuition of Being. This is contrary to our experience.

2. *Idealistic monism* finds the criterion in *coherence* or consistency. But even a false system may be coherent. By this criterion we could not distinguish between true and false 'existential judgments.' To know whether a particular judgment is coherent with a system of knowledge would practically demand omniscience.

3. *Fideism and Traditionalism*. Fideism takes 'faith' and traditionalism takes 'tradition' as the criterion. But before we can accept such an external criterion, we must *have prior certitude* about the validity of the authority demanding this act of faith.

4. *Inconceivability of the Opposite*. Judgments are supposed to be true, because their contradictories are 'inconceivable.' If this were true, a statement would have to be compared with its opposite, before its truth could be ascertained. But First Principles are seen to be absolutely true through a direct comparison of the *concepts* of the judgment, not by a comparison of these principles with their contradictories.

5. *Epistemological Monism (Neo-Realism)*. In this theory the mind is reduced to the object known. This is contrary to all experience. If there is no real mind, distinct from the object known, *error is impossible*; but error is a fact.

6. *Common Sense*. The Scottish School places the criterion in the dictates of 'common sense' which it conceives as based on a *blind* instinct. Belief, then, is the foundation of knowledge. If we are ignorant of the grounds of this belief, it is blind and irrational; if we know these grounds, then objective evidence is the criterion, and not belief.

7. *Critical Realism*. We perceive the 'characters or essences' of things and refer them to reality through an *instinctive belief* that these 'characters' are real qualities of things. This means that our knowledge is *not rational*. We could never know whether these 'characters' correspond to reality; we could, then, never distinguish between true and false knowledge.

8. *Pragmatism and Humanism*. 'Utility' is the criterion of truth: beliefs are 'true,' if they produce 'beneficial results.' This is a confusion of the 'true' with the 'good'; and since the 'good' is the object of the will, the intellect would be without an object. This theory evades, but does not solve, the problem of knowledge. Pragmatists are inconsistent, because they appeal to the *intellect* to prove that their theory is 'true.' In order to apply the criterion, we would have to discriminate between 'real' and 'apparent' needs, 'beneficial' and 'harmful' results; but only the intellect can do that through an insight into the *facts* — and then objective evidence is the criterion. Ordinary 'existential

judgments' cannot be judged as 'true' or 'false' according to beneficial results for humanity.

9. *Relativism*. Truth and knowledge have only relative value, according to the laws and conditions of the individual mind; truth is nothing permanent, absolute, and necessary. In that case the First Principles of Identity, Contradiction, and Excluded Middle have only relative validity. *Objective relativism* implies the denial of these principles. But that means the destruction of all knowledge and truth and leads to *skepticism*.

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¹ See Chapter 8

² K. Rogers, *What is Truth?* (Yale University Press, 1923), pp. 65 and 67. (Italics mine. — Author.)

³ *A Theory of Direct Realism* (Macmillan Co., 1925), pp. 128, 129 158

⁴ *Psychology*, 8th ed. (Longmans, Green and Co., 1930), p. 158 16

⁵ A. E. Murphy, *Ideas and Nature*, University of California Publications in Philosophy, Vol. 8, 1926, p. 202

⁶ E.F. Talbot, *Knowledge and Object* (Catholic University Press, 1932), p.53

Chapter 18

THE TRUTH-VALUE OF REASONING

PERCEPTS LEAD TO CONCEPTS, CONCEPTS TO JUDGMENTS, AND judgments contain truth or error in their interpretative pronouncement about reality. The result of our examination into their validity has vindicated man's spontaneous conviction that human knowledge is essentially trustworthy. Much of our true knowledge is acquired directly by means of immediate sense-perception and by an analysis of fundamental abstract concepts. But reality is often so complex and recondite that it is not self-evident to the mind contemplating it. Many truths cannot be discovered by means of immediate sense-perception as such or by means of a simple comparison of the concepts contained in a judgment. A mediate process of intellection is required in order to disclose the hidden truth. This is the process of *reasoning* or *ratiocination*.

Reasoning is that mental process in which, from truths already known, we *infer* some other truth contained in them and following from them with necessary consequence. The inference draws out and makes explicit a truth which is implicitly present in other truths. This can be done in two ways. We can argue from the logical whole to a logical part

of the whole, and then we have a process of *deduction*; or, we can reason from the truth of the logical parts to the truth of the logical whole, and that is the process of *induction*. In the former the inference goes from the more universal to the less universal or particular, and in the latter from the particulars or less universal to the more universal.

Serious objections have been raised against the inferential process involved in deduction and induction. Some philosophers claim that there is an essential flaw in the very nature of these processes. If deduction and induction, they say, are as described, they are incapable of leading the mind to a certain knowledge of new truths and are, therefore, useless as *inferences*. This attack on the validity of deduction and induction is really an attack on the validity of human reason as a source of knowledge and cannot pass unchallenged.

THE PROBLEM OF DEDUCTION

Francis Bacon (1561—1626) criticized the syllogistic or deductive method as being of no value for the acquisition of real knowledge; instead, he advocated the careful study of nature by means of inductive analysis. Whatever value the syllogism may have is due to the fact that it is based on induction. The *empiricists* and *positivists*, since their theory of knowledge is sensistic, also reject the inferential validity of deductive reasoning as exemplified in the syllogism, because this form of argumentation reasons from the truth of the universals to the truth of the particulars, and sensism will not admit that we have genuinely universal

ideas. *John Stuart Mill* launched a vigorous attack on the syllogism as a form of inference. He has this to say:

“It must be granted that in every syllogism, considered as an argument to prove the conclusion, there is a *petitia principii* [a begging of the question]. When we say,

All men are mortal,
Socrates is a man,
Therefore Socrates is mortal,

it is unanswerably urged by the adversaries of the syllogistic theory, that the proposition, Socrates is mortal, is presupposed in the more general assumption, All men are mortal: that we cannot be assured of the mortality of all men, unless we are already certain of the mortality of every individual man: that if it is still doubtful whether Socrates, or any other individual we choose to name, be mortal or not, the same degree of uncertainty must hang over the assertion, All men are mortal: that the general principle, instead of being given as evidence of the particular case cannot itself be taken for true without exception, until every shadow of doubt which could affect any case comprised with it, is dispelled by evidence *aliunde* [from an outside source]; and then what remains for the syllogism to prove? That, in short, no reasoning from generals to particulars can, as such, prove anything, since from a general principle we cannot infer any particulars but those which the principle itself assumes as known.”¹

Mill’s line of argument is plain: the conclusion is *already contained and known* in the major premise; for the major

premise ('All men are mortal') could not be known to be true, if it were not also previously known that the conclusion is true ('Socrates is mortal'). We must be certain that this conclusion is true before we can assume the truth of the major premise, because the truth of the major premise could not be clear without the truth of the conclusion. And yet, by the very fact that we are attempting to prove the conclusion we admit that we are *not certain* that the conclusion ('Socrates is mortal') is true; and that necessarily implies that we are *not certain* of the truth of the major premise. But to prove something from an uncertain and doubtful premise, is an illogical process. On the other hand, if we maintain that the major premise ('All men are mortal') is really certain, then it follows that we must also have known before making the syllogism that the conclusion ('Socrates is mortal') is true and certain; but in that case, why make the futile attempt of proving something which is already known and certain? In the first instance we have a flagrant begging of the question, and in the second instance we are not acquiring a new truth. In both instances the syllogism is useless as an inference, because we have either an *illogical inference or no real inference* at all. Such is the nature of Mill's argument.

Mill himself explains how we, according to his view, arrive at the general proposition ('All men are mortal') used as the major premise. Changing from 'Socrates' to 'the Duke of Wellington,' he states: "Assuming that the proposition, The Duke of Wellington is mortal, is immediately an inference from the proposition, All men are mortal; whence do we derive our knowledge of that general

truth? Of course from observation. Now, all which man can observe are individual cases. From these all general truths must be drawn, and into these they may be again resolved; *for a general truth is but an aggregate of particular truths*; a comprehensive expression, by which an indefinite number of individual facts are affirmed or denied at once. But a general proposition is not merely a compendious form for recording and preserving in the memory of a number of particular facts, all of which have been observed. Generalization is not a process of mere naming, it is also a process of inference. From instances which we have observed, we feel warranted in concluding, that what we found true in those instances, holds in all similar ones, past, present, and future, however numerous they may be. We then, by that valuable contrivance of language which enables us to speak of many as if they were one, record all that we have observed, together with all that we infer from our observation, in one concise expression."²

In this interesting passage Mill's sensism and nominalism is apparent. The major premise expresses a general truth; and this "general truth is but an *aggregate* of particular truths." The meaning of Mill is clear: we have *collective* propositions, but none that are truly universal. They give us a "comprehensive expression, by which an indefinite number of individual facts are affirmed or denied at once"; again, this must be understood in the sense of a 'collective,' not a 'universal,' proposition. Mill then shows how the truth of the major premise is the result of an *inductive* process; and he continues: "When, therefore, we conclude from the death of John and Thomas, and every

other person we ever heard of in whose case the experiment had been fairly tried, that the Duke of Wellington is mortal like the rest, we may, indeed, pass through the generalization, All men are mortal, as an intermediate stage; but it is not in the latter half of the process, the descent from all men to the Duke of Wellington, that the inference resides. The inference is finished when we have asserted that all men are mortal.”³

Mill did not realize it, but in giving this explanation of the genesis of the major premise he ruined the whole value of his initial argument against the validity of the syllogism as a legitimate inference. He himself furnishes the clue which establishes the truth-value of deduction.

THE TRUTH-VALUE OF DEDUCTION

Mill is perfectly correct when he states that we arrive at the truth of the major premise (‘All men are mortal’) by means of an inductive process of reasoning. But how is this induction made? By a complete enumeration of *all* instances? Not at all. It is impossible for us to observe all the instances which are included in a general statement; we can observe no more than a very limited number. Now — and this is vital — “from instances which we have observed, we feel warranted in concluding, that what we found true in those instances, holds in all similar ones, past, present, and future, however numerous they may be.” It is interesting that Mill, the empiricist, includes even the ‘future’ cases in this generalization. The main point is that Mill admits that we can make a legitimate inference from a *limited* number

to a generalization which embraces 'all similar ones' in the 'past, present, and future'; and that necessarily means that the inference applies also to those not *previously known* and not known *at the time* the generalization is made. But this is a fatal admission.

In his initial attack on the validity of the syllogism, Mill contended that we could not know that 'All men are mortal,' unless we had a *previous* knowledge that 'Socrates is mortal.' This contention really asserts that we could not know 'All men are mortal' except through the fact of a *complete* enumeration which, naturally, would then also include 'Socrates' as one of those whom we had perceived to be mortal. Now, Mill admits that 'Socrates' might not have been one of those whose death, like that of 'John' and 'Thomas,' we had actually observed; he could be one of 'the similar ones, past, present, or future,' of whom we have had *no previous* knowledge as to their mortality. Since I felt 'warranted in concluding' that 'All men are mortal,' notwithstanding the fact that I had no previous knowledge of the mortality of 'Socrates,' I can most assuredly *now conclude* that 'Socrates is mortal.' In making this deduction, Mill can no longer assert that the truth of the major premise ('All men are mortal') *depends* on the truth of the conclusion ('Socrates is mortal'), because the truth of this major premise was established *independently* of the truth of the conclusion; it was only from the mortality of 'John' and 'Thomas' and some others that I felt warranted in concluding that 'All men are mortal,' while 'Socrates' and his mortality never entered the inductive process at the time it was made. There will, then, be no begging of the

question, when I apply the general truth contained in the major premise to a particular instance, as long as the latter was not involved in the induction which gave me the general truth in the first place. Mill's argument is, therefore, fallacious.

As long as we are 'warranted in concluding' from an *incomplete enumeration* to a universal proposition, so that *not all* the particular instances are *previously* known, we can legitimately infer the truth of those not previously known by drawing them under the extension of the universal proposition. Such an instance, of course, will be contained in the major premise as a matter of fact, but this fact is not actually known to me until I make the deduction; in other words, the conclusion is *virtually* contained and known in the major premise, but not *formally*. And since only that which is 'formally known' is 'actually' known by me, I do really acquire a *new* knowledge when I deduce the truth of the conclusion from the truth of the universal proposition used as the major premise.

LET US TAKE A CONCRETE EXAMPLE. I READ IN CHEMISTRY THAT 'All substances consisting of carbon are combustible.' Scientists arrived at this generalization through the process of an extensive, though not complete, induction: wherever and whenever the experiment was made, carbon was found to be combustible. Does that also apply to diamonds? Certainly; but *I do not know* as yet that diamonds consist of carbon; I am under the impression that diamonds are a sort of quartz. A year later I read an article on diamonds and

discover that they consist of carbon. Do I now know that 'diamonds are combustible'? Not yet. While reading about diamonds, I do not think at all about the truth I learned a year before that 'All substances consisting of carbon are combustible.' Then one day it occurs to me *simultaneously* that 'All substances consisting of carbon are combustible' and that 'Diamonds consist of carbon.' And *now* it first dawns on my mind through deduction: 'Well, then, diamonds are *also* combustible,' and I have acquired a *new* knowledge about diamonds. Up to this point I had a knowledge of both facts, 'Carbon is combustible' and 'Diamonds are carbon,' taken separately and without realizing their implication. It was only when both truths are brought *together* before my mind and I realize the *logical connection* existing between them, that I am able to make the deductive syllogism and draw out the necessary conclusion:

All substances consisting of carbon are combustible;
Diamonds consist of carbon;
Ergo, diamonds are combustible.

We find many cases of this kind, where deduction is found to be a perfectly legitimate *inference*. Science, for example, includes in the class of 'mammals' all animals that breathe through lungs, have hair on the body, and suckle their young. Now, the *whale* lives in water and has the general shape of a fish. Upon closer examination, however the whale was found to breathe through lungs (not gills), to have hair (not scales) on its body, and to suckle its young.

What conclusion had to be deduced from these premises? This, that whale is not a fish, but a mammal; and so it happens that now the whale is classified as a mammal. Here the argument was made from the universal truth to the particular instance by means of deduction.

In a similar manner, *Pasteur* established by induction that 'Germs derive their origin from parental germs through generation.' At the time practically nothing about germs was known; the number of known existing types was very small. Notwithstanding this meager knowledge, the general principle was proved by induction to be true. Since then many new types of germs have been discovered; we cannot, therefore, say that they were known at the time this general principle was formulated. Through a process of syllogistic *deduction*, however, we can now *prove* that every new type discovered must have originated through parental generation; and that is a truth of great value for prophylactic medicine.

Einstein maintains that inertia is the same as gravity; consequently all the effects of inertia can also be obtained through gravity. From this he deduced that the rays of light would be bent from a straight course by passing through a gravitational field. Thus, the rays of the stars, passing close to the sun on their way to the earth, should be bent in the direction of the sun. This would follow from his general theory of relativity. Observations of solar eclipses have shown that the light of stars *does* curve toward the sun while passing near by, although the degree of curvature did not seem to agree with the mathematical calculations of

Einstein. The point here, however, is that *deduction* can lead to *new* knowledge and truths.

Through deduction *Mme. Irene Joliot-Curie* and her husband *M. Frederic Joliot* came to the conclusion that, since radioactive elements change to lighter elements through disintegration, it must be possible to reverse the process and create the heavier elements artificially by *re-integration*. Thereupon, in 1934, they bombarded common elements, like aluminum, magnesium, and boron, with alpha particles and succeeded in transforming them temporarily into heavier elements. Following their lead, *Ernest O. Lawrence*, of the University of California, shot a stream of positively charged particles from a four-million-volt cathode tube into common table salt, and after a ten-hour bombardment the salt emitted the gamma rays of radium for a period of fifteen hours.

Some of the greatest achievements in astronomy and astrophysics have been made by means of deduction. From a conclusion drawn from the theorems of Conic Sections, *Kepler* established the general principle that certain definite positions are characteristic of an ellipse. Then, by showing that the orbit of Mars presents these definite positions, he concluded that the orbit of Mars is an ellipse. From Kepler's laws of motion the genius of Newton deduced the universal gravitation of matter. His discovery was brought about by one of the most brilliant series of deductive processes ever performed by man.⁴ Mathematics has always played a predominant part in the calculations of astronomy, and mathematics is essentially a deductive

science. But who would seriously question the validity of the deductions of mathematics?

The characteristic feature of deductive reasoning is this: the conclusion is virtually contained in the premises, but not formally. The truth of the conclusion becomes formally known through the syllogistic process. As such, then, the formally known truth becomes a new truth and extends our knowledge of reality. Consequently, deduction is a *valid inference* and a source of new knowledge. And this is borne out by the many scientific discoveries made through deductive reasoning, a few of which have been noted above.

THE PROBLEM OF INDUCTION

Induction, as well as deduction, contains a serious problem concerning its validity as a legitimate inference. In order to appreciate its seriousness it will be necessary to understand clearly wherein induction consists. *Induction* can be defined as *the legitimate inference of universal laws from individual cases*, or, to put it in different words, the logical transition from that which is less universal to that which is more universal.

Induction will be either complete or incomplete. It is complete when it consists of a mere totalization of the individual instances expressed in the general statement. If I know, for example, that every single member of a certain Legion Post was an infantryman, I can express this fact in the totalizing general statement that 'All members of this Post were infantry men.' This is what might be called, in Mill's phrase, an 'aggregate of individual truths.' Such an

induction has no value for science, because the statement will not apply to anyone outside this limited aggregation; it does not lead to a universal law applicable to members not included in the original inductive process. Any induction will be incomplete, if it is based upon the investigation of a limited number of instances. If these instances are too limited or are non-typical, it will as a rule be insufficient as an inferential process; but if the instances are relatively numerous and typical, it will be a case of scientific induction.

An incomplete *scientific induction* is one which is based on a limited number of instances and from these infers the constant and *necessary relations* existing between things or between the properties of things. The result of this induction is expressed in a *universal* statement which represents a *law of nature*, and as such applies to all instances of the past, present, and future, whether known or unknown, whether actual or merely possible. That science makes inductions of this kind and claims that they are valid and legitimate inferential processes of reasoning, leading to new truths and knowledge, need hardly be mentioned.

This, however, involves a serious problem. We know from logic that we cannot legitimately conclude from the truth of the particular to the truth of the universal; what is true of *some* need not be true of *all*. Because some' men tell lies, we cannot conclude that 'all' men tell lies; because 'some' soldiers were killed in battle, we cannot conclude that 'all' soldiers were killed; because 'some' animals have wings, we cannot conclude that 'all' animals have wings. The

conclusion may not be wider than the premises. But that seems to be the very procedure followed in the process of induction. From some instances observed we argue to 'all' instances, even to those unobserved and unknown. From a *number* of particular cases we formulate a law which is supposed to apply validly to the *entire class* of these and similar cases. Is science, then, not guilty of an *illicit process*? Does this not vitiate the entire inductive inference, making it illogical and therefore valueless for acquiring true knowledge? But if induction is a valid method of reasoning, on what *grounds* is its validity based, so that it is logically justified? Wherein does the *necessity* of the inductive law consist, since it seems to be built upon so insecure a foundation?

Different solutions have been offered, depending to a great extent upon the theory of reality and the theory of knowledge proposed by the various schools of thought. *Empiricists*, who defend a sensistic philosophy and admit no knowledge beyond that of sense-experience, concede only an empirical or experiential validity to the laws formulated by means of induction. Such a law is a mere generalization from observed facts and has no strict value beyond the limits of observation. Within these limits they give us *certitude*, but beyond these limits only *probability*. We, of course, are subjectively convinced that these laws apply in all cases at all times under all circumstances; but this conviction of the 'necessity' of such laws is the result of 'association'; it is a *psychological*, not a logical, necessity. That is why Mill says: "In distant parts of the stellar regions, where the phenomena may be entirely unlike those with

which we are acquainted, it would be folly to affirm confidently that this general law [of causation, or causality] prevails, any more than those special ones which we have found to hold universally on our own planet. The uniformity in the succession of events, otherwise called the law of causation, must be received, not as a law of the universe, but of that portion of it only which is within the range of our means of sure observation, with a reasonable degree of extension to adjacent cases. To extend it further is to make a supposition without evidence, and to which, in the absence of any ground from experience for estimating its degree of probability, it would be idle to assign any.”⁵

Kant, and with him the *transcendentalists*, maintains that experience and induction can never lead to a knowledge which is strictly universal and necessary. “Experience teaches us, no doubt, that something is so or so, but not that it cannot be different. . . . Experience never imparts to its judgments true or strict, but only *assumed or relative, universality* (by means of induction), so that we ought always to say, so far as we have observed hitherto, there is no exception to this or that rule. If, therefore, a judgment is thought with strict universality, so that no exception is admitted as possible, it is not derived from experience, but valid absolutely *a priori*.”⁶ The strict necessity which we ascribe to inductive laws of science is the result of certain *a priori forms* of the mind and is not justifiable on the grounds of experience itself; it is due, therefore, to the peculiar constitution of the human mind which constructs such laws through the subjective force of the mind’s own nature. *Reid* and the Scottish School, on the

other hand, find the ultimate reason for the necessity of accepting inductive laws in an instinct of man's nature. The *pragmatists*, due to their theory of dynamic and fluent 'truth,' can see no absolute validity in the laws formulated by the inductive sciences; such laws have only provisional value.⁷

We maintain that induction is a valid process of inference, based on experience and observation. Experience and observation reveal facts which disclose to the intellect the nature or essence of a thing or property. Since this *nature* or *essence* is the *same in kind* for all members of a species or genus, the inductive law governing them will be truly universal and necessary. And if the law is grounded on some essential property or attribute common to all material things, the law will apply throughout the universe, even "in distant parts of the stellar regions," to all things at all times, past, present, and future, whether known or unknown, within and beyond the limits of actual observation.

THE TRUTH-VALUE OF INDUCTION

In order to avoid confusion of thought, it will be necessary to have a clear understanding of the meaning of 'essence' and 'nature' in this connection. The term is used in a threefold meaning. (1) We frequently designate by the term 'essence' anything, attribute, quality, or property, considered in the *abstract*, i.e., divested of all individualizing traits and characteristics. For example, 'humanity,' 'rationality,' 'roundness,' 'redness.' It was used

in this sense when discussing the problem of the universals. This is 'essence' in a wider sense. (2) It may also mean those attributes, qualities, and properties which are *invariably present* in a being, so that a necessary relation exists between them and the being which possesses them. They are 'essential' in opposition to 'accidental' attributes, qualities, and properties, in as much as the latter may be present or absent without affecting a being as to its species or genus. Whatever belongs to the 'essence' in this sense is either a *constitutive* element of the thing's being or *proceeds necessarily* from such a constitutive element. Whatever determines the genus, species, or specific difference of a thing, is a constitutive element of it; for instance, 'rationality,' 'humanity,' 'animality,' 'life,' 'materiality,' and 'substantiality,' in man. But that which flows or proceeds necessarily from such constitutive elements, is an essential property of the thing; such is 'the faculty of speech,' 'the power to laugh,' 'the capability to use tools,' etc., in man. This is 'essence' in a *strict* sense. (3) Finally, it may be taken to designate the *constitutive elements alone*, and not the properties which proceed necessarily from them. In this use of the term 'the faculty of speech,' 'the power to laugh,' etc., do not belong to the 'essence' of man. Here 'essence' is taken in its *strictest* sense. While science endeavors to discover the essence of things in the last meaning of the term, this is usually so difficult of attainment, that it must be satisfied in most cases with 'essence' in the *strict* sense. The *nature* of a thing is its essence considered as the principle of its activities.

We must now inquire into the *validity* of induction as a legitimate logical inference. Induction certainly seems to violate the canons of correct thinking, by passing from the truth of a *few* observed cases to a *universal* law which is supposed to apply to all cases of this kind. The conclusion (the universal law) is apparently much wider than the premises (the observed cases) from which it is drawn; and this looks suspiciously like an 'illicit process.' If this charge of an illicit process cannot be shown to be false, induction must be rejected. On what *grounds*, then, are we justified, after investigating a few observed instances, to formulate a universal law? When we examine a case of induction, we will perceive why we are obliged to consider it a valid inferential process.

In combining hydrogen and chlorine, for example, it is noticed that their quantities will not unite in any and all proportions. They combine in no other proportions than 1 to 35.5 by weight, or in other words, 1 to 1 by volume. These proportions are absolutely fixed and stable, no matter how the circumstances are varied. Having discovered this fact by induction, science enunciates the *law* that hydrochloric acid is formed by combining hydrogen and chlorine in the proportions of 1 to 35.5 by weight or 1 to 1 by volume. And this is a *universal law*, valid for all cases, at all times, and under all considerations. Whenever and wherever the experiment is made, the law is verified. And yet, whence comes the *universality* and *necessity* which we perceive to exist in this and other laws?

In the example just given we notice that the discovery of the general law is not the result of anything like a *complete*

enumeration of all possible quantities of hydrogen and chlorine in all possible combinations and circumstances. Scientists could not and do not attempt the impossible process of a complete enumeration. This universal law is the result of an *abstraction*. We perceive clearly that there must be a *sufficient reason* for this constant and invariable effect; and this reason cannot be anything like chance coincidence, but must be based on a definite, constantly and invariably operating *cause*. Now, there is only one thing that is constantly and invariably present in all these instances and experiments — the nature and essence of hydrogen and chlorine; the *nature* and *essence* of these elements is the cause, and the phenomena observed are the effect. Observations and experiments are made in such number and under such varying conditions until the mind clearly perceives that it is not only the nature of *this* hydrogen and *this* chlorine to form hydrochloric acid in these definite proportions, but that it is the nature and essence of hydrogen *as such* and of chlorine *as such* to produce these constant and invariable effects. We, therefore, prescind from the *particular* natures and essences observed in these few cases and penetrate by abstraction to the *nature and essence in general* of hydrogen and chlorine. Once this stage has been reached, there is no need of further experiments; since the nature and essence of hydrogen and chlorine will always remain the same in all conditions of time and place (for they never can be anything but hydrogen and chlorine), they will produce the same effects always and everywhere. This being certain, this conclusion is expressed in a universal

law; and the law can now be applied without fail to every instance which may arise in the world or in the laboratory. Science has been increased by a new law, and the mind has been enriched by a new truth.

The relation of the inductive *law* to the individual *phenomena* parallels the relation of the universal idea to the individual *things*. Both are the result of the abstractive power of the intellect, leaving aside the individuating differences and grasping the nature or essence common to them all. Thereby the idea and the law become *abstract, necessary, and universal*, applicable to the whole class as a class and to every single member of the class, irrespective of time or place. It is precisely this necessary and universal character of the idea and the law which makes them valuable for science and philosophy and constitutes a distinct advance of human knowledge. Scientific laws are expressed in definite categorical statements; and truth, as we know, is only found in categorical judgments which are an actual representation of reality as it is. The laws of science, discovered through induction, are, therefore, not mere figments of the thinking mind, as Kant claims, nor mere empiric generalizations of great probability, as the empiricists assert, nor general statements of provisional value, as pragmatists maintain, but genuinely *universal laws* expressive of reality.

Such is the nature of induction. The instance of the formation of hydrochloric acid is given merely as an illustration of the inductive process as used in every department of science. The details of method will vary, of course, according to the individual problems to be solved,

but the fundamental principles of procedure are the same: it is an *abstraction*, passing from the particular to the universal, from the effect to the cause, from the logical part to the logical whole, from the phenomena to the law.

If we now sum up the *underlying principles* of induction, they will be seen to be as follows: (1) Any attribute, quality, or property which, no matter how the external conditions are varied, is found to belong constantly and invariably to a certain thing, must have a *constant* and *intrinsic* reason for itself *in* that thing; and any effect which is constantly and invariably produced by a certain thing, must proceed from a *constant* and *intrinsic* cause in that thing. (2) Whatever is constant and intrinsic in a thing is either its essence and nature or a direct result of its essence and nature, because this nature and essence is the only reality which is constantly and intrinsically in the thing, everything else being accidental and subject to change. (3) Whatever pertains directly to the essence and nature of a thing must be found *in every individual* who possesses such an essence and nature.⁸ Since, then, the inferential force of induction does not rest on a complete enumeration of all individual instances, but is grounded on the 'nature' and essence of the *beings as such*, it is evident that induction does not involve an illicit process. On the contrary, the logical grounds are perfectly legitimate and adequate for the formulation of universal laws. Science, therefore, is justified in using induction as an instrument for discovering and establishing physical laws, and these laws reveal new truths and extend human knowledge.

Hence, both deduction and induction are *valid processes of reasoning*, leading to a true interpretation of reality. The objections raised against their validity are seen to be without foundation, and human reason as a source of true and valid knowledge is vindicated. This, of course, has always been a spontaneous conviction of mankind, and the critical examination of our intellectual operations has shown conclusively that this conviction is warranted and correct.

SUMMARY OF CHAPTER XVIII

Mediate knowledge is acquired by means of *reasoning*, or ratiocination. When we argue from the truth of the logical whole to that of the logical part, we have *deduction*; when we argue from the truth of the logical parts to that of the logical whole, we have *induction*. Serious objections have been raised against both as a legitimate inference.

1. *The Problem of Deduction.* Empiricists and positivists charge that deduction involves a begging of the question. The major premise is a general statement whose truth *presupposes* the truth of each particular instance comprised within the extension of the general statement; hence, the conclusion is already known before the general statement can be made. So Mill.

2. *The Truth-Value of Deduction.* Mill admits that the major premise is a general statement whose truth is discovered by induction. He also admits that such a general statement is derived from the observation of a limited number of instances, yet it is valid for 'all similar instances, past, present, and future.' But this proves that all individual instances need not have been previously known in order to make the general statement a valid major premise in a syllogism; hence, Mill is wrong when he asserts that the conclusion must already be known in the major premise. The conclusion is contained *virtually* in the major premise, but not *formally*; and it is only formal knowledge which is actual knowledge. Consequently, deduction can give us new knowledge by means of a legitimate inference. Besides,

many important scientific discoveries have been made through deduction, especially in mathematics and astronomy.

3. *The Problem of Induction.* Induction is complete when it consists of a mere totalization of the individual instances. It is *incomplete* and *scientific*, when it is based on a limited number of instances and from these infers the constant and necessary relations existing between things and between the properties of things. It leads to a *universal law*. This, however, seems to involve an illicit process, because the law is apparently an inference from the truth of 'some' to the truth of 'all.' *Empiricists* will not admit certitude for scientific induction beyond the limits of observation. *Kant* and the transcendentalists will not admit a true and strict, but only an assumed and relative, universality for the law. *Pragmatists* consider inductive laws to have only provisional value. We maintain that induction is based on the nature and essence of the observed things and is, therefore, an inference valid beyond the limits of observation and truly universal.

4. *The Truth-Value of induction.* What are the logical grounds for the universal validity of induction? It is not a complete enumeration of all instances, because such an enumeration is impossible. It is based on *abstraction*. The only sufficient reason for the constancy and invariability of natural effects is observed by the intellect to lie in the nature and essence of the things observed. From this we conclude that it lies in their *nature* and *essence* as such to produce these effects. Consequently, wherever and whenever this nature and essence is present, it will produce

these effects. This, then, is the sufficient reason for the universality and necessity expressed in the law.

Deduction and induction are, therefore, valid forms of reasoning, and reasoning is critically justified.

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1 *System of Logic* (Longmans, Green and Co., 1930), Bk. II, Ch. I, 2, p. 120

2 *Loc. cit.*, 3, p. 122. (Italics mine. — Author.)

3 *ibid*

4 See G. H. Joyce, *Principles of Logic*, 3rd ed. (Longmans, Green, 1929), Ch. XXI 168

5 *Loc. cit.*, Bk. III, Ch. XXI, p. 376. See also Bertrand Russell, *The Analysis of Mind*, pp. 93—97.

6 *Critique of Pure Reason*, pp. 716, (Italics mine. — Author.)

7 See George Mead, in *Creative Intelligence* (Henry Holt and Co.. 1917), pp. 176—228.

8 See Gény, *Critica*, on. 404—409; also Joyce, *Principles of Logic* (Longmans: 1908), pp. 216, 217.

Chapter 19

RECAPITULATION

IT IS THE PURPOSE OF EPISTEMOLOGY TO EXAMINE THE RATIONAL grounds upon which our spontaneous convictions are based, in order to see whether they are philosophically justified. This involves an investigation into the *validity*, or truth-value, of human knowledge; and that in turn involves an investigation into the reliability of the *sources* of our knowledge. These sources are the faculties which furnish the data from which knowledge is derived, and these sources are: consciousness, sense-perception, and intellection. It is characteristic of human knowledge that it claims to be a true representation or interpretation of *reality as it is*, not merely a subjective construction of the mind; and man has the spontaneous conviction that his knowledge actually conforms to extra-mental reality and as such is valid and true.

This, however, is not so simple as it seems. All knowledge is a mental state and therefore subjective; apparently, then, knowledge has only subjective value. Knowledge is fashioned from ideas; what, then, can the mind know but its own ideas? Again, how can extended bodies make an impression on an unextended mind, or how can an

unextended mind know extended bodies? There appears to be no common ground between mind and matter.

Ever since the days of Descartes the problem of knowledge has been acute. He inaugurated the modern epistemological problem by introducing an *excessive psycho-physical dualism* between mind and matter, soul and body. These realities are so disparate and antithetical in nature that a contact between them is utterly impossible. It followed with necessity that the mind could not effect a cognitional union between itself and extra-mental reality; the mind could not transcend itself and know the world, and an impassable gulf was placed between them. Either a bridge had to be found to span the intervening distance, or our knowledge of the world is an illusion. In his attempt to explain man's knowledge of his own body and of the world at large, Descartes had recourse to the theory of *innate ideas*: our knowledge is inborn and gradually unfolds itself out of the depths of the mind. Man, then, can know nothing but his own ideas and the internal states within himself; such was the inevitable consequence of his theory of innatism. The capital error of Descartes consisted in his overlooking the fact that man is a unit: body and soul (mind) form a *single psycho-physical organism*.

It was to be expected that subsequent philosophers would not be satisfied with Descartes' theory of innate ideas, and so different systems arose in an endeavor to give a more rational account of our obvious knowledge of the world around us. But practically all accepted the apparently evident principle that the mind can know nothing but its own states. The result was philosophical chaos. Theories

succeeded theories in kaleidoscopic confusion. They showed a double trend: if they followed the *mechanistic* body side of Descartes' views, they developed into empiricism, positivism, materialism, and skepticism; if they followed the *spiritualistic* mind-side of his theory, they branched off into ontologism, transcendentalism, and monistic idealism. And thus the excessive dualism of Descartes was reduced to absurdity.

A reaction toward the *common-sense view of realism* was inevitable; all humanity could not be so radically wrong, otherwise true knowledge must be adjudged impossible of attainment. The twentieth century witnessed the return of a saner outlook in the rise of pragmatism, neo-realism, and critical realism. Slowly the pendulum is swinging back to the aristotelianism of the scholastics as the only rational explanation of human knowledge. Philosophers realize at last that the 'idealist postulate,' maintaining that the mind is restricted in its knowledge to its own subjective states, is based on fallacy: *the mind of man can transcend itself* and contact the external world in cognition. The most recent epistemological theories defend some sort of *presentative realism* as the natural explanation of man's knowledge. That they do not succeed completely in their efforts to expound an all-round satisfactory system, is the result of their materialistic and evolutionistic tendencies; and they will never succeed until they come to the scientific and philosophic conclusion that body and mind, though essentially different as physical and psychical entities, are bound together as part-principles of a *psycho-physical organism* in the higher unity of the *Ego*. The

animated body is the *epistemological bridge* between the mind and the world. Therein lies the solution of the problem of human knowledge.

Strictly speaking, it is not the function of epistemology to explain the 'nature' of the knowing subject; that belongs to the province of psychology. Nevertheless, a careful examination of the data of knowledge points clearly to certain definite conclusions. The data of *consciousness* show that mind and body are constituent parts of the Ego; the Ego is an abiding reality, the ultimate possessor of mental and bodily states. The data of *sense-perception* reveal the indubitable fact that we can and do perceive extra-mental reality in our body and extra-Ego reality in the bodies existing in the external world. This cannot be denied without destroying the foundations of our knowledge. Neither idealism nor representative realism gives an adequate explanation of our knowledge, as manifested in sense-perception; *presentative realism* alone can account for the facts. If we analyze the data, we find that sense-perception is neither a purely mental function nor a purely bodily operation, but an activity which involves the presence of both physical and psychical elements; it is 'extended,' but 'vital,' and as such can proceed only from a psycho-physical base; in other words, an *animated organism* is demanded, if we wish to give a rational account of the process of knowledge as manifested in sense-perception. Any other theory will either necessitate the reduction of the mind to matter (materialism), or the sublimation of matter to mind (idealism), or the complete severance of mind and matter (Cartesian dualism); the first

cannot explain our intellectual knowledge, the second cannot explain our sense-knowledge, and the third cannot explain the combination of both. In order to explain the existence and validity of intellectual knowledge and sense-knowledge in man, man must be a unitary being capable of sense-perception and of intellection; and that means that he is an organism, a 'rational animal,' consisting of a vital body and a rational mind.

Our investigation into the data of consciousness, sense-perception, and intellection has shown that our knowledge in these fields is *essentially valid and true*. Errors occur, but they are incidental and accidental. As a general conclusion, then, the spontaneous convictions of man regarding the nature and scope of his knowledge have been critically vindicated. These convictions can no longer be considered unwarranted assumptions; they have now become reflex and philosophical certainties. We have the reasoned and critical assurance that our faculties of knowledge are essentially reliable and give us a truthful interpretation of 'reality as it is'; the information we receive through them is not complete and exhaustive, but it is true and valid as far as they can reach. And that is all that we can expect.

The validity, or truth-value, of human knowledge has been established after a careful scrutiny of the evidence. The 'process' of knowing is still mysterious and obscure; but the 'fact' of its validity should no longer be in doubt. That our solution agrees with the aristotelian-scholastic solution of the problem of knowledge, is simply due to the reason that no other theory will explain the acknowledged data in a satisfactory manner. It alone is capable of giving an

intelligible explanation of the cognitional union between reality and the mind.

GLOSSARY OF TERMS

NOTE: In the case of qualified words, always look for the word or noun qualified. For example: in seeking for *Epistemological Monism*, look for *Monism*, *Epistemological*, etc.

ABSOLUTE. The unconditioned, the ultimate ground of all reality.

ABSOLUTISM, EPISTEMOLOGICAL. See Idealism, Absolute.

ACOSMISM. The doctrine which denies or doubts the validity of our experiential knowledge concerning the existence and reality of a material world; immaterialism.

AGNOSTICISM. The doctrine which denies the constitutional ability of the mind to know reality and concludes

with the recognition of an intrinsically Unknowable.

ARISTOTELIANISM. The system of thought which in general follows the principles and teachings of Aristotle. Peripateticism.

ASSOCIATIONISM. In the problem of necessary judgments, the doctrine which holds that the necessity of

first principles is due to the law of associations as a form of mental compulsion.

CERTITUDE. That mental state in which the mind gives a firm assent to a judgment without fear of the possibility of error, due to recognized valid reasons.

COHERENCE. Coherence, or consistency, with the whole system of knowledge previously recognized as true, is considered by idealistic monism to be the criterion of truth.

CONCEPTUALISM. The doctrine which holds that we have universal ideas in the mind, but there is no objective ground or foundation in extra-mental objects which would entitle the mind to group a number of individuals under one (universal) idea.

CONSCIOUSNESS. The intuitive awareness by which we recognize something as cognitively present in the mind.

CONVICTIONS, SPONTANEOUS. Common-sense or ordinary convictions which have not been subjected to a critical investigation.

CRITERIOLOGY. The Science of the criteria or tests of truth. Frequently used synonymously of epistemology.

CRITERION. The test by which we distinguish true judgments from those which are false.

DEFINITION BY INITIAL PREDICATION. See Predication.

DOGMATISM, CRITICAL. The doctrine which, after a critical examination, accepts the three primary truths as essentially necessary for every process of thinking and reasoning prior to the investigation of the various classes of spontaneous convictions.

DOGMATISM, MITIGATED. The form of dogmatism which accepts only two facts as prerequisites for the solution of the problem of certitude, namely, the existence of necessary spontaneous assents (convictions) and the power to examine these by reflection.

DUALISM. The theory that physical objects are independent in their existence and nature from the mental act of perception and knowledge; that there is an essential distinction between 'mental' and 'real' objects and events, so that the latter exist irrespective of whether known or not known by a perceiver.

DUALISM, EPISTEMOLOGICAL. The theory that there exists a duality or non-identity between the content or datum, which is immediately and indubitably presented in the knowledge act at a given moment, and the reality or object known through the content or datum.

EGO. The human person, considered as possessing a body and mind; the subject of all psychical states, such as perception, thought, judgment, affective and volitional states; self.

EGO, ABSOLUTE. The non-individual, pure Ego, neither subject nor object, which posits the world.

EMERGENT EVOLUTION. See Evolution, Emergent.

EMPIRICISM. The doctrine which denies or doubts the validity of all intellectual knowledge and admits only the certainty of sense-knowledge.

EPISTEMOLOGY. The science of the validity, or truth-value, of knowledge. ERROR. Disconformity between mind and thing.

EVIDENCE, OBJECTIVE. That characteristic of reality whereby it becomes objectively manifest to the perceiving faculty.

EVOLUTION, EMERGENT. The doctrine which holds that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality.

EVOLUTIONISM, In the problem of necessary judgments, it is the doctrine which holds that the necessity of these judgments is due to certain fixed forms of thought which have been engendered in the past history of the human race and have been transmitted by heredity through a process of neural association repeated with countless frequency.

FICTIONALISM. The doctrine which holds that all concepts are fictions of the mind and have fictional value as mental constructions of reality, though they need not be true in themselves.

FIDEISM. The traditional doctrine which holds that all our knowledge must begin with an act of faith in divine revelation, since human reason is impotent to arrive at any certitude regarding the fundamental truths necessary for man to know; also, the doctrine that such truths can be known only by an affective act of faith.

FORMALISM. In the problem of necessary judgments, the theory which holds that the necessity of judgments is due to native a priori mental forms.

HUMANISM. See Pragmatism.

HYLOPSYCHISM. The doctrine which holds that all matter is instinct with something of the cognitive function; that every objective event has that self-transcending implication of other events which, when it occurs on the scale that it does in our brain processes, we call consciousness.

IDEA. (1) A mental representation of a thing. (2) Platonic Idea: an archetype, or pure immaterial pattern, of which the individual objects in any one natural class are but the imperfect copies, and by participation in which they have their being. (3) Descartes and English philosophers: an immediate object of consciousness.

IDEALISM. In general, the doctrine which holds that the being of things is conditioned by their being known; consciousness is constitutive of its objects; the being of sensible things is simply their being sensed, and their true characters are their sensed characters; the world we know is the world of our perceptual content; the mind cannot transcend its own internal, conscious states.

IDEALISM, ABSOLUTE. The doctrine that the relativity of knowledge implies the subjectivity of the objects of knowledge, so that the universe and everything in it are merely states of the thinker's mind; the real and the ideal, thought and thing, nature and spirit, object and subject, world and mind, are ultimately identified in the infinite and absolute Ego.

IDEALISM, COSMOTHEITICAL. The doctrine which holds that the external world exists, but that we have no

immediate knowledge of it.

IDEALISM, DIALECTICAL. See Idealism, Logical.

IDEALISM, EPISTEMOLOGICAL. The doctrine which holds that the external world has no existence independent of consciousness, but exists as an object of possible experience, as the content of universal experience, or as the content of a knowing mind, as something immanent to consciousness.

IDEALISM, LOGICAL. The doctrine which holds that reality is constituted of logical ideas (logical entities), so that we have direct knowledge of reality in the ideas of logical thought.

IDEALISM, METAPHYSICAL. The doctrine which holds that the real is identical with idea and mind, and the objects are modifications and evolutionary modes of the one, self-existent, absolute consciousness.

IDEALISM, OBJECTIVE. The doctrine which holds that the relation between the subject and the object of thought is one of absolute identity, supposing that all things exist in the absolute reason and that the laws of physics are the same as those of mental representations.

IDEALISM, PSYCHOLOGICAL. The doctrine which holds that the physical object is essentially idea, in the sense of being simply a part of consciousness, a content of conscious life which depends upon consciousness for its existence or at least upon the conscious relation to some subject.

IDEALISM, SUBJECTIVE. The doctrine which holds that the universal subject or Ego (not the Ego of the individual person) is the source of the object, the external world, or non-Ego.

IDEALISM, TRANSCENDENTAL. The doctrine that the mind imposes its own a priori forms of synthesis upon the unorganized and unrelated impressions which it receives from an unknown and unknowable thing-in-itself, or noumenon, so that the entire content of perception and thought consists of subjective phenomena.

IDEAL-REALISM. A metaphysical doctrine which combines the principles of idealism and realism.

IMAGINISM. An idealistic doctrine which holds that the world-principle resembles the imagining with which we humans are directly acquainted, and this cosmic imagining is a conscious infinite activity and the creative force of all reality.

IMMATERIALISM. The doctrine which denies or doubts the existence of material reality, admitting nothing but the reality of immaterial or spiritual things; that particular form of skepticism which admits the certitude of intellectual knowledge only, doubting or denying the validity of experiential knowledge; acosmism.

INCONCEIVABILITY. The inconceivability of the contradictory judgment is considered by some philosophers to be the ultimate criterion of truth.

INSTRUMENTALISM. The doctrine which holds that ideas are instruments of action and that their usefulness determines their truth.

MATERIALISM. A naturalistic form of philosophy which finds the ultimate solution of all phenomena, physical and psychical, in the nature and activity of universal matter or force.

MIND. In epistemology, the conscious knowing subject or the conscious knowing part of the subject.

MONADISM. The Leibnitzian doctrine which holds that the ultimate individual beings are monads; they are partly material and partly immaterial, possess innate power of representation, have no means of cognitional intercommunication, and obtain knowledge corresponding to reality through a divinely pre-established harmony.

MONISM. The doctrine which seeks to deduce all the varied phenomena of both the physical and spiritual worlds from a single principle which is in a continuous state of evolution; specifically, the metaphysical doctrine which holds that there is but one substance, either mind (idealism), or matter (materialism), or a neutral substance that is neither mind nor matter but is the substantial ground of both: opposed to dualism and pluralism.

MONISM, EPISTEMOLOGICAL. The doctrine which holds that the content or datum of perception is identical with the reality or object known thereby; that the attributes of the percept as experienced and all its relations, except that of being experienced, are identical with the entities composing the physical world; there is no dualism of things and ideas, but only the class of things.

MOTIVE OF CERTITUDE. The ground or reason which determines us to assent with firmness to a judgment as true without fear of its contradictory being true.

NATURALISM. The doctrine that scientific knowledge of physical objects is the final and only legitimate form of knowledge.

NEO-HEGELIANISM. See Neo-Idealism.

NEO-IDEALISM. A more recent form of Absolute Idealism, characterized by an approach to the problem of knowledge through experience rather than by means of aprioristic speculations; neo-hegelianism.

NEO-PSYCHOLOGISM. A more recent form of psychological idealism, characterized by a closer union between empirical science and psychology.

NEO-REALISM. The doctrine which holds that there are existent objects not conditioned by perception or cognition; all the attributes of the percept as experienced and all its relations, except that of being experienced, independently characterize such objects; pan-objectivism.

NEO-SCHOLASTICISM. The system of philosophy which in the main follows the principles and tenets of scholasticism, but adapts it to modern problems.

NOMINALISM. The doctrine which holds that there are neither universal objects outside the mind nor universal ideas in the mind.

NON-EGO. Not-self; the whole world, distinct from man's body and mind and outside his person, as something other-than-self.

NOUMENON. The unknowable reality or thing-in-itself which is postulated as the basis, ground, or cause of the phenomenon.

OBJECT. In epistemology, the thing known.

OBJECTIVISM. The doctrine that things are, when not experienced by us, just what they seem when experienced by us.

OCCASIONALISM. The doctrine which holds that cognition is caused by the sole activity of the mind on the occasion of bodily stimuli; in a special sense, the doctrine which holds that God is the cause of knowledge in the human mind on the occasion of bodily stimuli and also the cause of all actions in bodies.

ONTOLOGISM. The doctrine which holds that man's mind derives all its knowledge through a direct, immediate intuition of God's ideas or of absolute Being.

PANCALISM. A form of esthetic pragmatism.

PAN-EGOISM. The doctrine which attempts to dissolve the antithesis between noumenon and phenomenon, mind and matter, Ego and thing-in-itself, by identifying all reality with the universal consciousness or Ego; a form of absolute idealism, asserting the one-ness of all things in the absolute Ego.

PAN-OBJECTIVISM. See Neo-realism.

PAN-PHENOMENALISM. The doctrine which holds that the human mind can know nothing but the phenomena or appearances of things.

PAN-PSYCHISM. The doctrine which interprets the qualitative essence of material force and energy as a sort of psychical activity and appetency, so that all material reality, in its ultimate analysis, is endowed with psychical powers.

PANTHEISM. The doctrine which holds that the universe is identical with God; the reduction of God to the universe, or of the universe to God.

PARALLELISM, PSYCHO-PHYSICAL. The doctrine which holds that mind and matter are not substances, that the

psychical and physical are but a manifold of interrelated occurrences; subject and object are concepts which are due to the reflection resulting from the interrelations of the various components of the absolutely unitary contents of our immediate experience.

PERCEPTIONISM. See Realism, Presentative.

PERIPATETICISM. See Aristotelianism.

PERSONALISM. That form of idealism which gives equal recognition to both the pluralistic and monistic aspects of experience and which finds in the conscious unity, identity, and free activity of personality the key to the nature of reality and the solution of the ultimate problems of philosophy.

PHENOMENALISM. The doctrine that the appearances of things are their reality; there are no things in themselves, but only things in relation to our experience.

PHENOMENON. In epistemology, the appearance that is produced by the action of a thing upon a percipient.

PLURALISM. The doctrine which holds that reality cannot be reduced to either one ultimate form of being (monism of either mind or matter) or two ultimate forms of being (dualism of mind and matter), but to many mutually irreducible ultimate forms of being.

POSITIVISM. A form of naturalism which denies the legitimacy of philosophical problems and methods and claims that science is the only knowledge which is exact and ultimate.

POSTULATE, IDEALIST. The postulate, or axiom, considered by idealists as self-evident, that all objects of knowledge are mental objects, ideas, conscious states.

PRAGMATISM. The doctrine, or rather attitude, which places all knowledge and truth in a direct relation to life and action; it judges the value of ideas, judgments, hypotheses, theories, and systems, according to their capacity to satisfy human needs and interests in a social way.

PREDICAMENT, EGO-CENTRIC. The predicament involved in every act of knowledge that no thinker is able to mention a thing that is not an idea, for the obvious and simple reason that in mentioning it he makes it an idea; it is, therefore, impossible to discover whether the cognitive relationship is indispensable to things which enter into it.

PREDICATION, DEFINITION BY INITIAL. The fallacy which consists in considering an 'obvious' characteristic of a thing as the exclusive' characteristic of that thing, and then defines the thing as consisting solely and exclusively of this particular characteristic.

RATIONALISM. The method of proving propositions by appealing to abstract and universal principles.

REALISM. In general, the doctrine which holds that objects have an existence independent of their being known so that their relation to the subject in knowledge is only an external, not an internal or immanent, relation.

REALISM, ARISTOTELIAN-THOMISTIC. The doctrine which holds that man does not infer the existence of external objects from representative images or 'ideas' in consciousness, but perceives them directly in some form through a presentation of the objects themselves in sense-perception.

REALISM, COSMOTHETICAL. See Realism, Representative.

REALISM, CRITICAL. The doctrine which holds that we know physical objects by means of, and in terms of, logical ideas, but that it is the external object which we know and to which this complex act of cognition is directed; what we perceive is existentially identical with the independent reality, but it has, when being perceived, certain qualities — notably the sense qualities — which it does not possess when not perceived.

REALISM, CRITICAL PRESENTATIVE. That form of presentative realism which holds that some qualities of objects are real and as such are perceived immediately, while others are not actually and formally, but only potentially and causally, present in the objects; these latter have no formal existence independent of the perceiving subject. Also called moderate presentative realism.

REALISM, EPISTEMOLOGICAL. The theory that the real object has an existence independent of the experient's perception and thought.

REALISM, HYPOTHETICAL. See Realism, Representative.

REALISM, IMMEDIATE. See Realism, Presentative.

REALISM, INFERENTIAL. See Realism, Representative.

REALISM, INTUITIVE. See Realism, Presentative.

REALISM, MEDIATE. See Realism, Representative.

REALISM, MODERATE. In the problem of the universals, it is the doctrine which holds that there are no universal realities outside the mind, but we have universal ideas in the mind, and there is a foundation in the things themselves

for these universal ideas; universals are formally in the mind, but fundamentally in the things.

REALISM, MODERATE PRESENTATIVE. See Realism, Critical Presentative.

REALISM, NAÏVE PRESENTATIVE. See Realism, Rigid Presentative.

REALISM, NATURAL. See Realism, Presentative.

REALISM, NEW. See Neo-Realism.

REALISM, OBJECTIVE REPRESENTATIVE. That form of representative realism which holds that our 'representations' or 'ideas' resemble the external objects.

REALISM, PRESENTATIVE. The doctrine which holds that physical, external objects are presented directly in some form to consciousness in sense-perception, so that their reality is perceived as it exists 'out here' in nature. Also called immediate, intuitive, natural realism or perceptionism.

REALISM, REPRESENTATIVE. The doctrine which holds that the human mind is immediately aware, not of the external objects themselves, but of its own internal 'representations' or 'ideas' only, from which it then infers the external, non-Ego reality as their cause. Also called mediate, hypothetical, cosmothetical, inferential realism.

REALISM, RIGID PRESENTATIVE. That form of presentative realism which holds that the things perceived are actually so in nature as they appear to the senses. Also called naïve presentative realism.

REALISM, SUBJECTIVE REPRESENTATIVE. That form of representative realism which holds that our

‘representations’ or ‘ideas’ do not resemble the external objects.

REALISM, TRANSFIGURED. The doctrine which holds that the reality underlying appearances is totally and forever inconceivable to us; we know only appearances (phenomena) of reality and in them reality is transfigured or altered to such an extent that there is no resemblance between reality and the perceptual knowledge we have of it; Spencer’s subjective representative realism.

RELATIVISM. The doctrine that every known object is relative (in relation) to the knowing subject and as such is dependent in its being upon the knowing subject and incapable of existing apart from consciousness; the doctrine of the immanence of relations as constitutive of their being.

RELATIVISM, OBJECTIVE. The doctrine that the existence and character of experienced data depend upon the occurrence of percipient events and therefore upon the nature and situation of the experiencing organism as their essential and proximately determining factor; that the object known possesses the character exhibited by the datum only ‘in relation to’ this given organism; and that the perceptual content is ‘objectively’ present in nature precisely as experienced in perception and cognition, according to the relative standpoint of the individual perceiver.

REPRESENTATIONALISM. See Realism, Representative.

SCHOLASTICISM. The system of philosophy, prevalent in the middle ages, which follows the general lines of Aristotle’s principles. It advocates a natural dualism of God

and creature, mind and matter, thought and thing, as against monism and pantheism; it defends a moderate realism, as against ultra-realism, nominalism and conceptualism; it is spiritualistic and not materialistic, experimental and not aprioristic, objectivistic and not subjectivistic; in sense-perception it is presentational and not agnostic or representational or idealistic; concerning intellectual knowledge it defends a moderate rationalism, as against sensism, positivism, and innatism; it is common-sense knowledge critically examined and philosophically vindicated.

SELF-CONSCIOUSNESS. Reflex consciousness, by means of which the Ego apprehends itself concretely in its own mental acts and states; self-awareness.

SENSATIONALISM. The doctrine which holds that sensation is the sole origin of knowledge.

SENSISM. See Sensationalism.

SKEPTICISM. The reasoning of one who doubts the possibility of knowledge of reality; the systematic doubt which characterizes a philosophic skeptic.

SKEPTICISM, ABSOLUTE. The absence of any leaning toward either side of any question, when maintained as a philosophic principle.

SKEPTICISM, PYRRHONIC. See Skepticism, Absolute.

SOLIPSISM. The skeptical attitude, in which the thinker is certain only of his own personal internal states of mind.

SPINOZISM. The doctrine of Baruch Spinoza which holds that there exists but a single substance, infinite and uncreated, of which nature (matter) and thought (mind) are

the attributes; it is a pantheistic, absolute, metaphysical monism.

SUBJECT. In epistemology, that which possesses knowledge, perception, thought, consciousness; the mind, in so far as it possesses internal states of knowledge; the knower.

SUBJECTIVISM. The doctrine which holds that we can immediately know only what is present in consciousness.

TRADITIONALISM. The doctrine which holds that God gave a primitive revelation to mankind which is handed down as a tradition from generation to generation, and this tradition is the ultimate foundation of knowledge and criterion of truth.

TRANSCENDENCE. The characteristic of human knowledge enabling the mind to pass beyond the limits of its own internal state and to know extra-mental reality.

TRUTH. Conformity between mind and thing.

TRUTHS, PRIMARY. The First Fact: my own existence — 'I exist.' The First Principle: the Principle of Contradiction — 'It is impossible for a thing to be and not to be at the same time.' The First Condition: the essential trustworthiness of reason — 'Reason is capable of knowing truth.'

ULTRA-MECHANISM. The doctrine which excludes the human body as an essential participant in the vital functions of man, so that the body is considered to be actuated solely by mechanical forces.

ULTRA-REALISM. The doctrine which holds that we have not only universal ideas in the mind, but that there exist extra-mental universal realities corresponding to them.

ULTRA-SPIRITUALISM. The doctrine which postulates an excessive dualism between mind (soul) and body in the human Ego, destroying the conception of man as an organism, so that a cognitional communication between them is impossible.

UNIVERSAL. An idea, the content of which is predicable of a class as a class and of each individual member of a class.

THE DOMAIN OF BEING

ONTOLOGY

Imprimi potest: TISEODOSIUS FOLEY, O.M.CAP.,

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O.M.CAP.,

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Milwaukiensis

AUTHOR'S PREFACE

THIS IS a book of acquaintance. As a rule, college students and general readers have had little or no acquaintance with ontology, or general metaphysics, as a science in its own right. Many ideas of an ontological or metaphysical character are, of course, encountered in their daily reading in books, magazine articles, scientific treatises, and professional discussions of all kinds. While the general meaning of such ideas is clear enough, their signification and implication, as an integral part in the structure of philosophic thought, is unknown or hardly felt. They become understood and appreciated in their full value only when studied in the context of the philosophic science of ontology or metaphysics as a whole. Hence the need of correlating these scattered ideas into a basic science, such as ontology, and of fitting them into the fundamental framework of a philosophic system of thought.

It is hoped that this book may be helpful to the student and general reader in accomplishing this purpose. It is primarily a student's book, written from the standpoint of the student's mentality and educational development. While a general education, as a preparatory stage of mental

culture, is presupposed, no special previous acquaintance with the subject matter of ontology is expected or demanded.

In accordance with this purpose, the scope of the book is frankly positive and constructive. It attempts to build up an understanding of the matter of ontology in a logical manner, using simple language, illustrating the subjects with copious examples, and extracting the contents of each chapter into compact summaries. Some of the more abstruse problems of ontology, such as the problem of essence and existence, have been omitted; it was felt that the average student would derive little benefit from a lengthy discussion of problems which have taxed the ingenuity and acumen of the most profound intellects. Such problems may be attacked after the student has become acquainted with the ideas and subjects which form the foundation of the science of metaphysics. After all, the student cannot be expected to be a professional philosopher; it should be sufficient if he acquires a thorough grounding in fundamentals, so that he can deepen his knowledge through subsequent reading and study.

It might seem at times that the author is belaboring the obvious. However, one must bear in mind that the average student will not be clear in his ideas and principles until they are reduced to the simplest and most basic terms of evidence. Experience in the classroom proves this beyond dispute. The author, therefore, having the mental needs of the student always in view, has not hesitated to use this method whenever considered advisable. For the same reason, recapitulations of treated material are inserted at

various points throughout the book. The subject matter is complex and difficult at times, and the mind of the student may become confused through the multiplicity of details; a certain amount of periodic recapitulation should help the student to obtain a proper orientation as he proceeds on his way. The method and language of presentation is, generally speaking, comparatively non-mechanical; to have the student grasp the meaning of technical terms and ideas, one must speak the language of the student. While the sharpness and nicety of philosophical terminology will suffer somewhat for the time being, in the end the student will have acquired a technical vocabulary which should be fairly accurate and complete.

That the author's policy and method of presentation is essentially sound, is evidenced by the fact that his logic, *The Science of Correct Thinking*, and his epistemology, *Reality and the Mind*, have been adopted by a large number of colleges and universities as texts. It is hoped that this book will meet with similar favor and will render similar service.

THE AUTHOR

PART I

BEING AND ITS PRIMARY DETERMINATIONS

Chapter 1

SCIENCE, METAPHYSICS, ONTOLOGY

MAN'S MIND IS NEVER PERMANENTLY SATISFIED WITH A commonplace, obvious, and superficial knowledge of nature. It forever seeks to penetrate the veil of phenomena and to grasp the reality of things. This is due partly to man's insatiable craving for knowledge and partly to his desire to control the forces of nature. No doubt, the practical advantages resulting from such control furnish in most instances the original spur for knowledge; subsequently, however, knowledge for its own sake, for the mental satisfaction it affords, becomes a dominant factor in man's incessant search for the realities which make the wheels of the world go round. And with increased knowledge in widely separated fields comes the need to unify and systematize the scattered truths. Thus is science born.

SCIENCE

Science is not interested in isolated, individual facts and things, except in so far as they represent the traits of a class and of a law. A kettle of boiling water, a flash of lightning, a horseshoe magnet, a ray of sunshine, a sheaf of

wheat, a mongrel dog, an Australian bushman — these things mean little to the scientist when taken as individual facts. However, the laws of thermo-dynamics, of electricity, of magnetism, of light, of plant, animal, and human life, manifested by these things, are of great importance. If the scientist can discover the *causes* of such phenomena and the *laws* according to which they operate, he has acquired a knowledge which is the scientific explanation of the working forces of nature.

Each science has its own selected field of research. The material object may be the same for several sciences, but the formal object is different for each. By the *material* object of a science we understand the general object with which it occupies itself in its investigation; and by the *formal* object we understand that special phase or aspect of the general object which forms the subject matter peculiar to this science and which distinguishes it from all other sciences. The bodies existing in the world are the material object of the natural sciences; for instance, of astronomy, geology, physics, chemistry, biology, medicine, mathematics, etc. Each of these sciences, however, views and investigates bodies from its own peculiar standpoint. A particular class of bodies may be the material object of a number of special sciences. Organisms, or living bodies, are the material object of biology, botany, zoology, and anthropology; but while biology treats of life in general, botany treats of plants, zoology of animals, and anthropology of man.

While various sciences are engaged with the same bodies in general, it will be observed that each one examines them from a different standpoint. The fact,

however, that their material object is more or less common to them all, shows that no special science is completely isolated from the others. When compared to each other, certain features of reality will be found in them all. For example, all presuppose the existence of bodies, of quantity, quality, relation, cause and effect, relative permanence amid constant change, extension, mass, energy, and the like. Now, just as the single sciences are the result of the unifying and systematizing tendency of man's mind in particular fields of investigation, so the presence of such *common elements in all the sciences* entitles the mind to attempt a further unification and systematization of the various sciences in their more universal aspects, in order to harmonize their differences in a higher unity and synthesis of knowledge. And that, precisely, is the knowledge of *philosophy*.

The sciences seek the knowledge of things in their 'proximate' causes. *Philosophy*, on the other hand, is the science of things in their *ultimate causes, reasons, and principles*, acquired by the aid of human reason alone. It endeavors to obtain a more definite, extensive, scientific knowledge of those realities which are the *foundation* of the special sciences and which they accept as granted without previous investigation or proof. That leads us to metaphysics.

METAPHYSICS

The term 'metaphysics' had a peculiar origin. It was coined by *Andronicus of Rhodes* (about 70 B.C.); but the meaning

now universally associated with it hardly entered his mind. What he called *μετα τα φυσικα* meant only 'that which follows after physics,' in as much as he, when he edited Aristotle's works, placed this particular department of philosophy *after* the parts which followed Aristotle's discourse on physical nature. The term thus had only a systematic value. *Aristotle* (384—322 B.C.) himself called this part of his philosophy 'the theological science,' because it led up to a consideration of God and His attributes; and he also styled it 'the first philosophy,' since it treated of first or fundamental causes which, in his opinion, furnished us with knowledge of prime importance. Due to the curious coincidence that this 'first philosophy' of Aristotle treated of realities which were *beyond* the physical properties of things, being in this sense *μεταταφυσικα* (after or beyond physics), 'metaphysics' came in the course of time to mean that department of philosophy which deals with those features of things that are hyperphysical, supra-sensible, immaterial.

In a general way we may define *metaphysics* as the *science of the ultimate principles and properties of real beings*.

Instead of investigating a particular *kind* of being, as the other sciences do, metaphysics inquires into *being as such*, whether material or immaterial, actual or possible, real or mental, and seeks to discover its most general principles and properties. It leaves out of consideration all attributes which are characteristics of physical bodies in so far as they are physical, for instance, light, heat, electricity, color, and

sound, and focuses its attention on the most general features of their reality.

The outline just given indicates the scope of metaphysics. It includes the world, the soul, God, being in general. There is a further distinction between *General Metaphysics* and *Special Metaphysics*. Cosmology treats of the material world at large; psychology, of the soul; theodicy, of God: these are the three departments of Special Metaphysics. Ontology treats of being in general; it is the department of General Metaphysics.

ONTOLOGY

Ontology (Gr., *ον*, being, and *λογος*, treatise, discourse) is the *science of being in its most general aspects*. It is called a *science*, because it contains a definite body of proved truths, arranged in systematic order. It is the 'science of *being*.' 'Being' is here taken as the opposite of 'nothing,' and it means anything that really is or can be. The idea of 'being' will be analyzed in its various meanings and connections in the following chapters. In the special sciences 'being' in some form or other is also the material object with which they occupy themselves; but they always treat of some particular kind of being, e.g., physics, of the material qualities and forces of objects, chemistry, of the constitutive elements of bodies, biology, of vital functions, and so on. Ontology does not treat of any kind of being in particular; in as much, however, as it treats of 'being,' it agrees with them in its *material* object.

Ontology is the 'science of being in *its most general aspects*.' Here we have the *formal* object of ontology. Being, as actually found in nature, must, of course, be either material or immaterial. Ontology, however, does not consider 'being' from either standpoint; it views it in those most general conditions and aspects which are common to both and are, therefore, attributes or determinations of 'being in general': these are the proper subject matter for ontology as a special philosophic science.

Consider, for example, ideas like 'relation,' 'cause,' 'quality,' 'essence,' 'existence,' 'change,' 'substance,' 'accident,' 'one,' 'whole,' and others. They have so broad a meaning and so wide an application, that they will be found in every sort of being, whether material or immaterial. They transcend the merely physical properties of things, like heat, color, and three-dimensional extension, so that they must be considered as metaphysical and ontological attributes of 'being in general.' And that places them among the proper subject matter of ontology. This being the case, it must be evident that ontology is not a mere summation of the findings of the physical sciences, but is a science in its own right, with a formal object peculiar to itself, irrespective of whether it comes to the final conclusion that the above-mentioned ideas have a valid signification or not. At any rate, the philosopher has the right and the duty to examine the validity of such ideas.

IMPORTANCE OF METAPHYSICS AND ONTOLOGY

A goodly amount of abuse and contempt has been heaped upon metaphysics and ontology by some classes of scientists and philosophers. For them the empirical sciences alone have value as knowledge. They point with justifiable pride to the marvelous results obtained by the exact methods of experimentation as used in science and the vast broadening of human knowledge achieved thereby. In consequence of this, they consider any other knowledge as superfluous, if not impossible of attainment; the knowledge of physical causes and laws alone is truly certain and valid.¹

This attitude, however, is based on a misconception. There should be no hostility of scientists against metaphysics, because metaphysics is the very basis of true science. Without ontology the fundamental ideas of science cannot be resolved into their ultimate elements, nor can their validity be established. Do not the ideas of 'cause,' 'effect,' 'quality,' 'truth,' 'relation,' and similar ones previously noted, lie at the very root of all scientific knowledge? Science simply *presupposes* the validity of these ideas; consequently, to rob them of their objective value is to rob science of the ground upon which it stands. And to accept these ideas without examination and proof means to leave the *ultimate* foundation of all knowledge open to question and doubt. Man's mind can never be satisfied with this. If this ultimate foundation is insecure, everything based on it is insecure. It is the purpose of metaphysics and ontology to *prove* this foundation valid. Thereby ontology proves the *rationality of science* in general. Instead of being hostile, then, scientists should welcome such an investigation.

As a matter of fact, scientists themselves cannot avoid metaphysical problems, nor do they actually leave them aside in their scientific discussions. Soon or later they must reach a stage in their researches where metaphysical questions are asked. The deeper they delve into the mysteries of nature the more frequently they come face to face with metaphysical problems which demand a definite solution. The scientist cannot go very far without asking himself: What is quality? quantity? causality? change? energy? What is the ultimate constitution of bodies? of protons? of electrons? of matter? What is the essential difference between truth and error, substance and accident, power and act? These are metaphysical questions, and scientists do actually discuss them. But they usually lack the philosophic knowledge offered them by a thorough understanding of ontology, and as a result they often exhibit an ignorance of fundamental ideas and principles which is harmful to the best interests of science itself. Their very attitude shows that ontology is a science of prime importance for every department of human knowledge.

METHOD AND DIVISION OF ONTOLOGY

If the charge were true that the method employed in metaphysical inquiries is totally divorced from experience and observation, then indeed there were just cause for complaint.

The inductive method of the natural sciences has proved its value beyond the possibility of doubt. The progress made by these special sciences in advancing and broadening

man's knowledge of the world gives ample testimony of its worth. A vast body of valuable truths has been discovered and systematized in the course of the last century or two, which must form the essential material for the philosopher in conducting his own researches into those wider problems cast up by metaphysics. He must accept the demonstrated findings of these physical sciences and from them draw the conclusions implied therein concerning the ultimate realities which lie behind the phenomena and laws of nature. To ignore them would indeed be fatal to the very purpose of philosophy.

The metaphysician, therefore, accepts the *facts* proposed by science, if they are unquestionably proved; he also uses the *inductive method* as his implement of investigation. Having traversed the field of these special sciences, using the scientists themselves as his guide, he then attempts to explore the unknown regions of reality which extend beyond the frontiers of the experimental sciences and effect a still greater unification of knowledge by means of a fuller grasp of those general concepts and principles which knit all things together. Having established these general concepts and principles inductively, the metaphysician then deduces other concepts, principles, and truths which flow from the former as necessary conclusions. Thus, truth and knowledge are increased through the *deductive method*. Metaphysics, therefore, uses both induction and deduction as its method. This is done especially in ontology, the science of being in its most general aspects. Thereby a great service will also be rendered to the experimental sciences in return, because

ontology will show the essential truth and validity of the fundamental ideas upon which the sciences are based and without which they seek in vain for a final verification of their conclusions. Ontology and science must assist, not oppose, each other. Their interests are mutually related and dependent. The position of ontology in the scheme of human knowledge having thus been stated and clarified, we must now divide the subject matter in such a manner as to insure the best arrangement of the problems involved. This will be done by going from the more simple to the more complex, from the more known to the more obscure. Correspondingly, ontology is divided into three major parts: (1) *Being* and its *primary determinations*; (2) the *transcendental attributes* of being; (3) the *supreme categories* of being. The subject is avowedly difficult, but its understanding is well worth the mental effort expended.

SUMMARY OF CHAPTER I

Man's mind seeks to discover the reality manifested by the phenomena of nature.

1. *Science* is the knowledge of things in their causes. The empirical sciences look for the proximate causes, while *philosophy* is the science of the ultimate causes, reasons, and principles of things, acquired by the aid of human reason alone. All sciences contain common elements and are, therefore, interrelated.

2. *Metaphysics* is the science of the ultimate principles and properties of real beings. *General Metaphysics*, or ontology, treats of 'being in general.' *Special Metaphysics* consists of three departments: cosmology treats of the material world; psychology, of the soul; theodicy, of God.

3. *Ontology* is the *science of being in its most general aspects*. It investigates realities like 'being,' 'cause,' 'effect,' 'relation,' 'quality,' 'essence,' 'existence,' 'change,' 'substance,' 'accident,' etc.

4. The *importance* of metaphysics and ontology can be seen from the fact that the realities just mentioned are fundamental to all the natural sciences. Ontology proves their validity and thereby furnishes the ultimate verification of the sciences.

5. The *method* employed in ontology is the method of induction and deduction. The *division* of ontology is as follows:

Being and its primary determinations; the transcendental attributes of being; the supreme categories

of being.

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1 As an example of this attitude, see *Modern Science*, by Hugh S. R. Elliot (Longmans, Green, 1912).

Chapter 2

THE CONCEPT OF BEING

THE FIRST THING NECESSARY IN ANY SCIENCE IS TO HAVE A clear understanding of the subject under discussion. In ontology it is 'being.' The form 'being' is the participle of the verb 'to be,' and the verb 'to be' means 'to exist,' 'to have existence.' But while the participial form of 'being' means 'having existence,' the term 'being' is usually taken as a noun, and in this substantive form it is equivalent to 'that which exists,' 'that which has existence.' This nominal definition is taken from the etymology of the term and is sufficient as a preliminary designation. There is, however, much more to the meaning of 'being' than this meager content, and it will be our first task to develop the concept of 'being' in its various phases. We have a *direct* and a *reflex* concept of 'being,' and both demand our attention.

THE DIRECT CONCEPT OF BEING

We derive the concept of 'being' from the things around us: they all are 'beings.' A tree is a being; and so is a house, a bird, a dog, a cloud, a lake, a star, a book. All objects, persons, places, facts, qualities, actions, events, are beings

or things. Whatever is present in the universe or outside of it in some way or other is a being. Each one is a particular *kind* of being, distinguished from every other by its own degrees of being. But they all have this one feature *in common* that they *exist*, and that is why we can apply to them the same word —‘being.’ The mind thus ignores all that in which things differ among themselves and centers its attention on that in which they agree, namely, the common element of ‘existence.’ ‘Being’ includes even more than the actually existing things: it embraces also all those things which do not at present actually exist, but which *can exist*, which have ‘possible existence.’ Thus we would say that the generation of men to be born a hundred years hence are possible ‘beings.’

The term ‘being,’ then, includes anything that has a *positive reference to existence*, whether this existence be actual or merely possible. The common element in actual and possible beings is their *capacity for existence*. Hence, ‘being’ in general means something capable of existing, *existible*; something capable of being actualized, *actualizable*; something capable of being realized, *realizable*.

Anything that can be positively thought of partakes of this character of ‘existibility’ — the actual and the possible, the real and the ideal, the necessary and the contingent, the material and the immaterial, the physical and the mental, the finite and the infinite. All fall under the comprehension of ‘being’; not in so far as they differ, but in so far as they agree in the one feature of something that is ‘existible.’ This meaning of ‘being’ in the sense of ‘existible’

is the meaning with which ontology occupies itself. 'Being,' then, in this widest, most indeterminate sense, is the special subject matter of ontology.

How does the mind arrive at such an indeterminate concept like 'being'? By *abstraction or precision*. Both mean the same thing, namely, the concentration of the mind's attention upon some particular phase of a thing, thereby ignoring and mentally excluding other phases or characteristics actually combined with it. A practical example will illustrate this mental process.

Take 'man.' There are many individual men, and no two are perfectly alike in every respect. Some are children, others adults; some are white, others are brown or black or yellow or copper-colored; some are male, others female; some are healthy, others diseased; some are stout, others slender; some are tall, others short; some are vivacious, others phlegmatic; and so forth. Notwithstanding these many individuating differences, all agree in this that they possess a human 'nature' — they are 'men'; and a man is a 'rational animal.' Now, the mind can ignore all these *individuating notes* or characteristics and concentrate its attention on that portion of man's being which he has in *common* with every other human being and which constitutes his *essence* as a 'man.' The essence of a thing is its 'whatness' — that which makes it to be 'what' it is and without which it would cease to be 'what' it is; everything else could be changed or missing, and the thing would still remain a member of that particular class of beings. Thus, the essence of man consists in this that he is a 'rational animal.' As long, and only as long, as he is a 'rational

animal' is he truly a 'man.' Size, age, sex, color, weight, shape, health, temperament, and similar individualizing traits, may remain, change, or disappear, but that will not affect his essential nature as a 'rational animal.'

Precision, or *abstraction*, therefore, is a process in which the mind fixes its attention upon one or other characteristic of a thing or upon an item common to many things, excluding others which are joined to it in the real order.

Precision may be either subjective (formal) or objective (material), and the difference depends upon the difference in the relation of the abstracted ideas to each other. It will be a *subjective precision*, when the ideas drawn out by the abstractive process are only *subjectively different*, i.e., when these ideas are such that they include each other implicitly, though they do not expressly mention each other. And it will be an *objective precision*, when the ideas drawn out by the abstractive process are *objectively different*, i.e., when these ideas have a different comprehension or thought-content, so that the one does not necessarily include the other. An example will make this clearer.

Man's essence, as we have seen, consists in this that he is a 'rational animal.' This involves a number of constituent elements. Man in his essence is 'rational.' As an 'animal' he is also 'sentient' and 'living.' He is also a 'body' and a 'substance' and a 'being.' We have thus resolved the essence of man into a 'rational, sentient, living, corporeal, substantial being.' Do these ideas mutually include each other, so that they are only subjectively different (subjective precision); or can we define the one without necessarily

including the other, so that they are objectively different (objective precision)? Let us see.

The idea 'sentient' means something that is capable of sense-perception; and that does not involve the idea 'rational,' because the brutes (e.g., dogs, lions, eagles, etc.) are sentient, but they are not in any sense 'rational' like man. The idea 'living' means an organism capable of immanent action (vital function); and that does not involve the idea 'sentient,' because plants are living, but they have no sense-perception. The idea 'body' means something that consists of extended matter; and that does not involve the idea 'living,' because inanimate things (metals, etc.) are corporeal, but they are not living. The idea 'substance' means something that exists in itself; and that does not involve the idea 'body,' because God is a substance, but He is not corporeal. These ideas, therefore, do not include each other, even though in man they are found together. They are objectively different, and the abstractive process, whereby they are abstracted from man's essence, is an *objective precision*.

But when we compare these ideas with the idea of 'being,' we perceive an entirely different relation. They all contain within themselves *implicitly* the idea of 'being,' because they evidently are 'beings'; and 'being' *implicitly* contains every one of these ideas, because 'being' involves every sort of reality. The only difference between 'being' and these other ideas is that they do *not expressly mention* each other, although they are and must be implicitly included in each other. The ideas 'rational,' 'sentient,' 'living,' 'corporeal,' and 'substance,' are objectively

different among themselves and have a thought. content which is not mutually inclusive; but the idea 'being' includes them all and is included in them all, so that they are only *subjectively* different from 'being' and 'being' from them.

No matter with what other idea we compare the idea of 'being' (except with 'nothing'), they are mutually inclusive: everything is a 'being' and 'being' is everything. Consequently, we arrive at the idea of 'being' by means of a *subjective, or formal, precision*.

THE REFLEX CONCEPT OF BEING

So far we have considered 'being' simply in its direct and immediate meaning, and we have examined the mode of abstraction by means of which we acquire its idea. We must now consider 'being' *reflexly*, i.e., as applied to the various kinds of things, and examine its relation to them. This will reveal a number of interesting facts.

The idea of 'being' is *first in the logical order*. By this is meant that it is the first and most fundamental in the order of ideas. Every idea contains the idea of 'being' in some form. An idea must have a content, must be the idea of something; and 'something' is always a 'being.' All knowledge is of things. The content of an idea will thus always represent a modification or a certain kind of 'being.' Hence, it is the most basic idea, the one into which all other ideas are ultimately resolved, the one without which nothing can ever be known.

The idea of 'being' is *first in the chronological order*. This statement cannot, of course, be demonstrated in any

strict fashion. No one can prove its truth from personal experience, because no one will be able to recall the first idea that he had in time. Nor can it be proved through observation of other minds. Obviously, children would be the only ones who could tell us, and they are incapable of telling us when they obtain their first idea and what its content is. The above statement is made in consequence of a general fact universally observed, namely, that man always passes in his knowledge from the more confused and indeterminate ideas to those more clear and more detailed. Since, however, the most confused and indeterminate idea is that of 'being' or 'thing,' and since this idea is involved in every concept, it is natural to suppose that the child's process of knowledge will have started with the simplest notion of 'thing' ('being') and gone from there to the more detailed modes and kinds of 'being.'

The idea of 'being' is the *narrowest in comprehension* and the *widest in extension*. By the comprehension of an idea we understand the sum total of all the attributes or thought—elements which constitute the idea; it is expressed in the definition of the content of the idea. By the extension of an idea we understand the sum total of all the individuals and groups to which an idea can be applied.¹ The comprehension of 'being' is the simplest of all, since it contains but a *single* element, namely, that which is 'existible,' that which is not 'nothing.' Its extension is the widest of all ideas, because it can be applied to absolutely *everything* that exists or can exist —finite and infinite, God and creature, material and immaterial, substance and accident.

Since the idea of 'being' is composed of but a single element, the 'existible,' it is the *most empty* of all ideas. It ignores every kind and special modification of entity in its comprehension and expresses solely the one element common to all things, namely, their capacity for existence. But while 'being' is the most empty of all ideas, the most indeterminate of all concepts, it has a *positive content of reality*. Hence, it cannot be identified with 'nothing,' as it is done by *Georg Hegel* (1770—1831), the German idealist philosopher. He does this because of the indeterminateness of the idea of 'being.' But indeterminateness does not deprive 'being' of all positive content. If it did, and if 'being' were equivalent to 'nothing,' then there would be no difference between 'being' and 'non-being,' between 'thing' and 'no-thing.' That would be a patent contradiction in terms, a logical and ontological monstrosity. After all, 'being' must always be 'being' and not its opposite. An examination of 'nothing' will show this more plainly.

BEING AND NOTHING

'*Nothing*' is the *absence of being*. It presupposes the knowledge of 'being' to begin with. It is only by having a previous concept of 'being' and then denying its presence that we acquire the idea of 'nothing.'

We can even distinguish between different *kinds* of 'nothing,' depending on the different kinds of 'being' which are considered to be absent. Thus, we speak of absolute and relative 'nothing.'

An *absolute nothing* is the *total* absence of being in every conceivable form. It is, obviously, only a mental abstraction. Being actually exists and has always existed, at least so far as God is concerned. There could never have been a time when there was an absolute nothing; because in that case no being could ever have come into existence.

A *relative nothing* is the absence of a definite *kind* of being. This relative nothing will again be either negative or privative. A *negative nothing* is the *mere absence* of some kind of being in a thing: the absence of wings or fins or claws or hoofs in a man; the absence of life or sight or hearing or speech in a stone; the absence of locomotion or feeling or memory in a plant. A *privative nothing* is the absence of some kind of being in a thing that is *fit* to have it and normally *ought* to have it. Cases in point are: the absence of wings in a sparrow, of fins in a perch, of hoofs in a horse; the absence of life in a dog, of hearing in a squirrel, of speech in man; the absence of locomotion in a giraffe, of memory in a lion. In these instances the absence of the perfection mentioned is a real *privation*, since these beings lack something that they ought to have according to their normal constitution.

From the above it is evident that Hegel's contention, that 'indeterminate being' is identical with 'absolute nothing,' is erroneous. If the two ideas were identical in content, then whatever is excluded from the idea of 'absolute nothing' would also be excluded from the idea of 'indeterminate being.' But this is not so. *All* being, of whatever type and kind, is excluded from 'absolute nothing'; but only a definite or *determinate kind* of being is excluded from the idea of

‘indeterminate being.’ The two ideas are thus seen to be objectively and essentially different. Certainly, both ‘absolute nothing’ and ‘indeterminate being’ exclude every determinate kind of being; but ‘absolute nothing’ is absolutely devoid of *all content* in its idea, while ‘indeterminate being’ still retains the *positive content* of ‘being in general.’ The mere fact that both agree in one point does not make them identical and equivalent; just as little as the fact that the ideas of ‘plant’ and ‘animal’ exclude the idea of ‘rationality’ will make the plant and the animal to be the same reality and identical thing. ‘Indeterminate being’ is still always ‘being,’ while ‘absolute nothing’ is never ‘being’ under any and all conditions.

DEFINITION OF BEING

‘Being’ admits of *no strict philosophic definition*. Such a definition would demand a proximate genus and a specific difference. The proximate ‘genus’ includes within its comprehension all the essential elements of the genera above it and therefore includes all the beings that are cognate or similar in nature to the thing which is to be defined. The ‘specific difference,’ on the other hand, brings in the distinctive element which separates this thing from all others of a similar nature, by showing in what manner it is different from all others with which it might be erroneously identified.

Take as example ‘man.’ Man is defined as a ‘rational animal’; ‘animal’ is his proximate genus, ‘rational’ is his specific difference. The proximate genus ‘animal’ includes

within its comprehension all the essential elements of the genera above it, because an 'animal' is a 'sentient, living, corporeal substance'; and this shows all the beings which are in some way similar to man-brutes, plants, inanimate bodies, substances. The specific difference 'rational' is the one distinctive essential element which distinguishes 'man' from every other 'animal'; it thereby makes him a species of his own and separates him from every other 'animal' and also from every other genus or species, including plants and inanimate bodies.²

It will be noted that the generic idea must always be *wider in extension* than the idea to be defined; and the idea expressed by the specific difference must always be something not already contained in, but *extraneous* to, the generic idea. A definition, therefore, if it is to be a real and strict one, must be made up of two objectively different ideas — one wider and one narrower than the thing to be defined, so that the combination of both gives the exact designation of the thing. This, however, can never be the case in a definition of 'being.' 'Being' is the supreme idea, the widest and simplest and most indeterminate which the mind possesses; *there can be no wider idea than 'being.'* Consequently, the mind can find no idea which could, in any strict sense of the term, serve as a true genus for 'being.' The most we can attempt, then, is a *descriptive definition*, and even that will not elucidate the idea, since none of the ideas which could be employed will be clearer and simpler than 'being' itself. As was pointed out above, 'being' is the first idea in the logical order, and no other idea is

intelligible without a previous understanding of the idea of 'being.

Viewed positively, 'being' can be described as that *which exists or can exist*, the 'existible'; viewed negatively, it is *whatever is not nothing*. That is the best we can do in describing it.

SUMMARY OF CHAPTER II

The term 'being' is derived from the verb 'to be' and means something that has, or can have, existence.

1. *The Direct Concept of Being.* We form the general idea of 'being' by contemplating the things around us; they are things, 'beings.' All things have a common element — actual or possible existence; they are *existible*.

The mind arrives at the indeterminate idea of 'being' by means of a subjective (formal), not an objective (material), *abstraction or precision*.

2. *Reflex Concept of Being.* The idea of 'being' is the first in the logical and chronological order. It is the narrowest in comprehension and the widest in extension; it is the most empty of all ideas. But the idea of 'being' always has a positive content of reality and as such is not identical with 'nothing.'

3. *Being and Nothing.* 'Nothing' is the absence of being. *Absolute* nothing is the total absence of being, while relative nothing is the absence of a definite kind of being. A *relative* nothing is negative, when it is the mere absence of some kind of being in a thing; and it is *privative*, when it is the absence of some kind of being in a thing that is fit for it and ought to have it. 'Absolute nothing' is the absence of all being, while 'indeterminate being' is merely the absence of a determinate kind of being.

4. *Definition of Being.* A strict philosophic definition is impossible, because there is no idea wider than 'being' that could serve as its genus; a descriptive definition is the best

than can be given, and even this will not elucidate the idea of 'being,' because no idea is more intelligible than this. Viewed positively, 'being' is that *which exists or can exist*; viewed negatively, it is *whatever is not nothing*.

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¹ 'See *The Science of Correct Thinking* (Bruce Publishing Co., 1935), p. 28, where the author gives a more detailed description of these terms.

² See *The Science of Correct Thinking*, p. 74; also pp. 56—58.

Chapter 3

KINDS OF BEING

THE IDEA OF 'BEING' IS THE SIMPLEST, WIDEST, AND MOST indeterminate of all ideas. 'Being' is anything and everything that does or can exist; whatever is not nothing is a 'being.' Such is our concept of it in its most general form. Naturally, 'being' itself can never exist in such indeterminateness; it appears always as some determinate *kind* of being, as something which possesses definite *degrees* of reality, as individual things or *entities*. Every single thing in nature is a 'being,' and we could make a classification of 'being' according to the ordinary types of things which are found in the universe. Such a classification, however, belongs more properly to the special sciences. Ontology considers only those kinds of 'being' which run across the lines of all the sciences, as characteristic of 'being in general.' A classification from this standpoint is the division into *real* being, *ideal* being, and *logical* being.

REAL BEING

A *real being* is anything that has, or can have, *existence independent of man's actual knowing*. By this is meant that it must be able to exist even when not thought of by man, That nothing can exist without the knowledge of God, is true; but it must be existible without dependence on man's knowledge-act. There are a number of subdivisions of real being which are important in this connection, and their general concept will be given.

ACTUAL AND POSSIBLE BEING. THE 'ACTUAL' BEING IS ONE THAT *really exists* at the present moment. We all are aware of ourselves as existing realities, we are conscious of our existence we are, therefore, actual beings. The same is true of every article in my room; of the house I live in; of the trees, garden, hills, sky, clouds, sun, etc., which exist in the universe at large, even if we do not know that they exist. They may be visible or invisible, physical or psychical, corporeal or spiritual: so long as they have existence here and now, they are actual.

The 'possible' (potential) being is one that does not actually exist, but is *capable of existence*. Such a being is not present in any way in the existing order of things; but it is such that it is not intrinsically impossible and can receive existence, provided there is a cause that can give it existence. For instance, in the spring, when the seed is placed into the soil, the future crop is not actually present; but it is a possible or potential reality, in as much as the seed has the inherent power (Lat., *potentia*, power) to bring

it forth so that it can exist (Lat., *pot-ens, potis esse*, to be able to exist).

SUBSTANTIAL AND ACCIDENTAL BEING. A 'SUBSTANCE' IS A BEING that *exists in itself* and does not need another to exist in as in a subject of inherence. Such are the ordinary objects we observe in the physical world — a table, a box, a book; metals and non-metals; plants, animals, men; the rivers and lakes, the hills and plains, the sun and the moon and the stars. These things exist in themselves and have a being of their own.

An 'accident' is a being that cannot exist in itself, but *needs another to exist* in as in a subject of inherence. Such beings are too weak in entity to exist without a subject; they require a substance to support them in their being and existence. Accidents are modifications of substances. Such are color, quantity, quality, action, motion, etc. Motion, for instance, never exists for itself and in itself; it is always a body that moves from place to place. Action cannot exist except in a body that acts. Color is always found in a body that is colored.

NECESSARY AND CONTINGENT BEING. A BEING IS SAID TO BE necessary, when its *non-existence is impossible*. It may be either absolutely or conditionally necessary.

A being is 'absolutely' necessary, when its non-existence is impossible under any and all conditions. In such a being existence is a constituent of its very essence. Such a being

simply *must exist*. An absolutely necessary being can never have been produced, because production implies that there was a moment when it did not exist and then received existence through this production; an absolutely necessary being, however, can never have been non-existent even for a moment. Consequently, such a being cannot be a produced being, but owes its existence to its own infinitely perfect essence (*ens a se*). God is conceived as such a being; His existence is identical with His essence, and as such His essence can never be without actual existence.

A being is 'conditionally' or 'hypothetically' necessary, when its non-existence is impossible under a certain given condition. Thus, no man's existence is necessary; however, given his existence, he must exist as a 'rational' being, because 'rationality' is one of the elements which constitute his existing essence. Again, a plant need not exist; but if it exists, it must have 'life.' So, too, a stone need not fall; but if it falls, it must of necessity have a certain amount of speed in its motion.

A 'contingent' being is one whose *non-existence is possible*. Actual existence, therefore, is not an essential element of its nature. It would involve no contradiction to conceive of such a being as non-existent. Essentially, such a being is indifferent to existence or non-existence. If it actually exists, it could not have received its existence in virtue of its own essence, but must have received it from some other being which produced it. This is obvious. Since its existence is not due to itself, it must be due to another being; this means that it is produced by this other. If it were not produced by another, it would owe its existence to its

own essence, and then it would not be contingent but necessary.

FINITE AND INFINITE BEING. THESE ARE TERMS WHICH ARE frequently used, and their exact meaning should be well understood.

A 'finite' being is one whose reality is *limited in perfection*. All things composing this physical world are finite. Not one has being, power, or existence which can truly be conceived as not limited in some manner. They are limited in size, in energy, in time, in space, in quality, in action, in endurance. As long as there is the slightest limitation of any kind in a being, it cannot strictly be accounted as anything but finite.

An 'infinite' being (Lat., *finis*, limit; *infinitem*, without limit, limitless) is one which has *no limit in its entity or perfection*. Our idea of the 'infinite' is negative in form, since it denies a limit; but it is positive in content, because it asserts the supreme fullness of entity and perfection. A being may be actually or potentially infinite.

A being is 'actually' infinite, when it has *reality without limit*. If this being is unlimited in one definite *kind* of reality only, while limited in other ways, it is said to be 'relatively' infinite. In mathematics, for instance, we speak of an infinite line; we mean thereby that it is limitless in length, but a line is limited in width and depth to such an extent that it is conceived as being without these two dimensions. But if a being were without any limit in the positive fullness of *all perfection*, including every kind and degree without

measure, it would be 'absolutely' infinite. A being of this nature must possess the perfections of all other beings and essences within itself, but stripped of their imperfections and limitations; and since a spiritual substance is more perfect than a corporeal substance, the absolutely infinite being must be a spirit whose essence is purest actuality without any admixture of potentiality. It is thus that we conceive God to be.

Something is 'potentially' infinite, when it is always actually finite in the amount of its reality, but is *limitless in its potentiality for receiving more reality*. Its possibility of receiving more reality will never reach an ultimate limit, for the reason that the store of possible reality which it did not yet receive is inexhaustible. A potentially infinite being, therefore, is always actually finite in perfection, and it can never become actually infinite in perfection.

ABSOLUTE AND RELATIVE BEING. THAT IS 'ABSOLUTE' WHICH CAN be thought of or can exist *without reference to another*. It is self-sufficient, independent; it does not need another. If it can exist without reference to another, it is *ontologically* absolute. Only the necessary being, God, is absolute in this sense. If it can be 'thought of' without reference to another, it is *logically absolute*. Ordinary objects are logically absolute, because we can form an idea of them without reference to another object; such are the idea of 'dog,' 'clock,' 'star,' 'gold,' 'eagle,' 'man,' etc. Their meaning is clear, and they can be defined by themselves.

That is 'relative' which can exist or be thought of only in *reference to another*. If the existence is relative, the thing is said to be *ontologically* relative. The existence of all creatures is of this kind, because they owe it to God. If the very concept of a thing, as expressed in its definition, involves reference to another, it is *logically* relative. We see this logical relation in ideas like 'father,' 'child,' 'brother,' 'king,' 'president,' 'front,' 'rear,' 'north,' 'east.'

Some of these divisions are the subject of considerable controversy, like 'substance' and 'infinite' and 'absolute.' It is not our purpose here to pass judgment on the validity of such concepts. They, and the problems connected with them, will be treated at greater length in different departments of philosophy. For the moment we are concerned merely with stating these classifications and nominal definitions, because they are commonly used, and their signification should be clearly understood, so as to avoid confusion of thought.

IDEAL BEING

By *ideal being* we understand any object in so far *as it is known*. It is also called *intentional* being. The mind of man in the act of knowledge is not like a mirror in which the known object is simply reflected, or like a photographic plate upon which the object makes an impression, so that the mind is purely passive in the process. The mind itself is actively engaged in this process and contributes its share to the production of the cognitional image of the object. No object leaves its position in external space and passes with

its bodily presence into the sense in sense-perception and into the intellect in thought. Nor does the mind pass out of the human person and envelop the physical object. Nevertheless, there must be a union between mind and object in some fashion in the act of knowledge, otherwise the mind could not be aware of its presence and existence. In the act of knowledge, then, there must be a *substitute presence* or image of the object *in the mind*. This *presence to awareness*, this sense-presence or thought-presence, is what we mean by 'ideal being.' An object as 'known,' therefore, obtains a mental or ideal existence whereby it manifests its presence to the perceiving mind; and this 'ideal existence' is entirely different from its real or physical existence which it has as an object in its own right, within the realm of the physical universe.

That the mind is not purely passive in the process of knowledge, can be seen in the fact that the mind can err in its knowledge. If the object were the only active agent in this process, it would always reveal itself as it is, and the mind could never obtain an erroneous impression of it, and thus a false judgment about it would be utterly impossible and unintelligible. The only reason why we can make a mistake about an object is, that the mind itself actively produces an intentional or ideal image of the object, and this image may not always correspond perfectly with the object in its physical being. In epistemology it was shown¹ that sense-knowledge of things is largely a matter of *interpretation and subjective construction*, based upon impressions received from the physical objects. Both object and mind contribute their share to the production of the

image, and the result is something different from the physical object itself. In the act of knowledge, then, the object receives a special form of being or existence, characteristic of knowledge itself, which is styled its 'ideal' or 'cognitional' or 'intentional' being.

This ideal being of a thing appears in two forms, *sensible* and *intellectual*, depending on the type of faculty which represents the object. Brutes and men have sense-perception of things, and these known things thus obtain a 'sensible intentional (ideal) being' in this form of knowledge. But men also have an intellect and form intellectual ideas, strictly so called, of these things; the cognitional existence thus obtained by the known things is an 'intellectual intentional (ideal) being.' Many philosophers of a sensist and phenomenalist frame of thought deny the difference between sense and intellect and assert that there is nothing but sense-knowledge in man. It is the duty of the psychologist to investigate this claim. The terms 'sense' and 'intellect,' however, are so current and so generally recognized as essentially different that the ontologist is entitled to accept the distinction, at least in a general way, and give a nominal definition of both. Whether these terms possess ultimate validity, will be a matter for discussion in psychology. So much is certain: man and brute are different in some way, and the difference manifests itself in man's power to think, an activity which is not definitely observed in the brutes. That alone is a sufficient reason for the classification of 'ideal being' into 'sensible' and 'intellectual.'

There is another point to bear in mind in this connection: sense-images are always concrete, individual, vague and indistinct with complexity and minuteness of detail, while idea-images are abstract, universal, sharp and distinct notwithstanding complexity and minuteness of detail.² This is a further reason to divide 'ideal being' into 'sensible' and 'intellectual,' even though there would be no essential difference between sense and intellect.

LOGICAL BEING

We speak of *logical being* in opposition to real being and ideal being. Our knowledge is naturally of things that are found in external nature, of extra-mental realities. Trees, buildings, birds, animals, earth, stars, are realities independent of our mind and its operations; the mere fact of their being known or unknown does not make them less real. They have their own being, 'real' being. An 'ideal' being, it is true, is dependent on the mind for its existence as known; but the ideal being of a thing always presupposes its real being, and hence is not purely mental.

There are, however, a variety of beings which have no existence and being whatever except as *products of thought*, creations of the mind; they have no objective existence in the world outside. The mind, in acquiring its knowledge of a thing (real being), makes concepts of them (ideal being), and this knowledge represents the thing as it exists in nature. But the mind goes a step further and analyzes these concepts, compares them, relates them, and

thus arrives at new concepts which have value only *in the order of thought*.

Such are the concepts of *genus*, *species*, and others of a similar character. 'Animal,' we say, is the 'genus' of man, and 'rational animal' is his 'species.' There is no such *thing* in nature, as a mind-independent entity, which could be called a 'genus' or a 'species'; the only beings that exist in nature are individuals. But the mind by its abstractive power conceives them as a unit and expresses them in one concept which it then applies to all the individuals as a class. As a 'genus' or a 'species' they have no existence except in the mind, in the logical order of thought. *They are logical beings, thought-beings.*

So, too, the mind in its thinking makes sentences with *subjects* and *predicates*, *nouns* and *adjectives*, *prepositions* and *adverbs*; and so on, with the other mental beings we call 'particles of speech.' We do not find such things existing in the world, as we see trees, buildings, hills, lakes, dogs, horses; they are not physical entities, but exist only in the mind.

We are now in a position to define *logical being*; it is *anything that has objective being only in the mind*. Whatever is conceived by the mind as a being, although it has not, and cannot have, any objective existence in nature precisely as thus conceived, is a thought-being, a logical being.

There are two main classes of logical being: one without a foundation in reality, and the other with a foundation in reality.

A logical being may be *without a foundation in reality*, and then it is a pure fabrication of the mind. Such would be 'a square circle,' 'a stick with only one end,' 'a corporeal spirit,' and similar contradictory concepts. Each element in such a dual concept actually denies and removes the reality given by the other, and so nothing is left that would represent a positive reality. Yet they are treated by the mind as *if* they represented some positive content and had real being. Obviously, such concepts or thought-beings can exist nowhere except in the mind.

A logical being with a *foundation in reality* is one which cannot exist in nature in the *precise manner in which it is conceived*, but there is a reason in the things of nature why the mind conceives it thus. Such a logical being will be either negative, or privative, or relative.

A *negative* logical being is a concept representing a mere absence of being; for instance, a 'vacuum,' 'sightlessness,' 'lifelessness.' Ideas of this sort have a content which is negative and *as such* is not a reality which can exist for itself outside the mind. Yet there is a foundation in reality for these concepts, because they are negations of some reality.

A *privative* logical being is a concept representing a lack of being. Examples would be 'death,' 'blindness,' 'paralysis,' 'neuralgia,' and similar concepts. If we compare such logical beings with negative logical beings, we will immediately see the difference. 'Sightlessness' signifies the mere absence of sight, while 'blindness' is the privation of sight in one who ought to have it. 'Lifelessness' is the absence of life in a being which is not supposed to possess

it, for instance in a stone; but 'death' is the privation of life in a being which formerly was living.

A *relative* logical being is a concept representing some relation between thoughts, sentences, inferences, and any part of them, considered as a being. The relations existing between subjects and predicates, between the premises and conclusion in an argumentation, between parts of speech, between genera and species, etc., are logical entities. So, too, are the mental laws which govern them, for instance, the laws of the syllogism, of induction, of education, of predication.

Such things have a foundation in reality. The negative and privative logical beings have their foundation in the physical world, in as much as the objects found therein are limited and imperfect and are affected by negations and privations in some part of their being.

These, then, are the different kinds of being: real, ideal, and logical. They all belong to the extension of 'being in general' and give us a better understanding of what 'being' really is: it includes everything mental and extra-mental, everything in the order of existing or existible things. Our next task will be to investigate how 'being' is found in these different kinds of being. And this brings us to the contraction of being in general to its inferiors.

SUMMARY OF CHAPTER III

There are three main kinds of being: real, ideal, and logical.

1. *Real* being is anything that has, or can have, *existence independent of man's actual knowing*. It includes: actual and possible being; substance and accident; necessary and contingent being; finite and infinite being; absolute and relative being.

2. *Ideal* being is any object in so far *as it is known*. It is also called 'intentional' or 'cognitional' being. It consists in the presence to awareness which an object has in the mind when known. The mind is not purely passive in knowledge, but is actively engaged in the process and contributes its share to the production of the cognitional image. The ideal being is either sensible or intellectual.

3. *Logical* being is anything that has objective being *only in the mind*. There are two kinds: with or without a foundation in reality. Logical beings, which have a foundation in reality, are either negative, or privative, or relative.

READINGS

Coffey, P., Ch. I; Hugon. Ed., Tr. I, Qu. I, art. I; McCormick, J. F., Ch. II.

¹ See the author's *Reality and the Mind* (Bruce, 1936), Chapters X—XII.

² See the author's *The Science of Correct Thinking*, pp. 24—28, 44—63. Also his *Reality and the Mind*, Chapter XIII, XIV

Chapter 4

THE CONTRACTION OF BEING

THE VARIOUS KINDS OF BEING HAVE BEEN NOTED. THEY ARE widely diverse in nature and character. Since they all belong to the extension of 'being in general,' the vague concept of indeterminate 'being' must be narrowed down or contracted in its extension to these different classes. The *contraction of being* is the reduction or narrowing of the extension of 'being' to its inferiors by means of the addition of some element to the comprehension of 'being,' thereby including some definite beings and excluding others from this extension.

CONTRACTION BY LOGICAL COMPOSITION

'Being' is contracted to its inferiors, not by means of a physical or metaphysical composition, but by means of a *logical composition*.

By composition we mean the union of elements that are distinct from each other. If these elements are such that they are objectively different in idea and physically different as things, then their union is effected through a *physical* composition. If they are objectively different in idea, but

really identical in their physical being as things, their union is effected through a *metaphysical* composition. And if these elements are neither objectively different in idea nor physically different as things, but merely different in the sense that the one idea contains implicitly and vaguely what the other expresses explicitly and determinately, their union is effected through a *logical* composition. The contraction of 'being' to its inferiors is made by means of a logical composition.

When we melt copper and zinc together, or when hydrogen and oxygen unite to form water, we have a physical composition. Here these realities are not only different in idea, but also as things. When the elements 'living body' and 'sentiency' are united together to form an 'animal,' we have a metaphysical composition. These elements are objectively different in idea, but in the animal as an existing reality they are not physically different as things; the very body of an animal which is 'living' is at the same time also 'sentient,' and 'sentiency' in the animal is an expression of its 'life.' When, however, we contract the idea 'being' to its inferiors 'substance' and 'accident,' we have only a *logical* composition, because these realities are neither altogether objectively different in idea nor physically different as things. This will be clearer from the following considerations.

When we discussed the mode of precision employed in abstracting the idea of 'being' from the essence of 'man,' we showed that the ideas of 'rational' and 'animal' are objectively different, because they are not mutually inclusive. The wider idea of 'animal' is contracted or

narrowed down to its inferior 'many by *adding* the idea 'rational' to the idea 'animal'; and the idea 'rational' is truly *foreign* and *extraneous* to the idea 'animal.' This, then, represents a metaphysical composition.

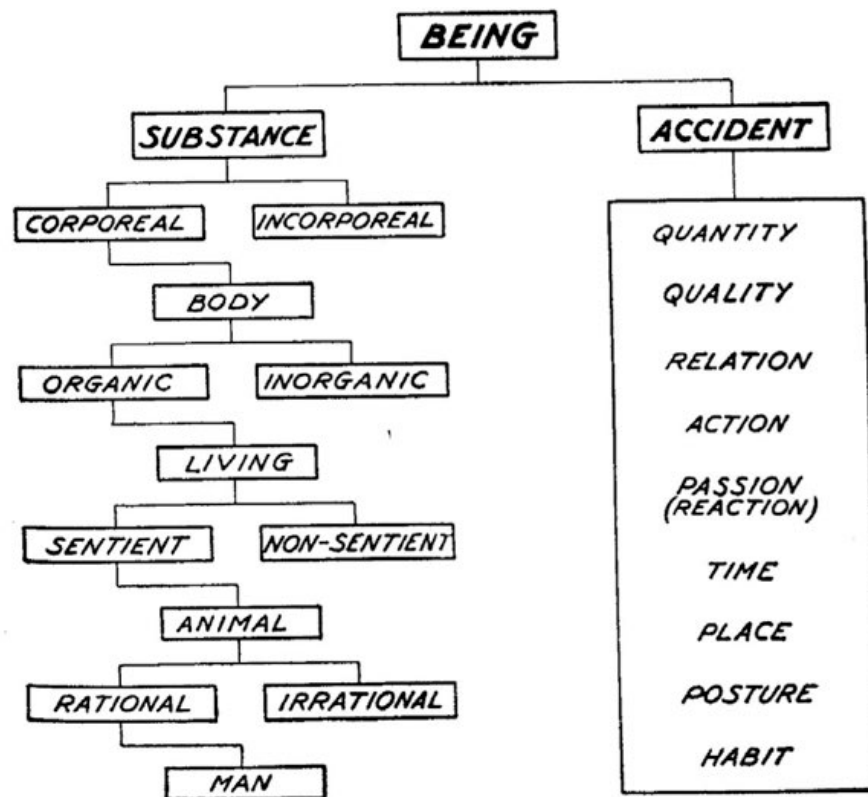
When we contract the idea of 'being' to its inferior ideas, like 'substance,' 'accident,' 'body,' 'animal,' 'man,' or to any other idea, does this also involve a metaphysical composition, such as exists between 'animal' and 'rational' in man? It does not. If it did, the element or idea *added* to 'being' would have to be objectively different from it and *positively excluded* from its content; it would have to be an element foreign and extraneous to 'being,' something not already contained in it. Now, what element could be added to 'being' which is not a 'being' in some form or other? The only element or idea that is *outside* the idea of 'being' is the idea of 'nothing'; but it must be evident that 'being' can make no composition with 'nothing,' because the latter can *add nothing positive* to the idea of 'being.'

Comparing, then, the idea of 'being' with that of 'substance' and 'accident' or any other idea, we find that the latter can add to 'being' nothing which would be objectively different from 'being,' nothing which would be new and extraneous to it. Whatever they contain of positive reality is merely an explicit and determinate *form of being* and is already contained in the idea of 'being in generals in an implicit and indeterminate manner. They are, therefore, neither physically different as things, nor objectively different in idea, from 'being' itself. And that is precisely the characteristic mark of a logical composition. Hence, the contraction of 'being' to its inferior members is effected, not

through a physical or metaphysical, but through a *logical composition*.

BEING IS NOT A TRUE GENUS

Nothing seems plainer than that 'being' should be the genus of 'substance' and 'accident,' because they form the natural divisions of 'being.' This can be seen from the following diagram:



'Substance' and 'accident' certainly appear to be well-defined species under the genus of 'being.' But this is only apparently so. The reason why 'being' cannot be considered a true genus follows with necessity from what has just been

said about the logical composition involved in the contraction of 'being' to its inferiors. A *species* is the result of the union between a *genus* and a *specific difference*; and the specific difference is an element new and extraneous to the content of the genus, something not contained in the genus in any way as a part of its comprehension. Unless, then, the content of the specific difference is something *new* and *extraneous* to the comprehension of the so-called genus, the latter is not a true genus. And that is the case with 'being' as applied to 'substance' and 'accident.'

The reason is obvious. One cannot find any specific difference *outside* the idea of 'being' which could make a *true difference* and thus constitute a true species, because any such difference would always be a 'being' in some form and on that account would already *be contained* in the idea of 'being.' 'Substance' is a being 'existing in itself,' and 'accident' is a being 'existing in another.' But 'existence,' whether 'in itself' or 'in other,' is already a modal form of 'being'; consequently, it is contained within the comprehension of 'being' in general and is nothing truly new and extraneous to 'being.' The only idea outside the comprehension of 'being' is the idea of 'nothing'; and that, of course, can never become a mark to distinguish one species from another. A specific difference *must be a positive element* of distinction between two species, so that the one is realized *with it* and the other *without it*; that is precisely what constitutes the difference between one species and another. 'Being,' then, is not a true genus for 'substance' and 'accident,' because we can find no specific difference outside its comprehension.

Since 'being' is no strict genus and since it includes every possible thing in the scale of reality, it is properly called *transcendental*, i.e., something which transcends or surpasses all classes or categories of determinate beings.

BEING IS AN ANALOGOUS IDEA

Three terms, depending upon their perfect or imperfect signification, can be considered in this connection: univocal, equivocal, and analogous. A *univocal* term is one which designates a number of things in an *identical sense*. Such things are of the same kind, so that the word used to name them has the same meaning throughout. The term 'dog,' as applied to mastiffs, bulldogs, terriers, poodles, etc., is a univocal term. The term 'metal,' used to designate gold, silver, copper, tin, etc., is also univocal. This is true of most terms signifying objects belonging to a certain class. An *equivocal term* is one which is used of diverse things, so that it has *entirely different meanings*. For instance, 'pen' as an instrument for writing and as an enclosure for animals; 'coach' as a vehicle and as an athletic director; 'page' as a leaf of a book and as an attendant at court. Here the identical word has entirely different meanings, as will be seen at a glance; it is, from this standpoint, the opposite of a univocal term.

An analogous term stands midway between these two: it is one which applies to *unlike things, partly for the same and partly for a different reason*, so that it is used in a meaning that is partly the same and partly different. There is always some fundamental relation present in such things,

entitling the mind to designate them by the same term; hence, such a term is not equivocal. On the other hand, because of their partial unlikeness, the term is not used in a strictly identical sense, and so it is not univocal. That is why it is called analogous. Take the term 'healthy.' Man is termed 'healthy'; and since health is a condition affecting a living body, the term is applied here in an absolute sense. But we also say that a medicine is 'healthy,' because it causes health; a complexion is 'healthy,' because it is an indication of health; food is 'healthy,' because it preserves health; exercise is 'healthy,' because it promotes health: here the term is used in a relative sense, because the word 'healthy' can only be applied to them in relation to the health of a living body with which they have some connection. The meaning is not strictly identical nor is it entirely different; the things so designated are really unlike, but the fundamental relation to 'health' unites them in the same term and concept.

The term 'being,' as applied to its inferiors, e.g., to the infinite and the finite, to substance and accident, to the absolute and relative, etc., is manifestly *not equivocal*. It certainly does not apply to them like the term 'pen' to an instrument of writing and to an enclosure for animals. The objects designated here by the term 'pen' are totally different in meaning and have no common bond between them. But the infinite and the finite, the absolute and the relative, substance and accident, are 'beings' in the true meaning of the term; they contain a common element and are related by a common bond, namely by their mutual reference to existence, because all are 'existibles.'

The question now arises: Does not this common element 'existible' imply the selfsame meaning in these inferiors of 'being,' so that the term 'being' is applied to them in a *univocal* manner? At first glance one would think so. But an exact analysis of the conditions involved in univocal predication will show that 'being' is not applied to them in a strictly identical sense.

In order that a term be univocal in its application to its inferiors, two things are required: first, that there be *one thought-content* or comprehension corresponding to the one term, and this thought-content must really be *present in the inferiors*; second, that this one thought-content be present in all of them in a *strictly uniform manner*.

The first condition is undoubtedly verified in the application of 'being' to the infinite and the finite, to substance and accident, to the absolute and the relative, etc. 'Being,' in the sense of 'existible,' is truly found in them all. They exist; or at least they can exist. There is no intrinsic contradiction in any of these concepts as such, and that is sufficient to consider them at least as *possible beings*. They are, then, beings in the sense of something 'existible'; and in this sense the thought-content of 'being' is really found in them in a true manner.

But the second condition is not fully verified. When a thought-content is realized in a number of things in a *strictly uniform manner*, they are, so far as this element is concerned, *perfectly alike* and do not differ in this particular respect. If they differ nevertheless, this difference is due to some other element *added* to it and this element is added to it *from without* as something new and

extraneous. For instance, 'animal' is a univocal term applied to man and brute. In so far as man and brute are 'animals,' i.e., 'sentient,' they do not differ among themselves. The distinguishing element 'rational,' the point in which they differ, is *not contained* in the concept of 'animal' at all and is added from without. This, however, is not true of 'being' as realized in its inferiors. 'Being,' of course, is found in every one of these concepts; but the element in which the 'infinite' differs from the 'finite' and 'substance' differs from 'accident,' etc., is not anything outside the concept of 'being' and added extrinsically to it, *but is itself also a being.* Hence, 'being' is not only that in which they agree; it is also that in which they *differ* and as such, then, it is not found in them in a strictly uniform manner. Thus, the 'infinite' is a being that is of itself eternal, immutable, absolutely independent; the 'finite' is created, changeable, temporal, dependent on the infinite. 'Substance' is a being that exists in itself and does not need another to inhere in; 'accident' is something that cannot naturally exist in itself, but must always depend on its substantial support for existence. These are essentially different modes of 'being,' and thus 'being' is *not realized* in them in a *strictly uniform manner*. In consequence of this the term 'being' does not apply to them in an entirely identical meaning. And since a term, which applies to its inferiors in a manner and meaning partly the same and partly different, is called analogous, 'being' is an *analogous term*.

If we inspect the fundamental relation which forms the basis of the analogy here, we find that it is an *analogy of intrinsic attribution*. For this two conditions are demanded:

the element common to the things designated by the same term must be present in them in a true and genuine sense, and not merely applied to them as a figure of speech; this element must be found in the one member in an independent and absolute sense, and in the other member relatively and with dependence on the first. Such is the nature of 'being' as applied to the infinite and the finite, to substance and accident, to the absolute and the relative. In all these the concept of 'being,' their common element, is present in a true and genuine sense, and not merely as a figure of speech; they are truly and genuinely *beings*, because they really are existible. But it is equally clear that the *infinite* (God) is 'being' in an absolute and independent manner, while the *finite* (creature) can have 'being' only in relation to, and with dependence on, the infinite (God). So, too, it is the *substance* which has 'being' primarily, while *accidents* can exist only in and with the substance. Similarly, the absolute is of its very nature something which is independent in its 'being,' while the *relative*, as its name indicates, is dependent on the absolute. We thus see that these dual members, although they are true beings, are such that 'being' is realized in them in a totally different manner, the second member having a relation of dependence on the first: the first can exist without the second, but the second cannot exist without the first. And this relation of dependence forms the basis for the analogy of *intrinsic attribution* between them, since that is what is meant by analogy of 'intrinsic attribution.'

Summing up, we find that 'being' is contracted to its inferiors, not by means of a physical or metaphysical

composition, but by means of a *logical composition*. 'Being' *is not a true genus*, but an *analogous idea*, based on an analogy of intrinsic attribution. These distinctions may not seem very important, but they play a vital part in the controversy between theism and pantheism. If 'being' were a true genus, embracing as members God and the world, there would be danger of merging both in the higher reality of 'being in general'; and that would be pantheism. A confusion of this sort would indeed be disastrous in many ways. A clear-cut knowledge of 'being' will avoid this intellectual pitfall without much difficulty.

SUMMARY OF CHAPTER IV

By the *contraction of being* we understand the reduction or narrowing of its extension to its inferiors by the addition of some element to its comprehension or thought-content.

1. '*Being*' is contracted to its inferiors, not by means of a physical or metaphysical composition, but by means of a *logical composition*. By a logical composition is meant the union of elements which are neither objectively different in idea nor physically different as things, but merely different in the sense that the one idea contains implicitly and vaguely what the other expresses explicitly and determinately. If we contract the idea 'being' to 'substance' and 'accident,' we find that whatever reality the latter contain is merely an explicit and determinate *form of being* and is already included in the idea of 'being in general' in an implicit and indeterminate manner. They are, therefore, neither objectively different in idea, nor physically different as things, from 'being' itself.

2. *Being is not a true genus*. 'Substance' and 'accident' are not true species under 'being' as their genus. A 'species' is the result of the union between a 'genus' and a 'specific difference'; and the specific difference is an element *new* and *extraneous* to the content of the genus. In order, then, that 'being' be a true genus, we must find a specific difference which would be extraneous to the concept of 'being' and be added to it in the Species. But every such difference would itself be a 'being' of Some kind, and then it would not be extraneous to 'being.'

The only thing outside 'being' is 'nothing,' and 'nothing' can make no difference between things.

3. *Being is an analogous idea.* A 'univocal' term is one that is applied to a number of things in an identical sense. An 'equivocal' term is one that is applied to a number of things in entirely different meanings. An 'analogous' term is one which applies to unlike things, partly for the same and partly for a different reason, so that it is used in a meaning partly the same and partly different.

The term 'being,' as applied to the infinite and the finite, to substance and accident, to the absolute and relative, is not equivocal, because these things are real beings. But neither is it applied to them univocally, because the thought-content of 'being' is not found in them in a *strictly uniform manner*. It is found in the infinite, in the substance, and in the absolute in a primary and independent sense, while it is found in the finite, in the accident, and in the relative in a secondary and dependent sense. 'Being' is thus an analogous term, based on an analogy of *intrinsic attribution*.

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Chapter 5

THE SUPREME PRINCIPLES

SO FAR WE HAVE INVESTIGATED 'BEING' WITH REGARD TO ITS content, in order to have a clear idea of its meaning. Our idea of 'being' has been amplified by the enumeration of the main classes in which it can be realized; we have become acquainted in a general manner with real being, ideal being, and logical being. The concept of 'nothing' has also been examined, thereby setting off the positive content of 'being' against the negative content of 'nothing.' We have also seen how the idea of 'being' is contracted to its inferiors, to the infinite and the finite, to substance and accident, to the absolute and the relative. We must now turn our attention to the supreme principles of being.

THE NATURE OF A PRINCIPLE

A *principle*, generally speaking, is *that from which something else proceeds in any way whatever*. In order that something be a real principle, it is necessary: first, that the principle be *prior* to the reality which proceeds from it; secondly, that this priority be grounded in the things

themselves on account of some *special connection*. This priority may be one of time, or of nature, or of origin.

A *priority of time* exists when the principle has an existence which precedes that of the reality which flows from it. Fire is prior in time to the boiling of the water which it causes; an inventor is prior in time to the machine he makes; an electric current is prior in time to the movement of the motor which it operates; the sun is prior in time to the light it emits. A *Priority in nature* exists when the principle possesses a nature

Whose presence is necessary for the existence of something which proceeds from it, even though this nature be not prior in time. Thus, substances must be prior in nature to their own accidents. because the latter presuppose a substance as the subject in which they have their being. The substance of a body is prior in nature to the three-dimensional quantity which modifies the body; a rose is prior in nature to the color found in it; a man is prior in nature to the vital functions which exist in his being. These accidents are present at the same time as the substance, but they could not exist unless the nature of the substance were presupposed, because they proceed from it as from their natural principle. A *priority of origin* exists when the principle is neither prior in time nor in nature, but prior in origin, to the reality which proceeds from it. We have an example in the Blessed Trinity, as held in Christian theology. The Father is the principle of origin for the Son and is prior to Him in this sense, but this origin involves neither a priority of time nor of nature. Obviously, it is

beyond the scope and possibility of philosophy either to prove or disprove this last type of priority.

The *special connection* between the principle and that which proceeds from it may belong either to the logical or to the ontological order. It will be a *logical* connection, when the truth of one statement depends upon the truth of another, from which it flows; this latter statement would then be a logical principle. For instance, the premises in an argumentation are the logical principle for the conclusion. It will be an *ontological* connection, when the entity of one thing depends on the entity of another; such a principle would be an entitative or ontological or metaphysical principle. The connection existing between effects and causes is ontological; thus, hydrogen and oxygen are the ontological principle of water, because water depends in its being on the entitative union of hydrogen and oxygen. While logical principles also interest the ontologist, his main concern is with ontological or metaphysical principles; and among these the supreme principles of being demand his particular attention. By the *supreme principles of being* are understood those highest principles which are *immediately derived from the concept of 'being'*: the Principle of Identity, the Principle of Contradiction, the Principle of Excluded Middle, and the Principle of Sufficient Reason.

THE PRINCIPLE OF IDENTITY

The *Principle of identity* rests immediately on the concept of 'being.' A 'being' is something 'that is.' It is evident, then, that 'a being is a being.' And since 'nothing' is that 'which is

not,' it is also evident that 'a not-being is a not-being.' Here we simply compare 'being' with itself and 'not-being' with itself, and the truth of the judgments is intuitively clear to the mind without the need of any demonstration; the relation of self-identity expressed therein is objectively self-evident. The Principle of Identity is the natural formulation of this relation. It is formulated in different ways: *Whatever is, is; and whatever is not, is not: Everything is what it is: Everything is its own being: Being is being, and not-being is not-being.*

This principle may seem to be a mere tautology, as if it were stated that 'A man is a man' or 'A stone is a stone.' But the identity enunciated in the principle has a wider application than this. It applies with equal force and truth to the statements that 'A man is a living substance' and 'A stone is material.' Here, too, the mind affirms an identity *in this case* between 'man' and 'living substance' and between 'stone' and 'material'; and these are obviously not tautological statements. The Principle of Identity is thus exemplified in every affirmative judgment made by the mind and is valid in both the logical and ontological orders.

THE PRINCIPLE OF CONTRADICTION

This principle is based on a comparison of 'being' with 'not-being.' In comparing these two concepts, it is transparently clear to the mind that the one is not, and cannot be, the other. They mutually exclude each other with an absolute necessity. 'Being' is simply 'being' and cannot be 'not-being,' otherwise 'being' would be 'nothing' and would not

be 'being' at all. The same is true of 'nothing': it is 'not-being' and as such can never be 'being,' otherwise 'nothing' would not be 'nothing' but would be 'being.' In other words, something 'that is' can never, under any and all conditions, be something 'that is not.' And since these two concepts can never be united in the mind as identical, but must be universally and necessarily in opposition to each other as contradictories, this self-evident truth is expressed in the Principle of Contradiction: *It is impossible for a thing to be and not be at the same time: A thing cannot be and not be something at the same time.*

It must be borne in mind, however, that the phrase 'at the same time' has more than a temporal meaning. It means as much as: from the same standpoint, at the same time, in the same circumstances, under the same conditions, in the same respect. The statement could be true that 'It is possible for rain to fall and not to fall at the same time,' if we refer to different localities; but it could not be true about the selfsame rain in the selfsame locality. It is also true that 'A boy can be a man,' if we mean that he can be a man at a later period of his life; but a boy cannot be a man while he is still a boy. The principle, therefore, applies to things taken *in the same respect*; and then it will be obvious that they cannot both 'be' and 'not be' something at the same time.

The principle has *universal application*. It applies with equal validity to things temporal and eternal, to things finite and infinite. Thus, it is impossible for a man to walk and not to walk, to think and not to think, to live and not to live, to be a millionaire and not to be a millionaire, to own a car and

not to own a car. It is impossible to be immortal and yet mortal, to be uncreated and yet produced, to have all perfection and yet lack entity, to be omniscient and yet be ignorant of something, to be omnipotent and yet be incapable of producing some possible being. From this it must be clear that the identification of 'being' and 'nothing' on the part of *Hegel* is sheer absurdity. Consider this statement of his: "The distinction between Being and Nought is, in the first place, only implicit, and not yet actually made: they only ought to be distinguished. A distinction, of course, implies two things, and that one of them possesses an attribute which is not found in the other. Being, however, is an absolute absence of attributes, and so is Nought. Hence, the distinction between the two is only meant to be; it is quite a nominal distinction, which is at the same time no distinction. In all other cases of difference there is some common point which comprehends both things. Suppose, e.g., we speak of two different species: the genus forms a common ground for both. But in the case of mere Being and Nothing, distinction is without a bottom to stand upon: hence, there can be no distinction, both determinations being the same bottomlessness . . . Nothing, if it is thus immediate and equal to itself, is also conversely the same as Being is . . . In Being we have Nothing, and in Nothing Being.... In Becoming the Being which is one with Nothing, and the Nothing which is one with Being, are only vanishing factors; they are and they are not."¹ This may be good idealistic monism, but it is an absolute violation of the Principle of Contradiction and the destruction of the foundations of all knowledge, science, and philosophy.

THE PRINCIPLE OF EXCLUDED MIDDLE

This principle is also the result of a comparison between 'being' and 'not-being.' It is called the *Principle of Excluded Middle*, because the mind intuitively perceives that between 'being' and 'not-being' there is no middle or third thing which would be left, if both 'being' and 'not-being' were removed. Such a middle thing either 'is' or 'is not.' If it 'is,' then it is a 'being'; if it 'is not,' then it is a 'not-being.' Consequently, it will be either a 'being' or a 'not-being,' but not a middle thing *between* the two which is neither the one nor the other. If it is the one, it is not the other; and if it is not the one, it must be the other. It certainly cannot be both 'being' and 'not-being' at the same time, because that would be impossible in virtue of the Principle of Contradiction. This principle has also been formulated in a number of ways: *A thing either is or is not: Everything must either be or not be: Between 'being' and 'not-being' there is no middle or third thing possible.*

As in the case of the two foregoing principles, this principle rests immediately on the relation between 'being' and 'not-being.' It needs no demonstration to prove its truth, because a mere understanding of the concepts of 'being' and 'not-being' and of their relations to each other is sufficient to make it evident. If it is impossible for a thing to 'be' and 'not to be' at the same time, then such a thing must either 'be' or 'not be'; nothing could be simpler or truer. The Principle of Excluded Middle is thus seen to flow naturally and logically out of the Principle of Contradiction. If the latter is valid, the former must be valid also.

Like the foregoing principles, this principle applies *to all things* without exception, if it is a question of contradictory distinctions. No matter what point may be mentioned, it is always 'either — or.' God is either infinite or not infinite, either eternal or not eternal, either created or not created, either a person or not a person. This stone is either quartz or not quartz, either heavy or not heavy, either small or not small. This man is either white or not white, either an American or not an American, either old or not old, either sick or not sick. There can be no middle ground between these contradictories: a thing cannot be both, and it must be either the one or the other of the two.

THE PRINCIPLE OF SUFFICIENT REASON

Everything, in so far as it is a 'being,' has reality. Whatever reality a being has, it must have it either of and by itself or from and by another being; in the first case it has the *sufficient reason* for its reality in itself, and in the second case it has it in the other. This is so obvious that the mere statement suffices to show its truth. And if it has no reality, it is no being at all, and this is simply due to the fact that it has not received reality either of itself or from another being; in both cases it is a 'not-being' because it has *no sufficient reason* for its reality. If it could have reality nevertheless, it would have to receive it from 'nothing.' But 'nothing' has no reality itself and can, therefore, never give reality to anything. Consequently, were such a reality without a sufficient reason, it would both 'be' and 'not be' at the same time: it would 'be,' because that is the

supposition; and it would also 'not be,' because, having no sufficient reason to account for its reality except 'nothing,' it could receive only that which 'nothing' could give, which is precisely nothing. But 'to be' and 'not to be' at the same time is a violation of the Principle of Contradiction; and that is an absurdity. Hence, if a being has reality, it must have it either of itself or from another, i.e., it must have a sufficient reason for itself: *Nothing is without a sufficient reason: Everything must have a sufficient reason for its being and existence.*

METAPHYSICAL AND LOGICAL PRINCIPLES

These metaphysical or ontological principles are called *First Principles*, because they follow immediately from the first and fundamental concept of 'being.' They are primarily metaphysical principles of *reality*. They have, however, also a *logical* character, and as such are the first and fundamental principles or *laws of thought*. This must be so. Ideas are mental representations of reality, of things. In order truly to represent things, they must conform to the reality they represent. Because things are what they are and are not what is different from themselves, we can judge and think that they are so. Reality is thus the standard and norm according to which the mind must regulate and formulate its judgments concerning reality. Just as reality itself must conform to the metaphysical laws of being, so all judgments must conform to these same laws. Consequently, the laws of being must also be the laws of thought; in other

words, these supreme metaphysical laws are at the same time the supreme logical laws.

It must be possible, then, to translate these metaphysical laws of being into logical laws of thought. This is not a difficult task.

The Principle of Identity will read:

Whatever is true of a thing must be affirmed of it:

Truth is always truth, and falsity always falsity.

The Principle of Contradiction will be:

Something cannot be both true and false at the same time: Contradictories cannot be true at the same time.

The Principle of Excluded Middle can be

expressed: Contradictory judgments must be either true or false.

The Principle of Sufficient Reason can be stated as follows:

There must be a sufficient reason for the truth or falsity of a judgment.

To say that these are the supreme metaphysical and logical principles, does not mean that all being and all truth are included in them in such a way that all particular beings and all particular truths derive their *origin* from them. Were this the case, it would be possible to deduce the existence of single beings and single truths from them; then

a knowledge of these principles would enable the mind to acquire a knowledge of all being and all truth in their various determinate forms by means of a gradual unfolding and detailed *development* of these principles. But this cannot be done. These principles are based on the concept of 'being in general,' and the latter is the emptiest and most indeterminate of all ideas. 'Being in general' is a mental abstraction; as such, it *exists* nowhere as a *reality* which would possess in the richness and fullness of its existing entity all other existing beings and truths. As an *idea* 'being in general' includes all beings and all truths in its extension, but not as an existing reality. The supreme principles of being and thought, therefore, are *not productive* principles or *causes*, but *regulative norms* and laws to which the particular beings and truths must conform. Particular beings and particular truths derive their origin from *sources outside* these principles. That the sun exists, is not due to these principles. But *if* and when it exists, then it must conform to these laws. If the sun exists, it is a sun, according to the Principle of Identity; it cannot be a sun and not a sun at the same time, according to the Principle of Contradiction; it must either be or not be a sun, according to the Principle of Excluded Middle; and it must have a sufficient reason for its reality and existence, according to the Principle of Sufficient Reason. And from a logical standpoint, it must be true that it is a sun; it cannot be true and false at the same time that it is a sun; it must be either true or false that it is a sun; and since the judgment about the sun agrees with its reality, there is a sufficient reason for the truth of this judgment. These principles themselves,

however, *do not confer reality and existence* on the sun; nor do they enable us to know of the existence of the sun. And what has been said here about the sun, pertains to every other kind of being; whether it be the earth, a tree, a dog, a house, a desk, an apple, a man, or God. They do not owe their being to the First Principles; but, if they have being, their being and the truths concerning their being are regulated according to the laws inherent in these metaphysical and logical principles. Such, then, is the nature of these supreme metaphysical and logical principles.

THE MOST FUNDAMENTAL PRINCIPLE

The question has been raised among philosophers as to which of these supreme metaphysical and logical principles is the *most fundamental*.

That the Principles of Excluded Middle and of Sufficient Reason cannot be the most fundamental, should be clear from the foregoing exposition of these principles. They are without doubt a development of the Principle of Contradiction. It is only because a thing 'cannot be and not be something under the same respect,' that it follows with necessity that a thing must 'either be or not be' and that it 'must have a sufficient reason.' Their validity is thus clearly based on the Principle of Contradiction; they rest solidly on the validity of the latter as upon their primary principle.

It is not so easy to decide whether the Principle of Identity or the Principle of Contradiction is the most fundamental in the ontological and logical order. *Aristotle*

and his followers, the scholastics, have always considered the Principle of Contradiction to be the more fundamental of the two. Their view of the matter held the ascendancy and remained practically unchallenged. In more recent times, *Gottfried W. Leibnitz* (1646—1716) advocated the opinion that the Principle of Identity was the first and foremost. In his first essay on Locke he expressed himself as follows: “My view is that nothing shall be taken as first principles but experiences and the axiom of identity or (what is the same thing) contradiction, which is primitive.”² Later on, however, in his *New Essays*, he came out more definitely in favor of the priority of the Principle of Identity: “In the natural order the statement, that a thing is what it is, is prior to the statement that it is not another.”³ At first, this latter view of Leibnitz might seem to be the more logical. But on closer inspection, if we consider these principles from the standpoint of the certitude of human knowledge, we must say that the *Principle of Contradiction* is the most fundamental. As *D. Card. Mercier* states the situation: “That of Identity is first, i.e., the first in the order of the mind’s analysis, or genetically first; but in the regressive order, when it is a question of the firm foundation of the certitude of our knowledge, the Principle of Contradiction is the last, the touchstone of all certitude.”⁴

The reason is this. If we accept the Principle of Identity as a mere tautology, then, it is true, it is prior to the Principle of Contradiction; but a tautology is no principle of being or thought. When, however, we wish to assert with strict certitude and necessity that ‘whatever is, is,’ we really

intend to affirm that ‘whatever is, is *necessarily so*’ and cannot be otherwise. But this is tantamount to saying that a thing cannot be and not be something at the same time: and that is the *Principle of Contradiction*. When we, therefore, consider the practical import of the Principle of Identity, we find that it really coincides with the Principle of Contradiction. Taken for itself, the Principle of Identity is, according to *Tilman Pesch*, “vague and indeterminate, so that it is rather the root and the imperfect germ of principles”⁵ than a full-fledged principle itself. Consequently, the Principle of Contradiction is the most fundamental among the supreme principles of being and of thought.

We may even go a step farther and say that the Principle of Contradiction is the most fundamental *of all principles* of being and thought. The most basic idea involved in every thought and thought-process, in every substantial and accidental reality, is the idea of ‘being.’ This idea of ‘being’ is thus the first in the *logical* and *ontological* order. Hence, the principle immediately expressive of this idea in thought and reality must be the most basic and fundamental principle in the same order. But it is the Principle of Contradiction which does this, because it is constituted solely by the idea of ‘being’ as compared with its directly opposite idea of ‘not-being.’ This principle, therefore, is implicitly contained in every other principle and gives to them whatever they possess of certitude and stability; they stand and fall with the Principle of Contradiction.

With this we conclude our investigation into the concept of ‘being in general’ and the supreme principles which flow

from it. These principles are the ultimate laws of all being and all thought. We must now direct our attention to an examination of *the primary determinations of being*.

SUMMARY OF CHAPTER V

1. *The Nature of a Principle.* A principle is that from which something else proceeds in any way whatever. There must be priority of the principle relative to the reality which proceeds from it; and this priority may be one of 'time,' or of 'nature,' or of 'origin.' This priority must be grounded in the things themselves on account of some *special connection*; this connection will be 'logical,' when the truth of one statement depends upon the truth of another, or 'ontological,' when the entity of one thing depends on the entity of another.

2. *The supreme principles* of being are those highest principles which are immediately derived from the concept of 'being.' These are:

- *The Principle of Identity:* Whatever is, is; and whatever is not, is not: Everything is what it is: Everything is its own being: Being is being, and not-being is not-being.
- *The Principle of Contradiction:* It is impossible for a thing to be and not to be at the same time: A thing cannot be and not be something at the same time.
- *The Principle of Excluded Middle:* A thing either is or is not: Everything must either be or not be: Between 'being' and 'not-being' there is no middle or third thing possible.

- *The Principle of Sufficient Reason*: Nothing exists without a sufficient reason: Everything must have a sufficient reason for its being and existence.

3. *Metaphysical and Logical Principles.* The metaphysical or ontological principles just mentioned are also logical principles, i.e., they are laws of thought as well as laws of being. Reality is the standard according to which we must regulate and formulate our ideas and judgments; consequently, the metaphysical laws are at the same time logical laws. These principles, however, are not the productive principles or causes of things, but the regulative norms or laws to which the particular beings and truths must conform.

4. *The Most Fundamental Principle.* The Principles of Excluded Middle and Sufficient Reason are a development of the Principle of Contradiction; they are, therefore, not the most fundamental. The Principle of Identity really means that 'whatever is, *is necessarily so*' and cannot be otherwise; and that is equivalent to the Principle of Contradiction. Consequently, the latter is the most fundamental of the supreme principles of being and of thought.

The Principle of Contradiction is also the most fundamental *of all principles*, because it is constituted solely by the idea of 'being,' and the idea of 'being' is the most basic idea involved in everything in the logical and ontological order.

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Chapter 6

ACT AND POTENCY

SO FAR 'BEING' HAS BEEN CONSIDERED IN ITS MOST GENERAL features. Certain kinds of being have been enumerated, but this was done more for the purpose of obtaining a better understanding of the concept of 'being' itself. 'Being in general,' as was noted, is characterized by extreme indeterminateness, signifying anything that is not nothing, anything that is existible. *Real* being, of course, is not as indeterminate as all this; it has a distinct and definite character of some sort. And it is this distinct and definite character of real being which we mean when we speak of the 'determinations' of being.

Among the manifold determinations of 'being,' we are mainly interested in those *primary determinations* which are *transcendental*; namely those which constitute the most fundamental distinctions of 'being in general' and go beyond all the ordinary classifications of beings as found among actual things. Such are the basic divisions of 'being' into act and potency, essence and existence, the necessary and contingent, the infinite and the finite.

CONCEPT OF ACT AND POTENCY

Strictly speaking, these terms cannot be defined. Act and potency are immediate divisions of 'being.' In order to be defined, 'being' would have to be their proximate genus in the definition; but 'being,' as was pointed out before, is not a strict and true genus. This must be borne in mind in the following explanations and discussions.

According to philosophical terminology an *act* (Lat., *actus*) means any entity of whatever kind and nature which perfects and determines a thing in its being. Thus, the term 'act' includes the *power* or faculty as well as the *operations* of that power, because this power is a perfection for the thing which has it; it includes every *accidental* modification of a being, because every accident (e.g., color, heat, weight, shape, etc.) perfects the being in some way; it includes every *essential* entity, because nothing is more perfecting for a thing than its essence; it also includes *existence*, because existence is a perfection for a being. Whatever a being *has* or *is* in a positive manner is an 'act' for it. Man's substantiality, materiality, life, sentiency, and rationality, are 'acts'; his quantity, size, shape, age, sex, color, health, are 'acts'; his powers of reason and of will, of locomotion, of digestion, of seeing, hearing, feeling, etc., all these are so many 'acts,' perfecting and determining his being in its respective order as 'man.' And so with all other beings. The term 'act,' therefore, has a specialized and technical meaning, much wider than its signification in ordinary language.

Potency (Lat., *potentia*, power) is the *capacity or aptitude for something*. It is the correlative term to 'act.' 'Potency' is always the capacity or aptitude in reference to something which a being is not or has not, but which it can be or can receive. Any being, in so far as it has not as yet received a certain 'act' or perfection, but is capable of receiving it, is said to be 'in potency' for this act. Hydrogen, for example, has the 'act' of hydrogen; and oxygen has the 'act' of oxygen: but both have the 'potency' of water; they are 'actually' hydrogen and oxygen, but 'potentially' water. Water, on the other hand, is 'actually' water; but it is 'potentially' hydrogen and oxygen, because it has the aptitude to be resolved into them. Common salt is 'actually' salt, but it is 'potentially' chlorine and sodium.

If we consider the *relation between 'act' and 'potency'*, we find that it is the relation of the completing to the incomplete, the determining to the determinable, the perfecting to the perfectible. Since these are relative terms, it is obvious that an entity may be a determination and perfection for a being in one way and thus be an act, and it may also be determinable and perfectible in itself and thus be a potency. The intellect, for example, is a positive perfection of the mind, and thus an 'act,' for man; but the intellect itself is perfected by the actual thinking process (which is an 'act' for the intellect), and it is, from this point of view, a 'potency.' Similarly, the power of locomotion is a perfection, an 'act,' for a resting dog; but the act of running is a perfection for this power of locomotion, and the power of locomotion is thus seen to be a 'potency' with regard to this act of running. An entity, therefore, can be both an 'act'

and a 'potency,' when considered from different viewpoints; but never with reference to the same perfection under the same respect, because that would violate the Principle of Contradiction.

KINDS OF ACT

There are as many kinds of 'acts' as there are kinds of 'being,' because every being as such is a *perfection*. We must, then, make a division along general lines.

Essence, Existence, Property, Accident. The act or actuality of the essence is the act which perfects and determines a thing in its species. It is that constitutive element or principle in a thing which makes it to be just this particular kind of thing and no other. It is the 'act of essence' which makes a horse to be a horse and not a cat, a rose to be a rose and not a cucumber, a man to be a man and not an elephant, silver to be silver and not copper.

The act of *existence* is the act perfecting and determining a thing in such a manner that it is no longer a merely possible being, but is present in the real order. A hundred years ago we were merely possible beings; now we have the 'act of existence.'

The act of *property* is the act of perfecting and determining an essence in such a manner that the entity it gives to the being *flows necessarily from its nature, without being strictly essential*. The essence of man, for instance, consists in being a 'rational animal'; never, not even for a single moment, can he cease to be such without destroying his human nature. The power of speech, of using tools, of

laughing, are not part of this essence, but they flow necessarily from his being as a rational animal. These powers demand a body, because speech and laughter and the use of tools are bodily operations; they also demand rationality, because only a thinking mind can express itself by means of speech, laughter, and the use of tools. Hence, only a 'rational animal' is capable of these operations. Since, however, they are only the results of his essence, rather than part of the essence itself, they are 'properties' of man and as such are an 'act of property' for him.

The act of *accident* is the act perfecting and determining a being in such a manner that the entity it gives *does not flow necessarily from the essence of the being*. Red hair, white skin, one's weight, height, shape, etc., are all 'accidental acts' of the body. Thoughts, emotions, states of consciousness, etc., are 'accidental acts' of the mind. All operations proceeding from powers or faculties belong to this class, whether they be animate or inanimate, such as motion, light, heat, electricity, gravitational attraction, and so on.¹

Primary and Secondary Act. A primary act is one that is the *first in a series of acts*, so that it has another act proceeding or capable of proceeding from it. Thus, the nature or essence of a being is an 'act,' and so are its faculties and the operations of these faculties. There exists a natural hierarchy among them, because the operations proceed from the faculties, and the faculties proceed from the essence or nature; hence, since this essence or nature is the ultimate principle from which both faculties and operations proceed, it is a 'primary act' in reference to

them. For the same reason the faculties or powers of a being are a 'primary act,' when compared to the operations which they perform. Man's rational nature, for instance, is the 'primary act' with reference to his intellect and thoughts; and, in a more limited way, the intellect is the 'primary act' with reference to the thoughts.

A secondary act is one that *presupposes another act in a definite series*, so that it proceeds from a primary act. Every action and operation is a 'secondary act' with regard to the power or faculty from which it flows. Thought is a 'secondary act' flowing from the intellect as a 'primary act.' A boy who has the ability to whistle is, in so far, in possession of a 'primary act' or faculty; but when he practices his art and warbles a tune, he has the 'secondary act' of whistling.

Pure and Mixed Act. A pure act is one *without the least admixture of potentiality*. It is all actuality (act), all perfection, complete determination. Such a being can have no capabilities or aptitudes. There is nothing in such a being which could be considered determinable, perfectible: it is completely and absolutely determined, actualized, perfect. It lacks no entity nor can it receive an increase of entity, for the simple reason that it possesses all possible actuality. Of course, the Infinite Being alone is such a 'Pure Act.'

A mixed or non-pure act is one that in some form or other *has an admixture of potentiality*. Such a being does not possess its actuality always and all at once; its perfection is acquired gradually and successively, and it is subject to development and change. Whatever has faculties

is such a 'mixed act,' because they are not always in operation. All creatural beings, inanimate as well as animate, belong to this class, because they are limited in essence and acquire and lose many determinations in the course of their existence.

KINDS OF POTENCY

Potency, or potentiality, as we have seen, is the capacity or aptitude for some act. There are two main kinds of potency: objective and subjective.

Objective Potency. By *objective* potency we understand *the capacity of a non-existent being for existence*. As this descriptive definition indicates, such a being has not as yet actual existence and is a non-being; there is, however, a possibility of its being brought into existence by some cause, and so it has a 'capacity for existence.' It is, therefore, not an absolute nothing. A hen, for instance, has laid a fertilized egg. The future chick is as yet non-existent; in as much, however, as the capability is there for the chick to be hatched later on, the chick is said to be 'in objective potency.' Sodium and chlorine are present in separate containers; salt is not yet an existing reality, but it has 'objective potency,' because the necessary elements are there for the production of salt.

Subjective Potency. *Subjective* or *real* potency is *the capacity of something existing for an act*. This potentiality may be such that it consists in a special power of *receiving* an 'act' from another being, or in a special power of

communicating an 'act' to another: this gives rise to the distinction between 'receptive' and 'operative' potencies.

A *receptive* subjective potency is *the capacity for receiving act*. A child's mind has the receptive potency of acquiring knowledge from a book or a teacher. Iron has the receptive potency of being magnetized. Water has the receptive potency being heated to the boiling point or of being frozen to ice. This receptive potency will be *natural*, when it is a capacity for receiving an act in virtue of its natural powers. Such are the instances just mentioned. It will be an *obediential* receptive potency, when it is a capacity for receiving an act which transcends its natural faculties, provided this act be given to it by a superior power. Thus, a dead body cannot, in virtue of its own powers, come to life again; but it can receive life a second time, if God reanimates it: a dead body, therefore, has an 'obediential subjective potency' for renewed life.

An *operative* subjective potency is *the capacity for doing something*; it is the power of a thing to bring forth some act. Electricity is a power capable of producing mechanical motion, light, heat. Dynamite can effect violent explosive detonations. The mind can produce thoughts.

An operative subjective potency is either supernatural or natural it is *supernatural*, when it is the power to produce effects which transcend the capabilities of physical nature. Miracles, or acts involving a suspension of physical laws, can be performed only by a supernatural power. It is *natural*, when the effects produced are the result of an operative power inherent in the essence of a being and acting according to the laws of nature. That the eye sees,

the ear hears, the mind thinks, the magnet attracts, the bird flies, the motor runs — all this is the effect of natural operative subjective potencies.

A natural operative potency may be passive or active. It is *passive*, when it presupposes its object and must be stimulated to activity by it; given the stimulation, however, the passive operative power becomes actively engaged in producing its proper effect. The eye, for instance, presupposes objects and light to stimulate it; it then produces vision through its own activity. Gasoline must be ignited in a motor cylinder; then its inherent forces explode and drive the pistons. A race horse must be led to the post and urged to race; but it does its own galloping. A potency will be an *active* natural operative potency, if it produces or prepares its own object. Thus, the vegetative powers first prepare the food in the digestive tract before assimilating the food into the tissues. Plants produce their own seeds. Bees produce their own wax for building cells and produce the honey for their own food.

POSSIBILITY, OR OBJECTIVE POTENCY

Possibility, or objective potency, as has been explained above, is *the capacity or aptitude of a being for existence*. A ‘possible’ being, then, is one that has an aptitude for receiving existence. *Impossibility* is the incapacity or inaptitude of a being for existence. An ‘impossible’ being is thus a being that has no aptitude for receiving existence. Possibility and impossibility are such important concepts in

the philosophy of 'being,' that they deserve special treatment.

Many things we know to be 'possible' from the simple fact that we observe them as actually existing; if they were 'impossible,' they would not exist and we could not observe them. Trees, potatoes, vines, cows, giraffes, cats, iron, gold, buildings, automobiles, airplanes, men — all are seen to really exist and consequently are 'capable of existence.' We cannot observe 'impossible' things, because such things do not and cannot exist; but we know certain things to be impossible by way of conclusion from what we see existing and from self-evident first principles. We know what 2 and 3 mean, and in consequence of this we also know that their sum cannot possibly be 7 or 8. We understand the nature of circles and squares, and we perceive that 'square circles' are an impossibility. We have a clear perception of the essence of man as a 'rational animal,' and we are absolutely sure that a man without the power of reason cannot possibly exist.

What, then, is required and suffices, in order that a being be *adequately possible*, i.e., that it can really pass from a state of non-existence into a state of existence? Two things are essentially demanded and suffice.

The *first requirement* is that there be a *compatibility of the being's constitutive elements*. These elements must not be mutually exclusive in any way, not antagonistic, incompatible, repugnant. If one element denies and removes as much as the other posits, it is obvious that such elements mutually remove each other; the result would really amount to a non-being, and a non-being cannot exist.

Take a 'square circle.' A circle is a geometrical figure that consists entirely of a curved line; the curved line eliminates all straight lines in the thing. A square, on the other hand, consists essentially of four straight lines of equal length and joined at their ends to make one figure; the straight lines thus eliminate any curved line. Hence, a 'square circle' would be a figure of straight lines, since it is 'square' (and that removes the curved line), and it would also be at the same time a figure consisting of a curved line, since it is a 'circle' (and that removes the straight lines); the final result would be that there are neither straight nor curved lines, and so nothing would be left that is capable of existence. effect and cause: a cannon can obviously do more than a popgun.

ENTITY AND KINDS OF POSSIBLES

It may seem odd to speak of the *entity of a possible being*. From the standpoint of actual existence, the possibles are clearly nothing, since they are as such non-existent. It would be wrong, nevertheless, to identify them absolutely with 'nothing.' For one thing, the possibles are *capable* of existence; 'nothing' is absolutely incapable of existence. Then, too, the possibles have a *positive thought-content* (e.g., a 'mountain of gold,' a 'crystal palace'); 'nothing' has no content whatever and can be known only through a negation of being. Finally, the possibles differ among themselves by means of *objectively different concepts* (e.g., there is a real difference between a 'mountain of gold' and a 'crystal palace'); but between 'nothing' and 'nothing'

there is no difference. The possibles are, therefore, real, though not actual; 'nothing,' however, is neither real nor actual. The possibles thus possess a *positive metaphysical entity*, but not any kind of physical actual entity.

As for the *various kinds of possibility*, we distinguish between intrinsic and extrinsic possibility.

Intrinsic (metaphysical, absolute, logical) possibility is the capacity or aptitude of a being for existence, due to the compatibility or *non-contradiction of its constitutive elements*. There must be no contradiction in terms, no contradiction in the thought-content or comprehension of its idea. A large circle is intrinsically possible, but a square circle is not. A winged horse is intrinsically possible, but a body-less horse is not, because, being an animal, it must be a corporeal substance. A stick a million miles long is intrinsically possible, but a stick with only one end is not, because it would be finite and infinite in length. The latter alternatives all contain a contradiction in terms.

Extrinsic (relative) possibility is the capacity of a being for existence *in virtue of the power of an efficient cause capable of producing it*. Next year's automobiles are extrinsically possible, because the men and machines are in existence to make them. For the same reason houses, clothes, shoes, tools, railways, dirigibles, guns, boats, motors, books, and similar things, are extrinsically possible. But it would be extrinsically impossible for a man to lift a five-ton truck with his hands alone, to run a mile a minute, to jump fifty feet into the air, to make a tree or a bird. Extrinsic possibility always presupposes intrinsic possibility.

Extrinsic possibility may be twofold: physical and moral. *Physical* possibility is the possibility due to the powers of a thing *acting according to the laws of nature*. For instance, a heavy charge of electricity in opposite clouds is physically capable of producing a flash of lightning. A normal man possesses the physical possibility of standing without support for five minutes; it may be physically impossible for a sick man to do the same. Other instances of physical possibility and impossibility are given in the preceding paragraph.

Moral possibility is the possibility of free agents to do something *without grave difficulty*. Where a grave difficulty is present, an action is said to be 'morally impossible,' although it may still be physically possible. It would be a serious inconvenience and therefore a moral impossibility for a man with pneumonia to perform hard labor. It is morally possible for a man of perfect health to walk five miles over good roads and in good weather for the sake of signing a contract that will net him a pretty sum of money; but it would be morally impossible for a child to walk a mile to school, when the temperature is 30° below zero.

Comparing these various kinds of possibility with one another, we arrive at the following general principles or laws of possibility: Moral possibility always includes physical and metaphysical possibility; physical possibility includes metaphysical. But what is metaphysically possible need not for that reason be physically or morally possible; and what is physically possible need not be morally possible.

Metaphysical impossibility excludes physical and moral possibility; and physical impossibility excludes moral

possibility. But what is morally impossible, need not for that reason be physically impossible; and what is physically impossible need not be metaphysically impossible.

A perusal of the examples given above will show the truth of these conclusions. The greatest number of possibles is found among things that are metaphysically possible, and the smallest number among those that are morally possible. Conversely, the greatest number of impossibles can be found among those that are morally impossible, and the smallest number among those that are metaphysically impossible.

Having seen the immediate reason or ground why things are said to be possible or impossible, it is but natural to ask ourselves, What is the *ultimate ground* of the possibility of things? This question reaches down into the very root of all 'being' and deserves special attention.

SUMMARY OF CHAPTER VI

The *primary determinations* of 'being' are transcendental, i.e., they constitute the most fundamental distinctions of 'being' in general and go beyond the classifications of beings as found among the ordinary things. One such primary determination of 'being' is *act* and *potency*.

1. *Act* is *any entity perfecting and determining a thing in its respective order of being*. This includes all operations, all powers or faculties, all accidental modifications, essence, and existence, of things: whatever a being has or is.

Potency is the *capacity or aptitude for something*. The relation between act and potency is the relation of the completing to the incomplete, of the perfecting to the perfectible, of the determining to the determinable.

2. *Kinds of Act*. There are 'acts' of essence, existence, property, and accident; primary and secondary; pure and non-pure or mixed.

Kinds of Potency. We distinguish between *objective* potency, which is the capacity of a non-existent being for existence, and *subjective* potency, which is the capacity of an existing being for an act. Subjective potency may be 'receptive' or 'operative.' A receptive potency may be either 'natural' or 'obediential'; an operative potency may be either 'supernatural' or 'natural'; a natural operative potency may be either 'passive' or 'active.'

3. *Possibility, or Objective Potency*. In order that a being be *adequately* possible, it is required and suffices that there be a compatibility of its constitutive elements and that there

exist an efficient cause capable of conferring existence upon it. The compatibility or non-contradiction of these constitutive elements gives to a being *intrinsic* (metaphysical, absolute, logical) possibility; and the existence of a capable efficient cause gives to a being *extrinsic* (relative) possibility.

4. *Entity and Kinds of Possibles.* Though the possibles do not exist, they are not absolutely identical with 'nothing': possibles can exist, while 'nothing' can never exist; the possibles have a positive thought-content, while 'nothing' is a mere negation; the possibles differ among themselves, while between 'nothing' and 'nothing' there is no difference.

Kinds of Possibility. The main kinds are *intrinsic* and *extrinsic*. Extrinsic possibility is either 'physical' or 'moral.' *Impossibility* is the reverse of 'possibility,' and there are as many kinds of impossibility as there are kinds of possibility.

READINGS

Coffey, P., Ch. II; Hugon, Ed., Tr. I, Qu. II, art. 1 et 2 Aristotle, *Metaphysics*, V, IX; St. Thomas, *Comment, in IX Metaph.*, in II, III, VII et VIII Phys.; *De Ente Et Essentia*; Urráburu, J. J., *Disp.* III, Cp. II; Phillips, R. P., Ch. IV; McCormick, J. F., Ch. IV, pp. 47-51.

¹ See *The Science of Correct Thinking*, by the author, for a more detailed elucidation of these terms, pp. 55—60.

Chapter 7

ULTIMATE GROUND OF POSSIBILITY

THINGS ARE POSSIBLE BEINGS WHEN THEY HAVE A CAPACITY FOR existence. For a thing to be possible, two conditions must be present: the elements constituting its being must be compatible (non-contradictory), and that is 'intrinsic' possibility; and there must exist an efficient cause with sufficient power to bring the possible thing from non-existence into existence, and that is 'extrinsic' possibility. Extrinsic possibility presupposes intrinsic possibility; for no efficient cause can produce a thing, if the constitutive elements of this being are contradictory and cannot be realized together. The compatibility of the elements is thus an *absolute* condition; without it a thing is metaphysically and absolutely impossible. The existence of an adequate efficient cause is a *relative* condition; one sort of efficient cause may not have enough power to produce the thing in question, but a higher and more powerful cause might be able to produce it. In the verification of these two conditions we have the immediate or *proximate ground* of possibility.

At present we are concerned with the deeper problem of the final or *ultimate ground* of possibility. It is not a question now whether this or that thing has a compatibility of its

constitutive elements, or whether this or that efficient cause can produce this or that particular thing. It is rather the question:

Why have the possibles any intrinsic and extrinsic possibility *at all*? Why are constitutive elements *ultimately* compatible or incompatible, so that some things are intrinsically possible, while others are intrinsically impossible? What is the ultimate foundation for extrinsic possibility, not only for a particular possible being, but for *each and every possible reality*, whether it ever becomes existent or not? Even the existing realities are possible, otherwise they could never have received existence. The question, therefore, involves the ultimate ground of *all possibility*, independent of actual existence as present or absent.

We will first consider the ultimate ground for extrinsic possibility, and then that for intrinsic possibility.

ULTIMATE EXTRINSIC POSSIBILITY

We may as well state, without further ado, that the ultimate ground or foundation of all possibility is found in the Supreme Being, in the *nature of God*. No philosophic proofs for God's existence and His infinite perfection will here be adduced. It would take us too far afield.¹ In connection with the present problem God's existence and infinite perfection must be assumed as validly demonstrated. Granted, then, the existence and infinite perfection of God's nature, we are prepared to prove that the ultimate ground for all extrinsic

possibility is found in the *omnipotence* of God, guided by His infinitely perfect *intelligence*.

In stating this thesis, we do not intend to affirm that God's omnipotence is the sole efficient cause, thereby denying the efficient causality of creatural beings. Creatural beings are also efficient causes. They possess productive powers and do actually produce things by means of these powers; as such they are the proximate ground for the extrinsic possibility of the things they produce. However, a moment's reflection should convince us that they are not the ultimate ground for this possibility. Finite causes do not and cannot produce the *total reality* of their effects, so that they bring the complete being from non-existence to existence. That would be creation, and finite beings *cannot create*; they merely change one kind of being into another kind of being. The forces of nature never produce the *matter* of which things consist; matter is always presupposed in every kind of creatural activity and causality. This 'matter' must also be accounted for when there is question of the ultimate ground of the extrinsic possibility of the things which creatural beings produce.

Similarly, finite beings produce things through the mediation of their operative powers, faculties, energies. The energies of nature can be transformed from one kind into another, as when heat is transformed into mechanical motion and electricity into light. But here again, it is a question of accounting for the extrinsic possibility of this creatural *energy*. Though an existent reality, it also is limited and contingent in its very nature, and we are therefore compelled to look for the ultimate ground of its

own possibility. Matter and energy can no more produce themselves than any other thing can produce itself; consequently, they also demand an ultimate ground *outside themselves* for their existence. They belong to the class of beings which we call the 'possibles' and as such are not self-explanatory.

Finally, we must admit that there are far more things of the same kind which *do not exist* than those which do. There could be more men, animals, plants, metals, elements, protons, electrons, etc., than those which actually exist; there could also be more electricity, heat, magnetism, light, mechanical motion, etc., than that which is actually present in our existing universe. These things, though they do not actually exist, are possible; they *could exist*, taken absolutely and by themselves, even though there are no existing causes in the universe which could create them and thus bring them from non-existence to existence. Since the present causes in our universe cannot give them existence, although they are possible, the ultimate ground of their extrinsic possibility does not lie in the actual universe but in something *outside the universe*. For we must bear in mind that the question before us involves *all possibles*, whether actually existing or not. Hence, when it is a question of the 'ultimate' ground of all extrinsic possibility, i.e., when we look for the *ultimate efficient cause* which could bring all possible beings into existence, this power can only be found in a being which is outside and beyond all beings of limited power and causality.

While the number of creatural beings in the actual universe is limited, there is no limit to the number of non-

existing possible beings which are capable of existing, provided there be a cause sufficiently powerful to produce them. It must be obvious, however, that only a positively infinite power is capable of producing the negatively infinite number of possible beings. The reason is clear. Since all creatural beings without exception, whether existent or non-existent, demand an 'ultimate ground for their extrinsic possibility, the efficient cause which can give them existence must be an *existent cause* and it must be completely *outside the class* of creatural beings. If it were not an 'existent cause,' it could not give existence to the possibles; and if it were not 'outside the creatural class,' it would itself belong to the possibles and as such would again demand an 'ultimate' ground for its own possibility. But such an existent cause which is outside the creatural class and which possesses a positively infinite power of causality, is the Infinite Being, God. The causality of God, however, resides in His *omnipotence*. Hence, it is the omnipotence of God which is the ultimate ground of all extrinsic possibility.

All extrinsic possibility is thus seen to be ultimately grounded in God's omnipotence. But not in His omnipotence alone. The infinite *intelligence* of God also has an essential part in the possibility of things. If His intelligence did not direct and guide His omnipotence, this omnipotence would act *blindly* in its productive activity. But that is absurd. God, the infinitely perfect being, cannot act blindly and unintelligently in any of His operations: intelligence is a prerequisite condition for His omnipotence to act. Of course, it is the omnipotent power of God which exerts *causality*, and not His intelligence; that is why we do

not place the ultimate ground of extrinsic possibility in His intelligence. Nevertheless, the possible beings must be 'known' before they can become the object of His omnipotent causal action; hence, His omnipotence must be directed and guided by His intelligence, in order that things *can* have extrinsic possibility.

And thus we see that the ultimate ground or foundation for all extrinsic possibility is found in the omnipotence of God, guided by His infinite perfect intelligence.

ULTIMATE INTRINSIC POSSIBILITY

In order that beings be truly 'possible,' they must also be *intrinsically* or metaphysically possible. That is to say, their constitutive elements must be *non-contradictory*, mutually compatible. This raises the vital question: What is the ultimate reason and ground why some constitutive elements are compatible, thereby making a being intrinsically possible, while other elements are incompatible so that a being is intrinsically impossible? In answer to this question we propose to prove that *God* is the ultimate ground of all intrinsic possibility in things. More specifically, it is not God's omnipotence, nor His will, nor His intelligence, but His infinitely perfect *essence*, which is this ultimate ground.

God is the *ultimate* ground of all intrinsic possibility in the possible beings.

This must be so. We have just shown that God is the ultimate ground of 'extrinsic' possibility. But 'extrinsic' possibility has its foundation in 'intrinsic' possibility. This

'intrinsic' possibility of things, then, must also have its ultimate ground *outside* the entire class of possibles; because, being only 'possible,' they themselves cannot give to themselves constitutive elements which would be either compatible or incompatible. Consider the vast amount of 'possible' beings that do not exist and never will exist. As 'mere possibles' they are entitatively nothing. They could, however, absolutely speaking, receive existence, due to the omnipotence of God and the compatibility of the constitutive elements of their essence. If the ultimate ground for this compatibility or incompatibility were found in them, they themselves would be the cause, or reason, or principle, why some things are intrinsically possible and others intrinsically impossible. But an 'entitative nothing' cannot be the cause, or reason, or principle, of anything. The possibles are *subject* to the law of intrinsic possibility, regarding both their essence and their existence, and as such must *conform* to this law in order to be 'possible' at all. They cannot, then, be the cause, or reason, or principle, of this law. Consequently, there must exist some being outside the entire class of possible beings, which is the ultimate ground of their intrinsic possibility. That being, of course, is God.

If God were not this ultimate ground, and if this ultimate ground were in the creatural things themselves, it would mean that God's omnipotence would be *dependent on His creatures* for the exercise of its causality. Even God's omnipotence, as we will see shortly, cannot produce an 'impossible' thing. If the reason for this does not lie in Himself, but in the creatures, these creatures would *restrict*

His omnipotence in a definite manner. But that is an absurdity. Creatures cannot restrict the power of omnipotence. Omnipotence, thus dependent and restricted by outside beings, would *not be infinite* in its perfection and would, as such, not be omnipotence at all. Consequently, to affirm that the ultimate ground of intrinsic possibility rests in the possibles themselves and not in God, would be a virtual denial of God's omnipotence and of God Himself. We must conclude, therefore, that this ultimate ground exists in God.

God's *omnipotence* is *not* this ultimate ground.

Some philosophers, among them *William of Ockham*² (about 1280—1349), defended the doctrine that intrinsic possibility depends ultimately on God's power. It is true that, because things are intrinsically possible, God's power can produce them. But we cannot reverse the statement and say that things are intrinsically possible *because* God's power can produce them. This statement seems innocent enough. However, consider what it implies. Why would things be intrinsically possible, i.e., why are their constitutive elements compatible and non-contradictory? Because God's omnipotence can produce them. And why are other things intrinsically impossible, i.e., why are their elements incompatible and contradictory? The only answer can be, *because* God's omnipotence cannot *produce* them. The ultimate ground for intrinsic impossibility would thus be the *lack of power* in God. If God had more power, the impossibles would also be intrinsically possible. But that is patently false.

God possesses power in an infinite degree; therefore, no things should be intrinsically impossible, if it were merely a question of God's power. In that case it should be within God's power to produce a being which is finite and infinite at the same time, which exists and does not exist at the same time, which is rational and irrational at the same time, which is living and dead at the same time. But to make an assertion like this, means to invalidate the Principle of Contradiction and that means to destroy the foundation of all being and knowledge: skepticism must follow such a view.

Consequently, if we accept God's omnipotence as the ultimate ground for intrinsic possibility and impossibility, we face the following dilemma: either God *lacks power*, because He cannot produce certain things, and that is why they are impossible; or He can *produce contradictory beings*, because He is truly omnipotent, and then there are no impossible beings at all. In the first alternative we deny God's omnipotence and thereby God Himself, and in the second we deny the validity of the Principle of Contradiction and thereby destroy the foundation of all being and knowledge. Both admissions are fatal. We must, therefore, conclude that the ultimate ground of the intrinsic possibility and impossibility of things is not due to God's omnipotence.

God's *will* is *not* this ultimate ground.

It has been maintained that the fundamental reason, why some things are intrinsically possible and others intrinsically impossible, is due to the fact that God freely willed that some constitutive elements shall be compatible and others incompatible. He could just as well decide that

what is now impossible shall be possible and what is now possible shall be impossible. *René Descartes* (1596—1650), for instance, affirmed that God did not will that the three angles of a triangle should be equal to two right angles because He knows that they could not be otherwise; on the contrary, this is so, and it cannot be otherwise, because He willed that these angles be necessarily equal to two right angles. In a similar manner, $1 + 2 = 3$, because God wills it to be this way; but if He had willed it to be different, the sum of $1 + 2$ could equal any other number.³ In other words, intrinsic possibility and impossibility has its ultimate foundation solely in the free will of God. God, of course, will not change His decision, and all things thus remain without confusion as He has willed them from eternity.

Such a view, however, has *disastrous consequences*. It is true that possible things can receive existence, and thus become actual, only if God freely decides to give them existence, for without His will no creatural thing can exist. But it is a totally different matter to assert that on that account His free will can change the contradictory elements of an intrinsically Impossible thing into non-contradictory elements. Consider the results of such a view. If God willed, He could create a man who would be God and, though God, would be only a plant, and this human-divine plant could be devoid of all life and still be omniscient and more than omniscient. If God willed, He could make a being which could be more powerful than His own omnipotence and at the same time could be absolutely inert, inactive, and powerless. A doctrine which involves absurdities such as these refutes itself.

God's *intelligence* is *not* this ultimate ground.

If the intelligence of God were the ultimate ground for the intrinsic possibility of things, it would mean that the constitutive elements in the essence of things would be compatible and non-contradictory, *because* they are *known* by God; God's intelligent knowing would then be the real reason why the elements of the possibles are non-contradictory and why the elements of the impossibles are contradictory. While this view comes closer to the true solution of the possibles than the others, it is not the final answer.

Certainly, if God's intelligence cannot think of the constitutive elements of a thing as being compatible, then such a thing is impossible; and if He can think of them as compatible, the thing is truly possible. But that does not necessarily imply that God's intelligence *confers* compatibility or incompatibility upon these elements. As a matter of fact and principle, 'being' is *logically prior* to 'thought,' because thought, to be true, must conform to the thing thought of. Thought logically presupposes the thing which is the object of thought; and that, in this case, is the 'possible' being.

Intelligence, through its act of knowledge, does *not make* the object *intelligible*. Rather, intelligence can know a thing only because this thing possesses intelligibility in itself, i.e., because it is a 'being' whose essence is constituted of elements that are compatible and for that reason has a *positive content* which can become an object of thought. Intelligence merely perceives and recognizes this compatibility or incompatibility of the essential

elements as something which is present and then acknowledges the fact that the thing is 'possible' or 'impossible.' Such is the nature of knowledge and intelligence. From this it will be seen that intelligence, in thinking of a thing, presupposes its intelligibility; and the intelligibility of a thing presupposes the compatibility of the elements of its essence. Consequently, intelligence does not really make a thing to be 'possible,' and God's intelligence thus cannot be the *ultimate* ground of possibility.

God's essence is the ultimate ground of intrinsic possibility.

This follows as a necessary conclusion from what already has been proved. God must be the ultimate ground for all possibility. But neither His omnipotence, nor His will, nor His intelligence, is the ultimate reason why some constitutive elements are compatible and others incompatible in the essence of things, so that the latter are possible or impossible. The ultimate ground for this must lie, then, in some reality in God which is logically prior to His omnipotence and will and intelligence. This reality, however, can only be His essence. Therefore, His essence is the ultimate ground of all intrinsic possibility.

A possible thing is fundamentally a 'being,' an 'essence,' while an impossible thing is fundamentally a 'non-being,' a non-essence.' Now, 'being' ('essence') cannot have its ultimate ground in anything but 'being' ('essence'), because 'being' can proceed only from 'being.' Consequently, God's *being* or *essence* is the ultimate ground for the intrinsic possibility of things. Because God possesses 'being' to the fullness of infinite perfection, other things can obtain

'being' from Him, in a limited and participated degree. This does not mean that they emanate from God's essence in any way, but that they can be *creatural imitations* which He can *produce*. In as much, then, as creatures can be made by God in imitation of His own being' and 'essence,' they are capable of receiving existence from His omnipotence, through an act of His will, guided by His intelligence; and in so far, and *only* in so far, are they 'possible.' On the other hand, a 'non- being,' a 'non-essence,' a 'nothing,' is the antithesis of God's being and essence and as such can be no imitation of Him; for that reason it is incapable of receiving existence from Him, that is, it is 'impossible.' And this also explains why the *possibles are intelligible*, while the impossibles are unintelligible. The former, since they imitate the infinite essence of God, possess constitutive elements in their essence which are compatible and therefore conceivable. The opposite is the case with the impossibles, and that is the reason why we can only think of them as negations of 'being,' as things that involve a contradiction in their very idea; the impossibles are inconceivable.

God's essence, then, is the ultimate ground for all intrinsic possibility, just as His omnipotence, guided by His intelligence, is the ultimate ground for all extrinsic possibility.

We now also understand why the *proximate* ground for intrinsic and extrinsic possibility resides in the possible things *themselves*. Because a possible thing possesses compatible constitutive elements in its own essence, it is 'intrinsically' possible in itself; but it possesses such

elements only because it is a finite copy of the compatible essence of God. Similarly, because there exists a finite cause which has the requisite power to produce the possible thing, this latter being is 'extrinsically' possible; but the finite cause has the power of causality only because it is a finite copy of the infinite causality of God's omnipotence.

This also explains why a thing is intrinsically or metaphysically impossible when our concept of such a thing involves a *contradictory thought-content*. Our concepts, of course, do not influence the reality of things, so as to make them either possible or impossible. But God's essence is the ultimate ground of all *being and thought*, the ultimate foundation for all *ontological and logical laws*. Our concepts copy reality, and the laws of our thought follow the laws of being. Consequently, just as there can be no contradiction in the 'being' of things without them being thereby intrinsically and metaphysically impossible, so there can be no contradiction in our 'concept' of things without them being thereby intrinsically and metaphysically impossible: our concepts of things imitate God's concepts of things, no matter how inadequately, just as the being of things imitates the being of God, no matter how inadequately. If, then, our concept of a thing involves a real contradiction, this contradiction will also exist for God's intelligence, because the thing is in contradiction to His own essence and as such must be intrinsically and metaphysically impossible *in itself*: God, therefore, could never make it either extrinsically or intrinsically possible without contradicting His own intelligence and essence.

We thus see the inner nature of possibility and impossibility. Being and thought, actuality and potentiality, possibility and conceivability — all have their root, their foundation, their final reason, their ultimate ground, in the infinite fullness and richness of God's own being and essence.

SUMMARY OF CHAPTER VII

The problem before us is the *ultimate ground* of all 'extrinsic' and 'intrinsic' possibility.

1. *Ultimate Extrinsic Possibility.* Finite or creatural beings possess real causality, but they do not produce the *total reality* of their effects: 'matter' and 'energy' are always presupposed as existing; their causality can only change things from one kind of being to another. But 'matter' and 'energy' must also be accounted for, when it is a question of the ultimate ground of all extrinsic possibility, because they also belong to the class of 'possibles.' Besides, there are far more possible beings which never receive existence than those which become existent. Since the finite causes of the present universe cannot give them existence, the ultimate ground for their possibility must lie outside the universe — in God. But it is God's *omnipotence* which is the principle of His causality. Consequently, God's omnipotence is the ultimate efficient cause which makes all possible things capable of receiving existence. God's omnipotence, however, cannot work blindly, but must be guided by His intelligence. Hence, God's omnipotence, guided by His *intelligence*, is the ultimate ground of all extrinsic possibility.

2. *Ultimate Intrinsic Possibility.* The reason why the constitutive elements of some things are compatible and those of other things incompatible, is found in God. This reason cannot lie in the things themselves, because both the 'possibles' and the 'impossibles' are as such 'entitatively

nothing,' and thus they cannot be the reason for the compatibility or incompatibility of their elements. This reason must, then, be found in a being *outside* the whole class of 'possibles' and 'impossibles.' That being is *God*.

But God's *omnipotence* is not this ultimate ground. If it were, then the only reason why certain things are 'impossible' would be because He lacks the power to produce them; that is a virtual denial of His omnipotence.

Neither is God's *will* this ultimate ground. If this compatibility or incompatibility were the result of His will, then, provided He willed it, the 'impossibles' could become 'possible.' But this leads to absurd consequences, since He could then produce 'beings' which would also be 'non-beings' at the same time.

Neither is God's *intelligence* this ultimate ground. Things would be 'possible,' because He thinks them, and 'impossible,' *because* He does not or cannot think them. But the 'object' is always logically prior to the 'thought'; intelligence presupposes its object and merely recognizes the fact of compatibility or incompatibility.

God's *essence is the ultimate ground* of intrinsic possibility. That must be the ultimate ground in God which is logically prior to His omnipotence, will, and intelligence; but that is His *essence*. Besides, things are 'possible,' because they are a 'being'; things are 'impossible,' because they are a 'nothing.' And since 'being' can only be grounded in 'being,' God's infinite essence must be the ultimate ground for the essence of the possible things.

Things are, therefore, intrinsically possible, because their being is in some way an imitation of God's infinite

essence.

READINGS

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1 These proofs will be given later in theodicy, in considerable length and detail

2 comment, in 11 sent. dist. 43 q. 2

3 In his Resp. ad Sex. Object., n. 6 et 8

Chapter 8

CHANGE AND MOTUS

GOD, THE INFINITE BEING, IS PURE ACT, ABSOLUTE ACTUALITY. He is the 'most real being (*ens realissimum*), without any' admixture of potentiality. In Him there is, and can be, no 'becoming' of any kind, because He possesses the fullness of being all at once and always. Whatever He is, He is from eternity and in an infinite degree of perfection. Such is our idea of God. How far this idea is justifiable before philosophic reason, will be seen in theodicy, a separate department of philosophy.

Creatural beings are a compound of potency and act. They do not possess their complete being all at once and always. Even when they have existence, they are perfectible, determinable, actualizable, to a greater or less degree; as such they continually pass *from potency to act*. There is a constant 'becoming' in them and an uninterrupted *change*. This metaphysical notion of 'change' will now claim our attention.

THE CONCEPT OF CHANGE

We acquire the concept of 'change' from our daily experience. We sleep and wake; we labor and become fatigued; we are glad and then grieved; we are healthy and then ill; we are conscious and afterwards grow unconscious; we are young and vigorous and then become old and feeble; we live and die. And we observe similar happenings in the various beings in our environment. All things, we are convinced, undergo changes in some way. Plants and animals come into existence, develop, mature, and decay. The seasons change, and so do the physical bodies, the elements, the earth, and the stars. The *Eleatics* (6 and 5 cent. B.C.) denied the fact of change and considered it an illusion: there is but one reality and that is absolutely unchanging and unchangeable. *Heraclitus* (born about 530 B.C.) went to the opposite extreme. He maintained that there is no permanent reality at all: nothing 'is,' everything is in a state of continuous change or 'becoming' (πάντα ρεῖ). The truth lies in the middle. Things change; but there is an underlying, relatively permanent subject in which the change takes place.

What is change? *Change is the transition from one positive state of being to another.* There are three conditions required for a true and strict change or mutation: (1) A positive *starting-point* (*terminus a quo*, term from which). A thing can be said to 'change' only when it already exists and has a definite, positive state of being to begin with. It must be an actual being, with a potency for some new state or act. (2) A positive goal or *ending-point* (*terminus ad quem*, term toward which). Just as the changing thing begins as a reality in a positive state of

being and not in a state of nothingness, so it must also end as a reality in a positive state of being and not in a state of nothingness. It must end as an actual being, with a newly acquired state or act. (3) A *real transition* from one positive state of being into another positive state of being. The changing thing must really pass from a state of potency to act, so that it is a different sort of being in some way after the change has taken place.

Examples will make these points clearer. Let us take a piece of ice and proceed to melt it over a fire. The *solid* state of the ice is evidently a positive state of being for the water. The result aimed at as an ending-point of the process of melting is the liquid state of the water, and that is also a positive state of being for the water. The process of 'melting' is the 'transition': the water passes from a solid state (starting-point, *terminus a quo*) over into a liquid state (ending-point, *terminus ad quem*). The water has 'changed.'

If any of these three conditions be missing, the change is not a *strict change*; but it may be called a 'change' in a *wider* and *improper* sense.

Sometimes the 'starting-point' is not a positive state of being, but a state of non-existence: we would then have the production of a thing from 'nothing,' and that would be *creation*. The notion of 'creation' is so common in the discourse of men, that this fact alone warrants its introduction here. At any rate, the notion of 'creation' represents an *intrinsic change* in an *improper* sense of the term.

Again, it may be that the 'ending-point' is not a positive state of being, but rather a state of nonexistence: the result

would be, not a strict change, but *annihilation*. If God were to destroy the world absolutely, so that not a vestige of it remained in existence, it would be annihilated. This is also called an *intrinsic change* in an improper sense.

The third kind of a change in a wider or improper sense would be, if there were *no real transition* on the part of the being that is said to change. An example: I walk through the rooms of an art gallery and look at the pictures. As I turn my gaze upon them, each one changes from a 'not-looked-at' picture to a 'looked-at' picture. Does a real change occur thereby in the picture itself? Evidently not; nothing has happened to the picture itself through the mere fact of my looking at it, so that it would now have acquired a new act or state of being. I am the one who undergoes a real change through the act of sight, but the picture remains just what it was before. Another example. Unknown to me, a distant relative has died. I have lost a relationship, and in that sense I can be said to have 'changed.' But the only one who really changed is my relative who died; so far as I am personally concerned, no real change has occurred in me. Such instances represent an external or *extrinsic change in an improper or wider sense*.

We thus notice that the term 'change' is not always used in a uniform meaning. In a strict sense, the notion of change involves a positive starting-point, a positive ending-point, and a real transition from one positive state to another.

KINDS OF STRICT CHANGE

A strict intrinsic change or mutation may appear in any of the following ways: *Generation and Corruption*. Generation and corruption are two different aspects of one and the same change: it is the transition of a being from one kind of *substantial entity* into another kind of substantial entity. The difference between generation and corruption is this: the substantial change which makes the one substance cease to be is called 'corruption'; and the same substantial change which, by means of the corruption of this first substance, brings the new substance into being is called 'generation.' The new substance is always generated through the corruption of the old substance; the old substance ceases to be in order to give place to the new. There are not two changes involved in this process, but a single substantial change which corrupts the one while it generates the other. Hence, the axiom: the generation of one substance involves corruption of another. We observe this kind of change in the life and death of plants and animals. The chemical elements are assimilated in nutrition and become parts of living tissue and living function, partaking of the life of the plant or animal; but when the plant or animal dies, they again change from living substances to inanimate chemical elements. Every substantial change thus involves generation and corruption.

Augmentation and Diminution. This change is the transition of a being from one *quantitative* state to another. If the being increases in quantity, it is 'augmentation'; if it decreases in quantity, it is 'diminution.' This is a common occurrence among corporeal beings. A boy grows in stature in the course of youth; an acorn develops into a stately oak;

the muscles grow weaker in severe illness; light fades when the voltage of electricity drops in the filament of a bulb.

Alteration. It is the transition of a being from one qualitative state to another. The skin becomes tanned, when exposed to the sun in summer; iron glows, if heated to a high degree of temperature; water vaporizes to steam at + 212° F.

Local Motion. It is the change which occurs in the transition of a thing from one *place* to another. A train travels from Chicago to New York; a lady walks from her house to the store; a boy runs through the park; a ball is thrown through a window.

If we compare these various kinds of strict changes, we notice that generation and corruption are *substantial* changes, while the others only change the accidental condition of a being and are, therefore, *accidental* changes. A thing changes from one substance to another in an instant (for instance, from nonliving to living, from life to death); a substantial change is, therefore, an *instantaneous change*. On the other hand, augmentation and diminution, alteration, and local motion, are in their nature changes that progress in steps and stages, gradually and successively; for this reason they are successive changes.

Closely related to the notion of 'change' is the notion of *motus* or *movement*.' It represents one of the most important phenomena of nature and deserves special attention.

MOTUS

The idea of '*motus*' has an honorable history. It dates back to the earlier days of Greek philosophic thought. *Aristotle* analyzed and developed it and fixed its meaning in a philosophic sense. Christian thinkers, especially the medieval *scholastics*, took it over and gave it considerable treatment, especially in their discussions on the existence and activity of the Supreme Being.

The term '*motus*' (Lat., *motus*, Gr., κίνησις, movement), *in the technical meaning which it has acquired in ontology, cannot be adequately rendered into English. 'Motion' and movement' are derivatives of the Latin word motus, but their meaning is more restricted. 'Motion' is used for local change, change of position regarding place and space. 'Movement' though broader in connotation than 'motion,' has not the philosophic width and depth of the term motus, as we shall see. The latter term, motus, is taken from the obvious case of local change and then broadened in meaning to apply to other activities of somewhat similar nature, even to vital and intellectual activities. The best thing to do under the circumstances is to specify the meaning of motus and use this Latin form, employing the English term 'movement' as an alternative.*

Motus agrees partly in meaning with a number of concepts which we have discussed so far, such as 'act' (Lat., *actus*, Gr., ἐντελέχεια, ἐνέργεια), 'potency' (Lat., *potentia*, Gr., δύναμις) 'change' (Lat., *mutatio*, Gr., μεταβολή), 'motion' or 'movement' (Lat., *motus*, Gr., κίνησις); yet it differs in some respects from them all. This will be clear from the following explanations.

In its *widest* sense the term *motus* means any *activity* whatsoever, whether or not it involves a transition from potency to act. All creatural activity contains a transition from potency to act; but God's activity does not, because in Him there is no potentiality of any kind. Both kinds, whether divine or creatural, are called *motus* in this sense. Thus, God's thinking, willing, living, loving, creating, etc., are eternally present 'acts' without any admixture of potency. Living, thinking, knowing, running, eating, producing, seeing, feeling, etc., or any activity of pure spirits, men, brutes, plants, or inanimate things, take place by means of a transition from potency to act; they become 'actualized' through their activities. All these activities, whether of God or of creature, are *motus* in this widest use of the term.

In a somewhat narrower, though still in a *wide* sense, *motus* means any activity involving a transition *from potency to act*. This qualification excludes God's activities, but it still includes all creatural activity. Therefore, all activities of pure spirits, men, brutes, plants, and inanimate things, belong to this class.

In a *stricter* sense *motus* means any activity involving a transition from potency to act in a *corporeal being*, whether it be an instantaneous (substantial) or a successive (accidental) change. This class excludes the activities of pure spirits, because they are incorporeal, but it still includes the activities of men, brutes, plants, and inanimate bodies. To this class we thus refer the production and death of man, brute, and plant; any chemical change of substance. These are instances of a substantial change. As examples of

accidental changes belonging to this class of *motus*, the following physical activities are characteristic: heating, freezing, illuminating, magnetizing, electrifying, etc.; running, walking, sleeping, eating, etc.; seeing, hearing, feeling, tasting, digesting, etc.

In a *strict* and *proper* sense *motus* is any activity involving the transition from potency to act in a corporeal being *through successive stages*, i.e., it is a successive change in a body. This, therefore, excludes all bodily changes of an instantaneous character, namely, generation and corruption; such would be the origin and death of living bodies and every substantial chemical change. On the other hand, it includes every kind of quantitative augmentation and diminution, qualitative alteration, and local change *in a body*. Examples are: growing physically larger or becoming smaller; heat and cold, strength and weakness; color, pain, pleasure; riding, jumping, rolling, etc.

ARISTOTLE'S DEFINITION OF MOTUS

Aristotle defined *motus* or successive change in the following manner: *the act of a being in potency while still in potency*; or, the actuality of that which is potential, in so far as it is a thing that is potential.¹ This definition may seem obscure, but, like all of Aristotle's definitions, it possesses a marvelous compactness and philosophic precision. Perhaps the best way to reach Aristotle's meaning will be to take an ordinary instance of local movement.

A train is about to travel from Chicago to New York and stands ready in the terminal. Here are the elements of its

motus or movement: the starting-point (*terminus a quo*) is the station in Chicago; the goal or ending-point (*terminus ad quem*) is the station in New York; the passage or transition is the entire trip from the station in Chicago to the station in New York. Wherein does the change, movement, motus, consist? As long as the train stands in the station in Chicago (starting-point) it is not yet in motion. When it stands in the station in New York (goal, ending-point), it is no longer in motion. Both these terminal points mean rest, not motion. Motion begins, when it leaves the station in Chicago, and lasts until it has come to rest in the station in New York. The complete 'act' to be acquired is its *arrival* at the station in New York, and it will always be in *potency* for this act until it arrives there. While it stands at the starting-point (Chicago), it is in *complete potency* for this act; and when it has arrived at its goal or ending-point (New York), it is in *complete act*. While traveling along the rails, the train partly realizes its act, because it is on the way, and it realizes its act more and more until it has its complete act on arriving in New York. But because its act is but partly realized while 'on the way,' it is always still partly 'in potency,' because its act must be realized further; and it must continue to pass from potency to act, until it finally arrives at its destination. Hence, the entire trip is a partial act which will be fully realized in the complete act at the arrival of the train in New York; and the train is always in potency toward this complete act as long as it is on the way: its motus is thus seen to be the act of a being in potency while still in potency. In other words: it is the actuality of a

partly realized potency while still only partly realized and tending toward complete realization.

As will be observed from this explanation, Aristotle's definition, though technical, displays a very keen and profound understanding of the essential elements of *motus*, as exemplified in local motion. The definition, of course, is not restricted to local motion. It applies with equal precision to *any successive change* or transition from potency to act, as long as the activity in question takes place in stages, so that there is a gradual realization of the complete 'act' striven for. Whenever a change is instantaneous, *motus* or movement, as just defined, does not occur; but it may occur in the preparation for this instantaneous change. In every case of *motus*, therefore, there is the following sequence: Before the thing 'moves,' it is in potency for both the *motus* and the final actuality to be acquired by it; when it begins to be 'moved,' it is no longer in potency for the *motus*, but has already acquired it as an intermediary act; while 'moving,' it still remains in potency for the final and complete actuality to be acquired at the ending-point of its *motus*; when it has acquired its final and complete act, *motus* ceases, and the thing comes to rest as completely realized. If we desire to use the term in a wider sense, we may do so; but then we must define our term accordingly.

Our concept of *motus* will receive further clarification, when we consider the various classes into which it can be divided.

KINDS OF MOTUS

As there are naturally many kinds of acts or actualities which can be acquired by objects in the universe, so there must be different kinds of *motus* or transitional ways of acquiring them. We thus distinguish:

Immanent or Vital Activity. It is the activity through which a living being perfects *itself* and makes itself the goal for the acquired actuality or perfection. Such an activity does not tend to leave the agent, in order to actualize a being distinct from itself; rather, it begins and terminates in the agent itself, so that it is also the passive recipient of the perfection acquired through its activity. Nutrition, for example, is an immanent activity. This function assimilates foodstuffs, so as to build and strengthen the very body in which it resides and remains (Lat., *immanere, manere in*, to remain in) and has its being. Plant, animal, and human bodies have immanent action; they are the term or goal of their own function; they move and actuate themselves. Thus, too, the various sense-perceptions, thought-processes, will-acts, emotions, etc., are immanent activities.

Transient, or Transeunt, or Transitive Activity. It is the activity which tends to *change another object*, distinct from the agent, thereby making this other object the term or goal of the acquired actuality. Here the agent and recipient are two distinct beings. The agent influences and modifies the recipient, while the recipient is thereby influenced and modified; the agent has the producing action, while the recipient receives the produced effect. Thus, a hot radiator sends heat in all directions, raising the temperature of the

surrounding atmosphere; the steam in the boiler of a locomotive drives the wheels which propel the train along the tracks. Since the changes produced in bodies may be of a varying character, we distinguish between three kinds of transient activity: mechanical, physical, and chemical.

Mechanical action is the active tendency of a body to change the *local position* of another body. Cases in point: swinging a baseball bat, throwing a stone, pushing a cart, drilling a well, digging a trench, closing a window, etc. *Physical action* is the active tendency of a body to change the *qualities* of another body without changing its substance and nature. For example: heating a body, freezing water, tempering steel, Painting a picture, magnetizing a needle, illuminating a room, etc. *Chemical action* is the active tendency of a body to *change the nature* of another body by combining elements into a compound, or dissolving a compound into its elements, or changing one compound into another. For instance: the chemical action which combines hydrogen and oxygen into water; the electrolytic action which dissolves water into hydrogen and oxygen; the radioactive change of uranium into radium.

In all these kinds of activities we find Aristotle's definition verified, namely, "that movement (*motus*) is a realization, but an incompleted one; because a potentiality, as long as it is such, is by its nature uncompleted, and therefore its actual functioning — which motion is — must stop short of the completion: on the attainment of the end, the motion toward it no longer exists, but is merged in the reality." It is always the case of the act of a being in potency

while still in potency: *actus entis in potentia quatenus in potentia.*

SUMMARY OF CHAPTER VIII

The transition from potency to act in finite beings is effected by means of 'change.'

1. *The Concept of Change.* Change is the transition from one positive state of being to another. Three *conditions* are required for this: a positive starting-point; a positive ending-point; and a real transition from the one to the other. If any of these three conditions be missing, we have 'change' in a wider and improper sense: such are creation, annihilation, and extrinsic change.

2. Kinds of Strict Change. 'Generation' and 'corruption' are the transition of a being from one kind of substantial entity into another kind of substantial entity. 'Augmentation' and 'diminution' are quantitative changes, while 'alteration' is a qualitative change. 'Local motion' is the transition from one place to another.

3. *Motus.* In its *widest* sense, *motus* means any activity whatsoever, whether divine or creatural. In a wide sense, it is any activity involving the transition from potency to act; this excludes God's activities. In a stricter sense, it is any activity involving a transition from potency to act in a corporeal being; this excludes the activities of pure spirits. In a strict and proper sense, it is any activity involving the transition from potency to act in a corporeal being in successive stages.

4. *Aristotle's Definition.* He defines *motus* as the act of a being in potency while still in potency; the actuality of that which is potential, in so far as it is a thing that is potential.

5. *Kinds of Motus*. ‘Immanent’ or ‘vital’ action is that through which a living being perfects itself and makes itself the goal for the acquired actuality. ‘Transient,’ ‘transeunt,’ or ‘transitive’ action is the activity which tends to change another object, distinct from the agent. This transient action is ‘mechanical,’ when it is an active tendency to change the local position of another body; it is ‘physical’ action, when it tends to change the qualities of another body; it is ‘chemical’ action, when it tends to change the nature of another body.

READINGS

Coffey, P., pp. 61–62; Mercier, D. Card., pp. 506–510; Pesch, Tilmann, n. 1317–1329; St. Thomas, *Summa Theologica*, I, q. 9, a. 2; McCormick, J. F., Ch. IV, pp. 56–59; Aristotle, *Metaph.*, III, IV; *Physics*, V–VIII.

1 Διήρημένον δέ καθ' ἕκαστον γένος μὲν ἐντελεχεία, τοῦ δέ δυνάμει, ἢ τοῦ δυνάμει ὄντος ἐντελέχεια, τοιοῦτον, κίνησίς ἐστιν. “Reverting, therefore, to the universal distinction already established between ‘being-at-the-goal’ in actuality and being in potentiality ‘such-as-is-capable-of-attaining-the-goal,’ we can now define motion or change as the progress of the realizing of a potentiality, qua potentiality.” *Physics*, Bk. 3’ Ch. 1, 201 a, tr. by P. H. Wicksteed and F. M. Cornford (Harvard U. Press), pp. 194, 595. See also *Metaph.*, Bk. 10, ch. 9 1065 b.

Chapter 9

THE PRINCIPLE OF CHANGE

CHANGE AND BECOMING ARE UNIVERSAL OCCURRENCES IN nature. Finite things, as the name indicates, have only limited being. As such they are always in potency for further actualization and determination. The terms 'change' and 'becoming' are not identical in meaning. Every 'change' is a form of 'becoming,' but not *vice versa*. According to strict terminology, 'change' is the transition from one positive state of being to another positive state of being; 'becoming' is any transition from potency to act, even if it be from nonexistence to existence. 'Becoming' is, therefore, in itself, a wider term than 'change.' These terms, however, are often employed to mean simply a transition from potency to act, and it is in this latter meaning that they must be taken when we speak of the Principle of Change.

STATE OF THE QUESTION

The importance of this principle, from a philosophic standpoint, can hardly be overestimated. It reaches down into the very depths of thought and being, and thus deserves a careful study. Resting directly on the Principles

of Contradiction and Sufficient Reason, the Principle of Change is nothing more than the application of these two primary principles to the processes of becoming and change as observed throughout the realm of nature. This Principle of Change is usually formulated: '*Quid quid movetur, ab alia movetur*; whatever changes, is changed by another.'

'Change' here means the transition from potency to act, and it makes no difference whether this transition is a transition from non-existence to existence or from one positive state of being to another positive state of being: the principle or law applies with equal validity to both kinds of becoming. In the first case, the transition from non-existence to existence involves the production of the whole entity of the being from nothingness. In the second case, it involves the transition of an existing thing to a different kind of being; this sort of change presupposes an underlying subject in which the change takes place.

When a concrete, positive being undergoes a change, there is always an underlying potential reality, called the *subject* or *matter*, in which the change occurs, and a perfection or actuality, called the *form*, which is either gained or lost; and this change always ends in a new positive state of being for the subject, because it is now something that it was not before. In all such cases of change, as *Aristotle* points out, "whether of quantity or quality or relation or time or place, it is obvious that there must be some underlying subject which undergoes the change."¹ And he mentions the following methods in which change may take place: "(1) Change of shape, as with the

statue made of bronze, or (2) additions, as in things that grow, or (3) subtractions, as when a block of marble is chipped into a Hermes, or (4) combination, as in building a house, or (5) such modifications as effect the properties of the material itself.”²

The Principle of Change, as enunciated, has this specific meaning: Nothing ever passes from receptive potency to act except under the influence of another being which is already in act. Or, to put it in a different way: No being can bring itself from receptive potency to act. ‘Act’ must be understood here in its philosophic sense as any entity determining or perfecting a thing in its being.

In testing this principle and giving its proof, we may appeal either to *experience* or to the *analysis* of the elements contained in the principle.

PROOF FROM EXPERIENCE

Physical science subscribes to this axiom of philosophy with regard to *mechanical motion*. *Newton* (1642—1727) gave scientific expression to it in the first two of his famous laws of motion: “(1) Every body tends to persevere in its state of rest or of uniform motion in a straight line, unless it is acted on by an impressed force; (2) change of momentum is proportional to the impressed force and takes place in the direction of the straight line in which the force acts.” These laws express plainly the universal fact that *inertia* governs the entire inanimate world and that nothing will ever pass from a state of rest (which is a state of potency) to a state of motion (which is a state of actuality, and newly acquired),

without it being brought into motion through the activation of some other body already in act. A body in motion, after having been brought into motion, cannot even change its own motion; this change must come through the influence of some other outside force. This clearly shows that, concerning mechanical motion at least, the Principle of Change is true: Whatever changes, is changed by another.

Science treats of *potential* and *kinetic* energy. Potential energy is energy of position, as we observe it in lifted weights, coiled or stretched springs, compressed gases, chemical combinations (e.g., explosives), storage batteries, etc. Kinetic energy is energy of *motion*, as we see it in a falling pile driver, a ticking watch, a discharging rifle, a burning flashlight, etc. Potential energy can be transformed into kinetic, and kinetic energy into potential. But it always necessitates an outside force to make potential energy active; of itself potential energy will *always remain potential*, and it will never be transformed into kinetic energy without some other transforming agency. An example or two from nature will elucidate this.

A punch press in a factory is punching holes into a steel-plate. The punch die is worked by the machine, the machine by the belt, the belt by the shaft, the shaft by the flywheel, the flywheel by the crank arm attached to the piston rod, the piston rod by the steam, the steam by the heat; the heat is generated by the combustion of the coal, the coal obtains its potential energy from the sun, the sun obtains it from the stored-up energy of its atoms; and the atoms — Inertia is a universal attribute of matter. Things tend to assume a stable equilibrium and to remain therein. They possess the

potency of becoming something; but in order to change, they require the active agency of another thing. We can trace this process back to the primary and elemental forces of nature, such as gravitational and sub-atomic energy, which supply the dynamic activities of physical bodies. Whether these agencies are kinetic transformations of deeper potential energies, science cannot say, for they lie beyond the ken of human observation. But so far as experiment and observation reach, we see that potential beings must be actualized by beings which are already in act. Hence, whatever changes, is changed by another.

PROOF FROM REASON

If we subject the Principle of Change to an analysis of its constituent factors, we will see that it is a principle which is *universally* and *necessarily* true. To state it again: No being can pass from receptive potency to act except under the influence of another being which is already in act; no being can bring itself from receptive potency to act; whatever changes, is changed by another.

This must be so. For one thing, every act or perfection thus acquired is a *new perfection or reality* for the being which was first only in receptive potency for it. Every 'act,' in contradistinction to receptive 'potency,' means some positive reality or entity modifying the thing; the thing *changes* thereby; it *acquires* something; it is now different from what it was before the change; it is in a *new state*. It is impossible that the thing changed be the same after the transition from potency to act as it was before: because

‘change’ means to pass from one state *to another*. Hence, through this change an act is acquired which is some new positive reality or entity.

It is evident that this new actuality acquired by the potential being demands a *sufficient and adequate* reason for its arrival: there can be nothing without a sufficient reason. This is an absolute requirement, based, as we have seen, on the Principle of Contradiction. In virtue of this requirement, the newly acquired actuality must be accounted for down to the last vestige. In so far as a thing is without sufficient reason, it has no being at all and cannot exist. Hence, when a being passes from potency to act, this act is something in the order of reality, and the being acquires it through the process of its change, and there must be a full and adequate reason for its presence after the change.

It must also be evident that the potential being, passing from potency to act in the change, *did not possess this act before the change*. When is a being ‘in potency’? When it has the ‘capacity for something.’ In such a state it certainly cannot possess this act already; otherwise it could no longer be ‘in potency’ for it, i.e., it could no longer be able to pass from a state of potency *to obtain it*. ‘Potency’ means a state of passivity, of receptivity, of possibility. It means the absence of a certain actuality, but it means at the same time the aptitude and possibility of *receiving it*. However, it receives it precisely by means of its transition from potency to act, by means of the *change*. But if it receives it by means of this transition and change, it could not possibly have had it before the transition and change. Otherwise an open

contradiction is stated: the being *had* this particular actuality *before* the transition and at the same time *it did not have it*. It had it before the transition from potency, because that is here assumed and claimed; and at the same time it also did not have it before the transition from potency, because it really acquired this actuality only by having passed from potency to act in order to obtain it. Hence, the thing passing from potency to act could not have possessed the actuality before the change, since the opposite assumption is *contradictory*.

So far it has been established that every actuality acquired through change is a new reality or perfection; its presence after the change demands a sufficient and adequate reason; it was not possessed as such by the potential being before the change, but was acquired by means of the change. Going a step farther, we must see that the being which passes from potency to act *cannot give this act to itself*. This means that the potential being cannot itself be the complete and adequate principle for the newly acquired actuality: It cannot 'move' or change itself.

Under the conditions as given, the potential being is incapable of giving this actuality to itself. The reason is extremely simple: *no being can give what it does not have*. No being can acquire the identical thing that it already possesses; and no being can give, either to itself or to another, something which is not in its possession: if it already has it, it can no longer acquire it; and if it lacks it, it cannot give it to itself or to another. It follows then, that, while a being is in potency for an act, it is without it. A potency *minus* the act, however, is certainly less perfect

than the potency *plus* the act. The act, consequently, is a plus-amount over and beyond the potency as such, *something superadded* to it.

Now, there are only three conceivable possibilities to account for this new reality: it can come either from the potential being itself, or from some actual being, or from nothing. Consider these cases. The *potential* being itself cannot give the new reality to itself, as has just been pointed out, because no one can give what it does not have; it is, then, no sufficient reason for it. On the same grounds, '*nothing*' cannot be a sufficient reason for the appearance of the newly acquired actuality, because 'nothing' possesses nothing and thus can give nothing to the potential being. Therefore, the potential being, in acquiring a new actuality through the transition from potency to act, can receive it *only from some other actual being*. Here, then, we have a truly sufficient reason: this other being exists; it possesses the actuality and communicates it to the potential being by 'moving' or 'changing' it, by making it pass from potency to act. That alone is a satisfactory explanation and does no violence to reason.

From all this we must derive the necessary conclusion: *Whatever passes from receptive potency to act does so under the influence of some other being already in act.*

THOMISM AND THE PRINCIPLE OF CHANGE

The Principle of Change, as enunciated above, refers to a *receptive* potency. All scholastics are in agreement as to the validity of the principle in this respect. There are, however,

also *operative potencies* (faculties, powers); these, apparently at least, are capable of performing operations *spontaneously*, without the necessity of being activated by other agencies.

Given the proper conditions, the mere proximity of certain chemical elements is sufficient to bring about an interaction between them, resulting in a chemical compound endowed with properties quite distinct from those of the constituent elements. A change has undoubtedly occurred, but this change is due, to all appearances, to the elements themselves, and not to the influence of any other agency. Radioactive elements are particularly remarkable in their change. Irrespective of their surroundings, they undergo transmutations which are spontaneous in character, and no known physical or chemical agency can hasten or retard these transmutations which take place within these elements themselves. They certainly seem to 'change themselves,' due to their own intrinsic operative potencies.

When we turn to the investigation of living beings, *organisms*, the facts become even more obvious. Plants, brutes, and men, it appears evident, possess *spontaneity of action, self-movement*. The operations of vegetation, sentiency, and rational life are *immanent* actions, proceeding from the organism itself and perfecting it in its being.

This does not mean that organisms are not *influenced* by outside agencies; the opposite is true. The seeds of plants, in order to begin development, need the stimulation of soil, moisture, and warmth. The assimilative powers need the

stimulation of foodstuffs in order to become active. The leaves need the stimulation of light for the production of chlorophyll, starch, etc. In animals the senses require the presence of definite stimuli before sensation can take place. The central sense, imagination, instinct, and sense-memory must be aroused into activity by the action of the peripheral organs of perception. The intellect of man requires the presentation of an object to stimulate it into activity. The appetency of the brute and the will of man also need an object to exercise their function. In some way, therefore, these operative faculties require an outside agency in order to pass from potency to act.

Nevertheless, in all these instances, the presence of these stimulations and objects seem to be more in the nature of a *condition for self-activity* than a changing agency as such. We cannot, of course, deny the existence of activity in creatural beings, whether it be transient activity in inorganic beings or immanent activity in organic beings; such a denial would lead to the false theory of occasionalism. It seems equally obvious, too, that such beings are *spontaneously active* and pass from the potency of their faculties to the act of their operations by their *own agency*, and not through the agency of another being: they 'move or 'change' themselves.

Because of these considerations, many scholastic philosophers restrict the Principle of Change to the *receptive* potencies; the *operative* potencies are outside the scope of this principle and are not affected by it. *Thomistic* scholastics, however, claim that the Principle of Change applies with equal force and rigor to *receptive* and

operative potencies alike. The school of Thomism defends the view that 'nothing ever passes from potency, whether receptive or operative, to act except under the influence of another being which is already in act'; 'no being, under any conditions, can reduce itself from potency to act,' and this applies, therefore, also to the operative potency.

According to the view of modern Thomism, an *antecedent physical influence, or physical premotion (praemotio physica)*, is required in order that the faculty of a creature can pass from potentiality to actuality. It is only in virtue of this antecedent physical influence that the faculty is immediately capable of operation. This influence is supplied by God to all creatural activity.

On what grounds do the Thomists base their contention that the Principle of Change also applies to the 'operative' potencies? On the grounds that the Principle of Sufficient Reason absolutely demands their inclusion in the Principle of Change. There is, they say, no essential difference between a receptive' and an 'operative' potency, when it is a question of passing into act. An operative potency, such as intellect and will, is certainly *perfected* by its operation. By means of this operation, which is an 'act,' the faculty now possesses a perfection which was not present before; it is something superadded to the faculty, a plus-amount newly acquired. Since the faculty did not possess it before, it could not give it to itself; only an outside agency can, then, be adequate cause of this new perfection. The faculty itself as a 'potency' cannot be the sufficient reason for the acquisition of the new perfection contained in the operation as an 'act.' Hence, it cannot reduce itself from potentiality to actuality,

and the Principle of Change applies to the 'operative' potency with the same rigor as it applies to the 'receptive' potency. In other words, the Principle of Change is a universal principle without exception. And because of this, a physical premotion on the part of God is necessary in order that the operative potency or faculty can become active.

Those who disagree with the thomistic view in this matter fail to see the stringency of their argument. Especially, the theory of this physical premotion seems to them to be inadequate. They point out that such an influence only places the faculty in *immediate preparation* for the operation that is to follow; it does not communicate the actual operation itself, but makes the faculty 'capable' of action. But in that case, the faculty still must pass from potency to act; and that would be contrary to the Principle of Change, as interpreted by the Thomists. Then why should it not be possible for the Creator to endow the creatural being with a complete faculty capable of action without the antecedent physical influence? The latter seems altogether superfluous under the circumstances and incapable of performing the function ascribed to it by the Thomists. And if the Thomists were to assert that it is precisely this physical premotion which reduces the faculty from potency to act, then it would seem that the faculty is no longer an 'operative,' but purely a 'receptive,' faculty and as such has no operation of its own. But is that not tantamount to a denial of all creatural activity?

On their part, the opponents of Thomism have the difficulty of explaining the presence of the 'new perfection' of the operation as an 'act' perfecting the faculty. We must

uphold the Principle of Sufficient Reason; all admit that. On the other hand, it seems obvious that creatural beings are truly active in virtue of the intrinsic powers with which they have been endowed by the Creator. If the operative power needs an outside agency (a physical premotion) to reduce it from potency to act, then the same situation applies to this agency; it is also a creatural power and needs another agency to reduce it to act. But this involves either an infinite regress, or we must end the series by stating that God is the direct agent of all creatural activity; that, however, would be occasionalism, denying true activity to creatures, and this agrees neither with experience nor with the principles of sound philosophy.

How can we harmonize this view with the Principle of Sufficient Reason? The opponents of Thomism make a distinction between the *virtual act* and the *formal act*. The 'perfection' of the operation is precontained in the faculty as an effect in its equivalent cause. The 'change' which takes place, when a faculty passes from potency to act in its operation, is not a change in this perfection itself, but in the perfection's *manner of being*: from being a *virtual* act it changes to a *formal* act. The perfection of the operation as an 'act' is not contained 'formally' in the faculty; all are in agreement on this point. However, if this perfection of the operation were not pre-contained at least 'virtually' in the faculty, then the faculty would not be an 'operative' potency at all, but merely a receptive' potency; then we should drop the concept of an operative' potency entirely and deny the possibility of true creatural activity. Hence, in order to safeguard the Principle of Sufficient Reason and the natural

activity of creatural beings, we must maintain the presence of the *perfection* of the operation as 'act' in the faculty as 'potency'; the change, then, which takes place in the passage from potency to act is the change of the virtual act to the formal act. In this view, therefore, the Principle of Change applies strictly to the 'receptive' potencies, but not to the 'operative' potencies.

In a more limited way, and in a wider sense, the Principle of Change can also be said to apply to the *operative* potencies. This is done, for instance, by *Sylvester Maurus*: "The opponents seem to have understood this principle *negatively* as if the sense were that nothing is moved by itself; and against this they have instanced the actions of animals and other beings which move themselves. However, the sense of the principle is *affirmative* in intent. No one denies the something can move itself, concurring *partially* to its own movement: but we assert that no being can move itself *totally* and as *with perfect self-sufficiency*: it must be moved by another so that it can move itself. It will be manifest to anyone giving due consideration to these terms, that everything which is moved, that is to say, everything which is changed intrinsically, now possessing some entity and now lacking it, is not its own *total cause* of possessing or lacking it, but must be moved by another being which forces it, or entices it, or attracts it, or perfects it. Consequently, even the free will, being a created and mutable reality, though it is primarily the cause of changing itself, cannot change itself except in so far as it is moved to change itself through some object which attracts or entices it."³

The arguments of the Thomists and their opponents, as outlined above, are based on fundamentally different views concerning the nature of an operative potency. The reader must decide which view he considers to be more consonant with fact and principle.

COROLLARIES

From the above explanations a few simple *principles* concerning act and potency are clearly seen to flow.

In so far as a thing is in act, it is perfect. An act is an entity determining and perfecting a thing in its respective order. An act is the realization of a certain power, the natural complement of a potency. Thus, the intellect is a faculty, a power; its natural purpose is to understand, and thought is its act, its actualization. It is evidently more perfect actually to think than merely to be able to think. Similarly, sight as a power or faculty is but the capacity for seeing; actual seeing, or vision, is the act or determination of sight as a faculty, and it is more perfect to have actual sight than only capacity for it. Potency is the mere capacity for something, and an act is the perfection, the realization, of this capacity. From the reverse standpoint, then, the following principle is equally true: *In so far as a thing is in potency, it is imperfect.*

What, then, must be the most perfect being? A being that is purest actuality, one without the slightest potentiality, one which (who) has being to the utmost degree possible, intensively and extensively — God. And what is the most imperfect being? The one with most

potentiality. Spiritual beings are beings to account for the actuality contained in the universe. The multiplicity of beings in the universe might lead us to the conclusion that there must also exist a plurality of actual beings outside the universe and prior to it. However, if it can be shown that the world is really a universe and not a *pluriverse* (to employ an unusual term), this line of thought would lead to one being as the actuality postulated by the facts under consideration. That the world is really a 'universe' seems quite clear. Astrophysics has established the fact that the stars and the earth consist of the same chemical elements and are governed by the same mechanical, chemical, and physical laws throughout; the world is a co-ordinated system, a totality of beings united together into a real *universe*, a *cosmos*. Since this involves a unified plan of construction and of activity, the changes and developments in the universe point very definitely to *One Being* as the agent responsible for the actuality acquired anywhere throughout the vast expanse of the present cosmos as we know it. And since an infinite regress in potential beings is impossible, and since even an infinite series of potential beings would demand an actual being outside the series itself, there must actually exist a *Prime Mover Unmoved* possessing complete actuality without any admixture of potentiality. If this Prime Mover again had any potentiality, this would also presuppose another actual Being preceding it, and so on backward, until we arrive at the First Being who is the real Prime Mover Unmoved, capable of conferring actuality on *all* potential beings without exception by assisting them in their transition from potency to act. These secondary

beings can be active only in co-operation with the Prime Mover.

There must, then, exist in the real order a Being who is *Pure Actuality*. We call this Being *God*. God, therefore, is not a mere abstraction, something like 'being in general,' devoid of all real content, but *Supreme Reality and Power*. He is in all truth the First Principle of thought and being, and as such He is, if we understand the term in its fullest and richest meaning, the *Absolute*.

Furthermore, the implications of the Principle of Change show the futility of the attempt of *Hegel* to deduce all things through the *logical evolution* of the concept of 'being.' The concept of 'being,' with which Hegel begins, is not the concept of God as Pure Actuality; it is the concept of 'being in general,' so empty of all real content that he considers it absolutely void and equal to 'nothing.' As he himself states: "Being is not a particular or definite thought, and hence, being quite indeterminate, is a thought not to be distinguished from Nothing."⁴ But 'being' does not remain in this indeterminate condition; it 'becomes,' and through this becoming it evolves into all determinate being, into nature and spirit and eventually into the Absolute. "Becoming is the first concrete thought, and therefore the first notion: whereas Being and Nothing are empty abstractions."⁵

This 'becoming' then gives rise, according to Hegel, to 'determinate being' in the following interesting process of logical evolution: "Even our ordinary conception of Becoming implies that somewhat [something] comes out of it, and that Becoming therefore has a result. . . . Becoming

always contains Being and Nothing in such a way that these two are always changing into each other, and reciprocally cancel each other. Thus Becoming stands before us in utter restlessness —unable, however, to maintain itself in this abstract restlessness: for since Being and Nothing vanish in Becoming (and that is the very notion of Becoming), the latter must vanish. . . . The result of this process, however, is not empty Nothing, but Being identical with the negation — what we call Being Determinate (being then and there’): the primary import of which evidently is that it *has become*.”⁶

In evaluating Hegel’s views, as given above, we must remember that he was actuated by the purpose, laudable in itself, of effecting a *supreme synthesis*. But in this endeavor he was misled into attempting to synthesize ‘thought’ and ‘thing’ into the ultimate ground of ‘being in general,’ of abstract and indeterminate being; he thereby hoped to harmonize not only the conflicting elements of ‘being,’ but also the contradictions or antinomies of ‘thought.’ Hence his contention that all ‘being’ is thought ‘realized’ and all *becoming is a logical development*. He therefore begins with the *idea* of ‘being’; and since this idea is also the *reality* of ‘being,’ it actually develops itself from indeterminateness to determinateness (‘determinate being’) by means of an *eternal logical process* of internal evolution. At first ‘being’ is so indeterminate that it is equivalent to ‘nothing,’ but through this process of logical ‘becoming’ it gradually unfolds itself into every kind of determinate being: it is a process of *self-actualization*.

This, however, is an *essential error* in Hegel's idealistic monism, because it is in contradiction to the Principle of Change (Becoming), as shown above. From both a logical and ontological viewpoint, Hegel's 'Being' is incapable of evolving in this manner. As a *logical* entity, his 'Being' is abstract, indeterminate, empty of content, equivalent to 'Nothing.' Since it contains nothing, nothing can arise out of it; hence, 'determinate being' can never be deduced from it. As an *ontological* entity (supposing it to be such), it is devoid of all actuality and therefore purely potential. This 'Being' does not contain all actuality in itself like coins in a purse or peas in a pod; it is rather, according to Hegel's own statement, "empty Nothing."⁷

Consequently, this 'Being' must be pure *potentiality*. It develops into all determinate being, not through some other being distinct from itself (for how can there be any being outside the whole class of 'being?'), but by means of the intrinsic *self-actualization* of its potentiality. But this is unintelligible and impossible. Since 'Being' contains no actuality, it cannot give any actuality to itself, because no one can give what one does not possess. And this 'Being' cannot receive it from another being, because outside the totality of 'Being' there is only 'Nothing,' and 'Nothing' has nothing to give. If, then, Hegel's contention were correct that the origin of all things comes from indeterminate 'Being,' which is equivalent to 'Nothing,' no determinate beings could ever come into existence. But the *universe is here*. Hence, it did not originate from this abstract, empty 'Being,' and Hegel's monism must be rejected as inadequate and false.

Finally, the Principle of Change shows conclusively that no theory of complete *evolution*, whether mechanistic or vitalistic, can fully explain the origin and development of living beings and of the world at large. The very idea of evolution involves change and development. It means the unfolding of forces in the direction of beings possessing more complicated structures and *higher forms* of organization from a more or less primitive and amorphous state. This implies a movement of an upward trend, with a constant and gradual acquisition of *higher perfection*; it is a transition from potency to act on a world-wide scale, an *actualization* which becomes more complete in the course of the ages. Such an evolution, however, if it took place, could never occur in virtue of the inherent forces of nature alone. There must be an actual Being outside this whole process of evolution, to activate these forces and give them direction toward higher actuality: whatever changes, is changed by another.

It makes little difference whether we accept mere matter and force as the moving principle of evolution, as the materialists do; or whether we claim that all matter is endowed with psychic activity, as the pan-psychists do; or whether we postulate some 'mind stuff,' which later develops into mind and matter, as the neutralists do; or whether we attribute evolution to a general vital impulse (*élan vital*), as Henri Bergson and his followers do; or whether we assume a *nisus* as the driving power of evolving new and unpredictable qualities, as the advocates of 'emergent evolution' do; or whether we take 'space-time' as the matrix of all evolving reality, as S. Alexander and some

relativitists do: evolution in every form starts with potentiality and progresses toward actuality. Even though evolution should be proved to be a fact, the Principle of Change would still necessitate the *prior existence of a Prime Mover* to account for the presence of evolution in the universe. Any other supposition would leave the entire process without a sufficient reason to explain the change and as such would involve a contradiction.

Such, then, is the Principle of Change (Becoming) in its nature and in its consequences. No being, subject to change, can escape its influence, It applies with equal force to things in the material and in the spiritual order of being. As a metaphysical principle, it will be noted, it is linked very closely with the ultimate foundation of possibility.

SUMMARY OF CHAPTER IX

The term 'becoming' means the transition from potency to act; 'change,' in the strict sense, means the transition from one positive state of being to another. But here we take 'change' in the wider sense of 'becoming,' when discussing the Principle of Change.

1. *State of the Question.* The Principle of Change reads:

Whatever changes, is changed by another; or, nothing ever passes from receptive potency to act except under the influence of another being already in act; or, no being can bring itself from receptive potency to act. In every change the result is the acquisition of a *new state* of being.

2. *Proof from Experience.* Physical science acknowledges this principle regarding mechanical motion, as can be seen from Newton's laws of motion. The principle of *potential* and *kinetic* energy also shows that potential energy cannot become kinetic except under the influence of the active agency of kinetic energy, because *inertia* is a universal attribute of all matter. Even the *vital powers* of organisms cannot become active unless stimulated into activity by other agencies; at least they are not the *total* cause of their self-movement.

3. *Proof from Reason.* Every act acquired through change is a new perfection or reality; this new reality demands a *sufficient* and adequate reason; this sufficient reason does not lie in the potential being, because it does *not possess* it before the change; since this new reality is something superadded to it, it can only receive it from

another being already in act. Hence, no being can pass from receptive potency to act, except under the influence of another being already in act.

Thomistic scholastics apply the Principle of Change in all its rigor also to 'operative' potencies and postulate a physical premotion to assist a creatural faculty in its passage from potency to act; this influence is supplied by God. Other scholastics oppose this view on the grounds that such a physical premotion, as described, would destroy all genuine creatural activity and lead to occasionalism; they maintain that the perfection of the act is contained 'virtually' in the faculty, and the change consists in the virtual act becoming a 'formal' act.

4. *Corollaries*. In so far as a being is in act, it is perfect; and in so far as a being is in potency, it is imperfect. In so far as a being is in act, it is a principle of activity; in so far as a being is in potency, it is passive. From the act we can validly conclude to the operative potency; but from the operative potency we cannot conclude to the act. In the real order, act (actual being) must precede potency (potential being).

5. *Application*. Since all beings in the universe undergo change, the universe itself is essentially potential in many respects. And since the world is really a universe, not a *pluriverse*, it demands a Prime Mover Unmoved, who is Pure Actuality and as such necessary to assist all beings in their transition from potency to act.

Hegel's monism is thus seen to be impossible. He attempts to deduce all beings from the idea of 'being in general.' Since 'being in general' is entirely potential, its

self-actualization into ‘determinate being’ is contrary to the Principle of Change. Even if the present universe were the result of *evolution* in some form, a Prime Mover would be required. The very fact of an evolution from a primitive state to a condition of higher organization and perfection involves the transition from potentiality to actuality; this process of change demands an existing Actual Being prior to it, giving it direction and actuality.

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2 *Loc. cit.*, p. 77

3 *Quaest. phil.*, 14 *de ente immat.*, q. 8. (Italics mine — Author.)

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Chapter 10

ESSENCE AND EXISTENCE

ESSENCE AND EXISTENCE ARE CLOSELY RELATED TO POSSIBLE and actual being, and as such also to potency and act. A possible being is one which has a capacity for existence, without having come into existence. An actual being is one which has existence, its capacity for existence having been realized. Existence is an act, a determination, a perfection. A 'possible' being is in potency for the existential act, while an 'actual' being is in possession of the existential act. A possible being can exist, and an actual being does exist. A deep and subtle problem lies at the root of essence and existence; hence, an examination of these fundamental realities will not be amiss.

ESSENCE

To arrive at the knowledge of the essence of a thing is a very difficult task, and it is seldom adequately accomplished. Psychology shows that the natural and proper object of knowledge for the human mind is the material thing, the 'sensible.' The channels through which the material thing reaches the mind are the bodily senses —

sight, hearing, touch, and so forth. The senses perceive only the accidental properties of things. We cannot perceive the essence of things with our senses; we can only infer the essence from the accidental properties by means of our intellect. We must analyze all our knowledge of a being, until we arrive at those elements which are absolutely required and which absolutely suffice to make that being to be just what it is, distinct from any other similar or dissimilar thing. These elements are its essential notes, its essence. Hence, *essence* is defined as *that through which a being is just what it is (id quo res est id quod est)*.

What, for instance, is the essence of man? That which makes him to be simply and positively a 'man,' and not a brute beast or a plant or an inanimate object or anything else. 'Animality' and 'rationality' are found in every individual 'man' and distinguish him from every other being in nature. His animality places him in the genus of 'animal,' and his rationality is the specific difference which places him in the species of 'man' as such. It will thus be seen that the definition of a being according to *proximate genus* and *specific difference* is equivalent to designating the essence of a being. For this reason *St. Thomas Aquinas* defines essence as "that through which a being is placed in its proper genus or species and which we signify by means of a definition indicating what a thing is."¹

Every being consists of essentials and non-essentials, when found in the natural order of the universe. Whatever is present in a thing is 'being'; not 'being' in the wide and abstract sense of 'being in general,' but rather definite degrees and determinations of entity in a *concrete* manner.

A man, as he actually exists, is not merely some indefinite and indeterminate being; he is a concrete being which consists of a definite amount of corporeal, living, sentient, rational substance and which has definite size, weight, shape, color, sex, and all those manifold powers of operation that we observe in our lives. And for all this complex amount of entity there must be a common source and fountainhead of being and operation. This source we appropriately designate the thing's *essence* (Lat., *esse*, to be; *essentia*, being), because it is the ultimate principle in the thing from which it derives whatever it possesses in the line of 'being' in any form.

Philosophers express the essence in various terms, depending on a difference of viewpoint. The essence of a thing is sometimes called *nature*. Out of the essence as out of a matrix all being of a thing is, so to say, born (Lat., *nascor*, to be born; *natus*, born; *natura*, nature); the elements of a thing, which constitute its being, have existence only in so far as they flow (are born) from the essence. Specifically, 'nature' is an essence considered as the ultimate principle of operations in a being. Man, for example, increases in weight and size, digests food, feels pain, thinks, and wills; but all these operations flow from his essence as a 'rational animal' as from their ultimate principle.

The essence of a thing is also called *quiddity* (whatness). This term is derived from the Latin word *quidditas*, which is a technical noun made from *quid* (what). The reason is obvious. When we desire to know what a particular thing really is, we ask the question 'What is it?' And in answer to

this question we obtain a knowledge of its 'whatness'; because, in being told what it is that makes this thing to be just this being and not another, we find out its essential elements (essence) in the definition given.

Oftentimes, too, the essence of a thing is designated as its *substance*. Every creatural being is a combination of 'substance' and 'accidents.' This pair of concepts will receive special treatment later; for the present it will suffice to show why the term 'substance' is used for the term 'essence.' The substance supports the accidents in their being and existence. Iron, for example, has many qualities and properties, like weight, extension, solidity, fusion point, color, etc., but these accidental determinations cannot exist except in the body of the iron; the body or 'substance' of iron is thus seen to be the principle from which such accidents flow and in which they have their being. Hence, the substance is the primary reality in a thing, while the accidents are only secondary realities in it. However, the primary reality in any being is its essence; and that is the reason why the 'essence' of a thing is often called its 'substance.'

The designation of essence as 'substance' can, however, be ambiguous and lead to confusion of thought. We have seen that 'essence' is defined as that which makes a being to be what it is. Accidents, too, are beings, things, realities; and as such they contain within themselves elements which make them to be what they are: weight to be weight, extension to be extension, thought to be thought, motion to be motion, and so forth. Each accident has an 'essence,' taken by itself, which makes it to be just this sort of accident

as distinct from every other. When, however, we look for the essence of any concrete *individual*, considered as a substance endowed with certain accidents, then, of course, it is the 'substance' of this individual which constitutes its essence. Generally speaking, therefore, it is correct to say that the essence of a thing is its substance. The context of the discussion will reveal whether the term 'essence' applies also to accidents.

CLASSIFICATION OF ESSENCE

There are two main kinds of essence, because we can view essence from two fundamentally different standpoints: from the standpoint of its *concrete* existence in the physical world, and from the standpoint of its *abstract* conception by the mind in thought. Correspondingly, we speak of physical and metaphysical essences.

Physical essence is an essence as it exists *concretely in nature*, independent of the mind's thinking. Such an essence is taken objectively, and thereby we mean the sum of those fundamental elements which, in the natural order of the world, constitute the object's innermost being, no matter how our mind may conceive them in its thoughts. Man, for instance, consists of two essential principles in his physical nature, namely, body and soul. The same is true of animals and plants; they, too, consist of a body and a life-giving principle. These various classes of living beings are composed of the same chemical materials (matter) as the determinable element of their physical being; that plants and brutes and men differ so greatly among themselves is

due to their determining life principle (form, soul) which uses this common material according to the needs of its specific nature. These elements or principles constitute the essence of a thing in the *concrete physical* order, irrespective of any mind that may contemplate them, and hence such an essence is called a 'physical' essence.

If such a physical essence is simple, i.e., constituted by a single substantial principle, and not by two or more substantial part-principles, it is a *simple* physical essence. God's essence and that of pure spirits are one in nature and not compounded by two or more substantial parts. But if this essence is composite, i.e., if it consists of two or more substantial part-principles (like body and soul), which together constitute one complete nature, it is a *composite* physical essence.

Metaphysical essence is the sum of the various *grades of being which constitute a thing in the abstract concepts of the mind*. Here we do not consider an object as it exists concretely in the physical world, but according to the manner in which it is conceived by the mind. An example will clarify this, In the physical order of existence, man is a compound of body and soul; notwithstanding this composition, he is a single being or essence. When the mind conceives man as a 'corporeal, living, sentient, rational substance,' the mind is fully aware of the fact that he does not consist of one physical part which is his substance,' and of a second physical part which is his 'body,' and of a third physical part which is his 'vegetant life,' and of a fourth physical part which is his 'sentiency,' and of a fifth and final physical part which is his 'rationality.' Man is a substance,

and this substance is at one and the same time corporeal and living and sentient and rational — one reality expressed in five objectively different concepts, like a set of photographs taken of the same person from five different angles. The five concepts, taken alone by themselves, give but a partial and inadequate idea of the one essence; taken together, however, they supplement each other and give a correct and complete idea of man's essence. The mind must represent the one reality by means of five objectively different concepts, because it is incapable of expressing it in a single all—comprehensive concept.²

Such parts of an essence which are the 'grades of being' of one concrete nature (in reality identical and inseparable, but distinct and separable in thought) are called *metaphysical parts*; and the essence which is conceived by the mind as consisting of such metaphysical grades of being is called the *metaphysical* essence of the thing. Needless to say, it is possible to express a number of such metaphysical grades of being by means of a single term. A corporeal substance is termed a 'body'; a living corporeal substance is termed a 'plant.' A sentient, living, corporeal substance is termed an 'animal.' A rational, sentient, living corporeal substance is termed a 'man'; and a man is often termed a 'rational animal.' A glance shows us that this latter mode of expression is the definition of man according to his proximate genus and specific difference. Whichever way we express the essence of a thing, whether by an enumeration of the single grades of being or by a definition according to the proximate genus and specific difference, in either case we express the *metaphysical* essence of that thing.³

PROPERTIES OF METAPHYSICAL ESSENCES

Metaphysical essences possess a number of properties: they are immutable, indivisible, necessary, and eternal.

Essences are immutable. The sense is: no constitutive element can be subtracted from, or added to, an essence without destroying the essence itself; any essence will cease to be that particular essence, if an element is added to it or subtracted from it. An essence is that which makes a thing to be what it is. To add another essential element to such an essence, or to take an essential element away from it, would mean that the thing would no longer be what it is. For a man to be a 'rational animal;' is his whole essence; that makes man to be precisely a 'man.' If 'rationality' were removed from the concept of man, only 'animality' would remain; but 'animality' alone does not constitute man's essence, and man would no longer be 'man.' Similarly, we cannot add any constitutive elements to an essence. A brute's essence is a sentient, living, corporeal substance; it does not possess 'rationality.' If we add 'rationality' to the brute's essence, it would be a 'rational animal'; thereby it would cease to be a brute and would now be a man. A man's essence, however, is always that of a 'rational animal,' and a brute's always that of a 'non-rational animal': they cannot be changed without ceasing to be what they are. Hence, metaphysical essences are immutable.

Essences are indivisible. A metaphysical essence, as we have seen, may consist of a number of grades of being. These grades of being, however, are not separable physical parts or entities; of the contrary, they are inseparably fused

together into a single, identical substance. Hence, it is impossible to divide them. Were it possible to divide them, they would be separable one from the other. Since essences are immutable, such a separation and division cannot take place without destroying the essence itself. For the same reason no essences are present in unequal amounts or degrees in individuals of the same class. Thus, all men have 'humanity' in the same degree; no individual is 'more man' than another: human nature and human essence is everywhere alike. The same is true of any other kind of being belonging to a definite class, such as lions, eagles, roses, trees, gold, radium, carbon, and the like.

Essences are necessary. This, of course, does not apply to essences in so far as they are found in the actual order of existence as physical things; as such they are clearly perceived to begin and to cease to exist. Individual men, brutes, and plants, for example, live and die; they have no necessary existence. Necessity, as applied to metaphysical essences, means that they must consist of their respective constitutive elements and of no other. Man's essence, for instance, must be that of a 'rational animal,' and it can never be anything else. Did the fact that man is a 'rational animal' ever have a beginning, or can it ever change? Evidently not. Under no circumstances or conditions can man be anything but a 'rational animal'; if he is not that, he is some other being, but he is not a 'man.' Hence, the content of metaphysical essences is a necessary content.

Essences are eternal. This follows from the foregoing. All that is meant by this is that the elements of an essence must be considered as constitutive of that particular essence,

without regard to past, present, or future. That the essence of 'man' consists in his being a 'rational animal' is something which has always been true, is true now, and will remain true forever. Man is simply such an essence, and he can be nothing else. In the idea of God man is just that; and since His ideas are eternal in their content, it is necessarily and therefore eternally true that man is a 'rational animal.' And what is true of man's essence, is also true of every other essence. Metaphysical essences are independent of time.

The unwary mind may become confused in this application of the idea of eternity to essences. It might think that somehow these metaphysical essences exist and possess an eternity of 'existence.' Nothing is farther from the truth. So far as actual existence is concerned, they are nothing. Only God is immutable, indivisible, necessary, and eternal in actual existence. An explanation of 'eternity' will elucidate this.

Eternity is duration without beginning, end, or change. It may be positive or negative. *Positive* eternity is a duration without beginning, end, or change in existence. This is 'real,' when it refers to actual existence; or 'ideal,' when it refers to possible existence. *Negative* eternity is the indifference of a thing toward existing in a determinate portion of time. Thus, we exist at this very moment; but there is no reason why God could not have called us into being at any other time in the past or future: we would simply exist then, and not now. From the above it will be clear that abstract, metaphysical essences possess an ideal and negative, but not a real, positive eternity.

To sum up: metaphysical essences, considered absolutely, as abstractly conceived by the mind according to their constitutive elements, have a content which is immutably, indivisibly, necessarily, and eternally the same. Physical essences, however, when actually existing in the physical universe, have no immutable, indivisible, necessary, and eternal existence; this will become more clear after an examination of the character of existence.

EXISTENCE

The essences, as just treated, were considered as abstract, metaphysical essences; they were not considered as they are found in actual existence. What is 'existence'? This is a primary and fundamental reality which cannot be adequately defined, but only known and recognized as the reality it is. Only those realities can be adequately defined, as logic shows, for which we can adduce a proximate genus and a specific difference. This, however, is not possible for a reality like 'existence.' The only proximate genus that could be used in its definition would be the idea of 'being'; but 'being,' as has already been observed, is no genus in the strict sense of the term. 'Being' can be applied only in an analogous meaning to its inferiors. The best that can be done, therefore, is to obtain a fairly accurate concept of existence by means of a description of its characteristics.

As long as an essence is contained merely as a thought-content in a mind ('intrinsic' possibility) and contained potentially in the producing power of its cause ('extrinsic' possibility), it is still non-existent. When, however, through

the agency of the producing cause, such an essence ceases to be merely in a mind as a 'thought-of' essence and in its cause as a 'possible' essence, it is said to 'exist.' A cause, producing an essence in this manner, gives it 'existence.' *Existence, then, is that state of a being in virtue of which it is present as an actuality, and not merely as a possibility, distinct from the mind and, if it be a produced being, distinct from its producing cause.*

When a thing 'exists,' it is a part of the visible or invisible world of beings. Hydrogen and oxygen, when not united, exist as hydrogen and oxygen and are only potentially water; but when united, water exists, and hydrogen and oxygen are only potentially there. A thousand years ago none of us actually existed; we were, however, potential beings in our forebears and in the creative power of God. Now we are conscious of our own identity as apart from the causes which produced us; we are, therefore, conscious of our 'existence.' It is thus far easier to point out existing things and recognize 'existence' concretely in this way, than it is to explain 'existence as such' in words.

The concepts of 'essence' and 'existence' are closely related, especially in an actually existing being. The attempt to specify the exact character of the distinction between the two has been the occasion for one of the most protracted controversies in philosophy.

THE PROBLEM OF ESSENCE AND EXISTENCE

It is obvious that there is a distinction between 'essences and 'existence,' when we speak of creatural beings. In them

their essence *receives* existence, because they obtain existence through the agency of their producing causes. Their essence is not the ultimate ground of their own existence. If it were, they would have existence in virtue of their particular essence, and then, their essence as such being eternally what it is, they would of necessity possess an eternal existence. That, however, is not, as a matter of observed fact, the case: things begin to exist and cease to exist. Only in God is the essence the ultimate and full ground of His existence. God's essence, being infinitely perfect, includes existence. In Him essence and existence are absolutely identical. Hence, He possesses an immutable, indivisible, necessary, and eternal existence in reality. God simply *is*. In Him there is no potentiality of any kind; He is Pure Act. That cannot be said of finite, creatural beings; they are a mixture of act and potentiality. In their case, existence is to their essence like a determining act to a determinable potency.

Just *what* and *how great* is the *distinction* between essence and 'existence' in an actually existing finite thing? That is the problem. The point at issue is this: Is the distinction between the essence and existence in an actually existing object a *real* or only a *virtual* distinction? First of all, therefore, it will be necessary to understand when a distinction is 'real' and when it is only 'virtual.' The subject of distinctions in their various forms will receive a fuller treatment later; at present, it will be sufficient to restrict our explanation to the two forms of distinction just mentioned, because they are the ones which are involved in this problem.

Objects are *really* distinct, when they are distinct from each other in *entity* and in *concept*. Not only are their respective concepts (definition and comprehension, thought-content) different, so that the concept of the one does not include that of the other, but they are also different in their entity, independent of any mind and its thinking. The mind does not make the distinction here, but merely recognizes the difference which was present in the objects before ever the mind directed its attention to them.

Things are *virtually* distinct, when they are distinct from each other in *concept*, but *not in entity*. They are distinct in concept (definition and comprehension, thought-content), so that the concept of the one does not signify the same content as that of the other; but they are not different in their entity as they are found *in nature*. In nature there exists but one reality, and the mind makes two or more distinct concepts of them.

There is a real distinction between an essence in the 'possible' order and the same essence in the 'actual (existing)' order; because, so long as it is merely possible it is actually nothing, while in the actual order it is a real being among physically existing things. There is no problem here. But, taking an object as it is present here and now *in the actual order of physically existing things*, as it stands here and now *outside the mind and outside all producing causes*, is there a *real* or only a *virtual* distinction between an essence and its existential act (existence)? In other words: Are essence and existence in an actually existing being *entitatively two realities*; or are they at bottom identical and only *one reality in nature*, but with *two*

distinct concepts in the mind? That is the crux of the problem.

The controversy regarding the real or virtual distinction between essence and existence in an actually existing being has held the attention of philosophers, especially among the scholastics, from the Middle Ages to the present day. Men of great caliber, celebrated for the depth and acumen of their insight into philosophic matters, have sought with great eagerness to find a solution for this vexing question; but no one has been able to bring forth arguments which would definitely settle the problems to the satisfaction of all.

There is a very great difficulty in the subject matter itself, since it revolves around two of the most fundamental concepts of the human mind — essence and existence. These two concepts lie so close to the borderland of ‘possible’ and ‘actual’ existence, and the line of demarcation separating them is so fine, that the unhappy controversialist may unwittingly lapse into a begging of the question. In fact, authors have frequently charged each other with this illogical procedure; the recriminations are mutual.

The philosophers of the *Thomistic School* defend the real distinction between essence and existence; it is a cardinal doctrine of their system. A number of scholastics, though not Thomists, follow them in this. Others follow *Suarez* and defend a virtual distinction between essence and existence. There are great authorities in either camp. To do justice to both sides would require extensive quotations, and it is doubtful whether the beginner in philosophy would derive much benefit from these conflicting views. It must therefore suffice here to merely mention the problem.⁴

SUMMARY OF CHAPTER X

Essence and *existence* are a main division of 'being in general.'

1. *Essence*. It is that in virtue of which a being is just what it is. The definition of a being according to its proximate genus and specific difference gives its essence. It is the ultimate principle in a thing from which it derives whatever it possesses in the line of 'being' in any form. It is also called 'nature,' 'quiddity,' 'substance.'

2. *Classification of Essence*. Essence is either physical or metaphysical. *Physical* essence is an essence as it exists concretely in nature, independent of the mind's thinking. It is simple,' if it is constituted by a single substantial principle; it is 'composite,' if it consists of two or more substantial part-principles which together constitute one complete nature. *Metaphysical* essence is the sum of the various grades of being which constitute a thing in the abstract concepts of the mind. These 'grades of being' in a concrete nature are in reality identical and separable only in thought.

3. *Properties of Metaphysical Essences*. Essences, taken metaphysically, are immutable, indivisible, necessary, and eternal. This does not apply to physical essences in their actual existence. Only God's existence has these properties in the actual order.

4. *Existence*. The term does not admit of a strict definition, because existence is a primary reality and concept. It is opposed to mere 'possibility.' It can be

described as that state of a being in virtue of which it is present as an actuality, and not merely as a possibility, distinct from the mind and, if it be a produced thing, distinct from its producing causes.

5. *Problem of Essence and Existence.* The problem is this: Is the distinction between the essence and existence in an actually existing object a real or only a *virtual* distinction? Objects are 'really' distinct, when they are distinct from each other in entity and in concept; they are 'virtually' distinct, when they are distinct from each other in concept, but not in entity. Hence: Are essence and existence in an actually existing being *entitatively two realities*; or are they at bottom identical and *only one reality in nature*, but with *two distinct concepts* in the mind?

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1 *De ente et essentia, c. I: "Illud per quod res Constituitur in proprio genere vei specie et quod significamus per definitionem indicantem, quid est res."*

2 See the author's *Science of Correct Thinking*, p. 80 ff

3 For a more detailed explanation of the terms 'genus,' 'species,' and 'specific difference,' see the author's *Science of Correct Thinking*, p. 55 ff

4 The interested student will find the main points of the discussion elucidated in any standard work on scholastic philosophy. The following selected list of works may be consulted with profit: Gredt, *Elementa philos.* II; Remer-Geny, *Ontol.*; Prick, *Ontol.*; Donat, *Ontol.*; Mercier, *Métaphysique Générale. A Manual*

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PART II

THE TRANSCENDENTAL ATTRIBUTES OF BEING

Chapter 11

BEING AND ONENESS

THE TRANSCENDENTAL ATTRIBUTES OF BEING ARE OFTEN styled 'properties.' In the strict sense of the term, a 'property' is some attribute which is not a direct part of an essence itself, but which flows necessarily from an essence integrally constituted. As such, it must be a positive entity, different from the essence itself. Applying this to the concept of 'being in general,' it is evident that, in the strict sense, there can be no such properties of 'being in general'; because a property that would be different from 'being' would have to be a non-being, and a non-being cannot be an attribute of anything. An attribute that flows necessarily from being must itself be a 'being' and therefore must already be contained in the concept of 'being in general.' However, in a wider use of the word we speak of the properties of being. We call them 'properties,' because they resemble the properties taken in the strict acceptation of the term. Bearing this in mind, *the transcendental properties or attributes of being in general are defined as certain supreme modes or attributes necessarily connected with every being, which are different phases of the same fundamental being, but are not explicitly contained in its*

concept as such. They are called 'transcendental' in as much as they are not confined to any particular category or classification of being, but are found in all, affecting each and every conceivable being: they 'transcend,' or 'go beyond and over,' all categories.

There are six transcendental concepts: *being, thing, something, true, good* (*ens, res, aliquid, unum, verum, bonum*). But of these 'being,' 'thing (reality),' and 'something' are Synonymous; there is no real difference of meaning between them, since all merely signify the opposite of nonentity. A glance at 'one,' 'true,' and 'good,' however, shows that these mean something different in their comprehension, when compared to each other, even though they are identical with the more fundamental concept of 'being.' These, then, *oneness, truth, and goodness*, are the transcendental properties or attributes of being.

In the previous chapters our investigation has considered 'being' only in its concept and in its primary determinations. We must now consider it more in its *relations*. If we consider a being in relation to its constitution, it is 'one.' If we consider it in its relation to another, it may be taken in relation to a knowing intellect, and this adds to it the mode of being 'true'; or it may be taken in relation to an appetitive power, and this adds to it the mode of being 'good.' These three transcendental properties or attributes will be investigated in this order.

THE CONCEPT OF UNITY

When is a being 'one'? Oneness or unity necessarily implies the idea of indivision within a being's own reality. Hence, a being is said to be 'one' when it is *undivided in itself*. This is the most fundamental idea underlying the concept of 'one' and 'unity.' There is no need of comparing a thing with another, in order to speak of its 'oneness'; a thing would be one even if no other being were in existence or possible. God, for example, existed from eternity; He, therefore, had oneness or unity in His own being, irrespective of the fact that He existed alone and no creatural beings co-existed from eternity with Him.

Usually, however, philosophers add another element to this definition, namely, that a being be *divided from other things*. It will readily be observed, though, that this latter is secondary and flows from the first: because a thing is undivided in itself, it will also be divided from all others. Since a thing, according to the Principle of Identity, is what it is, it must primarily be undivided in itself; then, since the thing, according to the Principle of Contradiction, cannot simultaneously be both itself and not itself, it must secondarily be divided from every other. From this it follows that a 'part' of a thing cannot be considered, with respect to some other part of that thing, as being truly one, because it is not actually divided from the other part; a part is united with the other part or parts, to form the unity or oneness of the whole: the whole is one, not the part. On the other hand, a 'compound' would truly be one, because the component parts are not actually divided: the whole has indivision in itself, notwithstanding its composition, and as such it possesses unity or oneness.

Viewed in this light, every being is one, and oneness is a transcendental property of being. *Transcendental unity* can, therefore, be defined as *that mode or attribute of a being in virtue of which a being is undivided in itself (and divided from every other being)*.

From this transcendental unity or oneness we must distinguish *predicamental unity* or oneness. We speak here of the unit or units of numbers. It is called 'predicamental,' because number belongs to the predicament or category of 'quantity.' Predicamental unity or oneness is the same as *mathematical* or *numerical* unity, or oneness, and it is defined as a unit considered as a standard for measuring mathematical or numerical quantity. In the metric system the millimeter, centimeter, meter, kilometer, etc., are mathematical units; in the English system we have the inch, the yard, the rod, the mile. Thus, too, the gram, the liter, the pint, the gallon, the ounce, the pound, the ton, etc., are all mathematical units of measurement. Such units differ with different peoples and with different scientific requirements.

CLASSIFICATION OF UNITY

Beings are said to be 'one,' either because there is unity in them as things, independent of the thinking mind which contemplates them (*real* unity), or because the mind conceives them as possessing unity as a *class*, although in nature they are not actually one (*logical* unity).

Real Unity. Real unity is the *indivision of a thing in its* entity, independent of our mode of thinking. Such a thing

would be undivided in itself and consequently 'one,' even if there were no mind in existence to contemplate it. Thus each object in the world, as it exists for itself, is one: a man, a dog, a bird, a plant, a stone, a star, a proton, an electron. Real unity may be simple or compound.

Real unity is a *unity of simplicity*, or a thing is said to be simple in its unity, when its indivision is such that the thing does *not consist of any parts* into which it could be divided; such a thing is actually undivided and potentially indivisible. A case in point is the soul of man; it is a spiritual being which does not consist of any parts and as such is one and indivisible. The same is true of the essence of God and of pure spirits.

Real unity is a *unity of composition*, or a thing is said to be composite in its unity, when it is a *whole not actually divided into the real parts of which it consists*. A being of this kind has parts within itself, but these parts are so united that they form a unit, a whole, a totality. Man's body, for instance, is composed of head, trunk, and extremities, and each of these consists of various minor parts; but they are not actually separated from one another, so that they would be mutually independent: they form an organism, and an organism is a whole or unit.

If the parts of a composite whole are substantial parts constituting a single nature, there is a *substantial unity*. Man is a single nature, consisting of body and soul. All brutes and plants are composed of a substantial material principle (matter) and a substantial life-giving principle (soul). According to the hylomorphic theory of Aristotle and the scholastics, even inanimate beings consist of two part-

substances, matter and form. If the parts of a composite whole are united because of something accidental, there is an *accidental unity*. There are three possibilities. Two or more substances may be united in an accidental bond; for example, two horses pulling a wagon, a piece of iron attracted by a magnet, the planets and the sun in the solar system. A substance may be united with accidents; for example, the union between the human body and its weight, energy, heat, color. An accident may be united with another accident; for example, the union between the accident of bodily extension in a stone and its modal accident of shape or Size.

The unity of composition may also be metaphysical, physical, or moral. This unity will be *metaphysical*, if the whole consists of grades of being as metaphysical parts, united through mutual compatibility; for example, the metaphysical parts of man's concrete nature are rationality, animality, vegetancy, materiality, and substantiality. It will be *physical*, if the unity of the parts of a whole is effected through the influence of the physical forces of nature; for example, the unity of electrons and protons forming an atom, of various atoms forming a body. It will be moral, if the unity of the various parts of the whole is the result of free-acting agencies; for example, the unity which exists among human societies, governments, firms, armies, families.

Again, if the unity of composition is brought about by means of an inherent tendency of the forces of nature, the result will be a *natural* unity. For example, body and soul in man; feathers, wings, legs, and the other parts of a bird;

roots, stem, leaves, flowers, and fruit in a watermelon plant; hydrogen and oxygen in the formation of water. But if the parts have no natural tendency to form a whole and do so only because an outside intelligence arranges them into a unit, such a unity is *artificial*. Thus, a house, a cap, a watch, an automobile, a ship, a gun, a desk, a book, etc., are artificial units.

In all these cases there is a 'real' unity, a unity of things as things, independent of the mind contemplating them; they have and retain their unity, even though no mind adverts to them.

Logical Unity. This form of unity is entirely dependent on the activity of the mind, and for that reason it is not found in the things of nature as such. Logical unity is the result of a thought process of man's intellect and is due to its generalizing and classifying tendency. The mind groups a number of things, actually divided and separated in nature, into a class on the basis of some similarity existing among them and in this manner unites them into a *conceptual whole*.

Any point of similarity may be taken by the mind as the basis for such a class-idea. Thus, between a human being in America and another in Africa and a third in China there is no possible real unity; they are really separated and divided. And the same fact applies to all human beings, dead or alive, present or past or future. Nevertheless, they all possess the essential similarity of a common human nature — they are 'rational animals.' The mind grasps this similar element in them all and expresses it in a universal idea, the unified concept 'man.' The concept 'man,'

therefore, is a conceptual whole, of which the individual men are considered by the mind as being logical parts.

In this manner the mind develops its universal ideas or class-ideas as conceptual wholes, of which the subclasses or individuals are the logical parts. All universal ideas possess this character. Scientific classifications fall under this head. Beginning with the individuals, they build up class after class, until they cover the entire field in one supreme, all-embracing class. Hence, logical unity is defined as the *indivision of a universal idea (class) considered as a whole of which the inferiors are the parts*.

CONVERTIBILITY OF BEING AND UNITY

When it is stated that being and unity are convertible, the meaning is: *Every being is one or a unit, and everything that is one or a unit is a being*. A brief consideration of the concepts of 'being' and 'one' will show the truth and necessity of this statement. Every being, of whatever kind and character, is either *simple* or *compound* in its nature. This is clear from the definition of these terms: a thing is 'compound,' when it consists of parts; and it is 'simple,' when it does not consist of parts. These terms are contradictory in meaning, and between contradictories there is no middle; hence, according to the Principle of Excluded Middle, every being must be either simple or compound. Whatever is 'simple' is undivided actually as well as potentially, because it has no parts into which it can be divided; consequently, a simple being is undivided in itself and therefore a unit or one. Whatever is a 'compound'

is a compound only in so far and only so long as its parts are united and are not actually divided, because that is what is understood by the term 'compound'; consequently, a compound being is undivided in itself and therefore a unit or one. From this it is evident that the being of every thing, whether simple or compound, is characterized by *indivision*; in other words, every being is a unit or one.

That everything which is a unit or one is also a being, is evident. To be a 'unit' or 'one' means to have the unity of simplicity or the unity of composition. That, however, presupposes that *some thing* has this unity of simplicity or this unity of composition. The concept of the 'unity of composition necessarily involves the concept of a *reality consisting of parts*, and these parts must be real in the whole; otherwise they would be nothing, and nothing cannot be distinguished into parts. For the same reason the 'unity of simplicity' necessarily implies the concept of a *reality consisting of no parts*; if the simple unit were not a reality (being), it would be nothing, and nothing cannot be a unit of any kind, whether simple or compound. Hence, only a being can be a unit or one. From this it follows that 'being' and 'one' are convertible, because they are identical; every being is a unit, and every unit is a being.

Regarding this question, it is well to remember that we are not speaking of *beings*, but of a *being*. We do not deny the plurality of beings in this world, nor do we assert that all beings together form a single being. It is merely a question whether an *individual being* is a unit *in itself*. Concerning a 'simple' being, the matter is easily solved: since it has no parts, it is naturally undivided in itself, and

therefore a unit or one. It is in connection with a 'compound' being that the question of unity can be raised. It consists of parts. Should a being consisting of parts really be considered as 'one,' as a 'unit'? Do not these parts imply a plurality, so that we should speak of 'beings' rather than of a 'being'? It is obvious that the parts of a compound, if actually separated and divided, no longer form a 'compound' at all; each separated and divided part becomes a being of its own, and thus actual division entails plurality. But if they are not actually separated and divided, they are not actually 'beings' either, since in their mutual union they form a unitary 'being.' Now, it is precisely when they are not actually separated and divided, that they form a 'compound.' Hence, so long as a thing is really a compound, it is not a plurality of beings, but *one single being*.

BEING AND INDIVIDUALITY

The unity of being, considered so far, is the unity proper to *all being*, whether possible or actual, abstract or concrete. A 'man,' for instance, is a unit, whether we consider him merely as a possible being who can exist, or as an actual being who does exist, whether we consider his nature in the abstract as a 'rational animal,' or as a concrete reality in the physical world of things: he is considered in all cases to be a compound being consisting of parts which form a complete and unitary nature. And what is true here of man, is true of every other being mentionable or conceivable.

There is, however, a special kind of transcendental unity which is called the *unity of individuality* or the *unity of an individual*; it is defined as the unity of a being which is *one in itself and non-multipliable*. An individual, therefore, is an existing unit of being, incapable of being multiplied; in other words, an individual is 'one' in such a manner that it cannot be divided, so that each member resulting from the division would be the same as the original undivided individual.

The concept of the 'individual' is thus seen to be in opposition to the concept of the 'universal.' The universal is conceived by the mind as a nature common-to-one-and-many; it is capable of being realized in any number of individuals of that class. As a class-nature it is conceived as a (logical, or conceptual) unit; since, however, it is communicable to many, it is multipliable. The individual nature, on the other hand, is conceived as being one for itself alone, so that it is incommunicable to others; there may be any number of individual natures of a certain type and class (e.g., men), but they are *not the same, identical nature*. The individual nature, as an existing individual, since it is not communicable to many, is thus conceived as non-multipliable.

Is this idea of the 'individual' justified? Why should it be impossible for a being to exist concretely in the physical world as a 'universal'? And why must a being, if it exist, exist only as an '*individual*'? For the following reason:

The universality of a universal idea involves the concept of a nature or essence which applies to a *class* as a whole and to every *member* of that class; it is applicable to one-

and-many. Take the universal idea 'man.' It represents a nature or essence ('rational animal') which applies to the whole class of men taken together, as when we state 'Man is mortal'; here we mean that the whole class of men as a class is mortal. But the universal idea 'man' also represents the same nature or essence as applied to each single member of the class of men, as when we state 'Peter is mortal, Napoleon is mortal, Margaret is mortal'; and here we mean that each man is mortal, taken singly and individually. The universal, therefore, is applicable to one-and-many; it is (conceptually) one, but also many. Hence, if the universal could exist *as a universal*, it would exist as 'one' and as 'many' *simultaneously*. That, however, involves a contradiction. As 'one' it would be a unit; as 'many' it would be a plurality: it would exist as a unit and as a plurality simultaneously — an obvious contradiction. It must exist either as a unit or as a plurality; it cannot be both. But we have just seen that every being is one, and oneness excludes plurality. Every being, therefore, if it exist, must be one and singular, not universal and plural. Consequently, no being can exist as a universal, but *only as an individual*.

THE PRINCIPLE OF ABSOLUTE INDIVIDUATION

Every being which exists must exist as an individual being. As such, the individual nature or essence is not communicable to others, but is absolutely restricted to this one individual, e.g., to Peter or Napoleon or Socrates. Individuality, in a philosophic sense, is therefore that state of an existing being in virtue of which it is one in itself and

non-multipliable. This raises an important question: What is the *principle of individuation* which makes an existing being to be an individual, so that its nature or essence is incommunicable to others and is restricted to this one? We can distinguish between an extrinsic and an intrinsic principle of individuation for a being. The 'extrinsic' principle is the cause which gives an individual being its existence. That, of course, is the efficient cause, either God or creature; and with that we are not concerned here. The 'intrinsic' principle of individuation is the ground or reason (principle) in the being itself which *gives individuality* to the being so that it is one in itself and non-multipliable into many. In other words, what is it in the being itself that makes it to be 'this' particular individual (*haecceitas*, 'thisness')? Since this question refers to the single individual, taken absolutely and without any relation to others, this intrinsic principle is called the *principle of absolute individuation*, i.e., the intrinsic principle which gives the unity of individuality to an existing being.

In order to understand the problem rightly, we must compare the 'individual nature' of a being with its 'specific nature.' The specific nature of a being is the result of the union of its proximate genus and specific difference. For instance, the specific nature of man consists of the proximate genus 'animal' and the specific difference 'rational'; the union of the two constitutes the specific nature (species) of man, for 'man is a 'rational animal.' This specific nature is, of course, alike in all men, because all men possess the nature or essence of a rational animal. From this standpoint alone there would be no difference in

the concept of one man and another. In an existing man, however, this general 'specific human nature' becomes an 'individual human nature,' and this is done through the union of the 'specific nature' with 'individuality'; Napoleon, through his individuality, is not merely a *man*, but *this man Napoleon*. In this manner the general 'specific nature' becomes *individuated* in an existing individual by means of a union between it and 'individuality.'

Hence, the question: What is the principle of absolute individuation which makes an individual to be an individual? Is 'individuality' a reality *really distinct* from the reality of the 'specific nature or essence,' united as physical entities in a *physical union*? In this case, the principle of absolute individuation would be the entity of the 'individuality' as such, and not the nature or essence at all. Or, are the 'specific nature' and the 'individuality' in an existing individual *entitatively identical*, with merely a distinction in thought between them, so that they form a *metaphysical union*? In that case, the (formal) principle of absolute individuation would be the entity of the 'individual nature or essence' itself, and there would be only a virtual distinction between 'individuality' and 'specific nature' in an individual. The latter view is correct, and that will now be demonstrated.

If we maintain a *real distinction* in an existing nature between its 'specific nature' and its 'individuality,' we must maintain that the 'individual nature' results from a physical composition of these two entities, so that the 'specific nature,' when it exists, cannot become individuated (i.e., become an individual nature') except through the reality of

this 'individuality.' But this 'specific nature,' *in itself*, must be either a *universal* or an *individual* nature. If it is universal, then a universal nature would exist as a universal; the 'individuality,' being distinct in its entity from the entity of this 'specific nature,' is merely superadded or united to it and cannot change it. As was shown before, however, a universal nature cannot exist in the physical order of things as a universal. Therefore, the specific nature must come into existence as an 'individual nature.' But if it comes into existence as an 'individual nature' the entity of 'individuality' is entirely superfluous and can no longer make it individual, because it is already an 'individual nature' *in itself* when it comes into existence. Consequently, the 'this-ness' or 'individuality' of an existing nature is not really, but only mentally, distinct from the existing nature itself, and the principle of absolute individuation in an existing individual is the *nature* or *essence* itself. In other words, every specific nature, by the mere fact that it exists, thereby becomes an *individuated* (individual) nature. 'Individuality,' therefore, is not an entity added or united to the nature, but solely a manner of existence for it.

The distinction, then, between the 'specific nature' and the 'individuality' or 'thisness' of an existing individual is a mental or *logical distinction*, i.e., there is no distinction between them as 'things,' but there is a distinction between them in their concepts.' That they are distinct in concept, is obvious, because we define them differently; we certainly do not mean the same thing when we speak of the 'nature' and of the 'individuality' of an individual. The question then arises: Is there a ground or reason or *foundation* in the

individuals for making this distinction in concepts? There is. 'Individuality,' as such, is the same in kind for all existing beings; it is simply conceived as that which makes a specific nature to become individuated in this particular individual. But there is a great variety of specific natures among existing beings (e.g., men, plants, animals, inanimate things, etc.), each of which is individuated in a large number of existing individuals, while a still larger number is merely possible and therefore not actually individuated at all. Here we have the ground, the reason, the *foundation in the things* themselves for our making a mental or logical distinction between the 'nature' and the 'individuality' in them. Now, when there is an identity of thing, but a distinction in concept, with a foundation in the thing for making this distinction, this distinction is not real, nor purely mental, but virtual. In an existing individual, therefore, there is a virtual *distinction* between the nature and its individuality.

The Scotists, followers of Duns Scotus, claim that this distinction is a 'formal distinction on the part of the nature of the thing.' In the next chapter we will discuss this formal distinction, and there it will be shown to be invalid.

THE PRINCIPLE OF RELATIVE INDIVIDUATION

In the foregoing problem an individual nature was considered in and for itself, and the problem consisted in determining the principle of absolute determination for this single individual as such. In the present problem the individuals of a certain species, as they exist in the world of

real beings, are taken in relation to each other, and the problem consists in seeking to determine the principle of individuation in virtue of which it is possible to have a number of *individuals of the same species*. To express the problem in a more concrete manner: What is the principle which individuates a specific nature, for example 'man,' into a number of individual natures or individuals, like Peter, Paul, Napoleon, etc., so that it is possible to have more than one individual of that species? This principle is called the *principle of relative individuation*. A solution of the problem has been attempted along two lines.

St. Thomas Aquinas and in general the scholastics follow the view of Aristotle and consider the principle of relative individuation to be *matter affected by dimensive quantity*. They reason as follows: Since it is a question of the plurality of individuals in the same species, the principle of individuation must be a principle of plurality. Plurality implies division and divisibility. The ground or principle of divisibility will, therefore, also be the ground or principle of plurality. Consequently, the ground or principle of relative individuation must be that ground or principle of divisibility which enables a specific nature to be multiplied into a plurality of individual natures. Now, in the physical order, the ground or principle of divisibility lies in *matter* as affected by dimensive quantity (*materia sub dimensionibus signata*), because matter alone, with its threefold dimensions, is *of itself divisible* in such a manner that a plurality of individuals can arise through its division. When a portion of matter is separated from another, due to a division of its dimensive quantity, a plurality is effected in it

which gives rise to a plurality of individual beings of the same species.

This is observed in *inorganic* beings. A piece of gold can be divided into a number of individuals of the same species of gold by a simple division of its quantity. In organic beings a new individual arises through a variety of processes, but they are all effected through a division of the quantity of matter. Whether the generation of new individuals takes place through fission or budding, by means of spores or seed, it always happens through the division and separation of a portion of matter affected by quantity in its threefold dimensions. Quantified matter, then, is the principle of relative individuation.¹

Such is the solution of St. Thomas and his followers. The theory explains the individuality and plurality of *corporeal* beings, as we know them to exist in this physical world. It also explains the plurality of individual human *souls*. Souls, though spiritual in nature, are essentially ordered toward union with a certain amount of quantified matter, so as to form with it a body; man is naturally a compound of soul and matter, and the soul is not a pure spirit. This ordination toward union with matter, since it is a natural exigency of the soul, can never be lost. Hence, even after death a disembodied soul will retain its separate individuality with respect to other souls. However, it also follows as a logical consequence of this theory that *pure spirits* cannot be multiplied as individuals in the same species. They do not consist of matter, nor have they a natural ordination toward union with matter. For this reason a plurality of individual pure spirits, belonging to the same species, is impossible,

because 'quantified matter' is the principle of relative individuation. The result of this theory would be that each single pure spirit represents a distinct species. Of course, the human mind, in its condition of embodiment on earth, has no way of either directly proving or disproving this contention. In virtue of its own observation it cannot know whether or not pure spirits are represented by a number of individuals within the same species; in fact, it is questionable whether the human mind, with the natural light of reason alone, can prove even the existence of pure spirits. But there certainly seems to be no contradiction in the *idea* of a plurality of individual pure spirits within the same species. To deny such a plurality of individuals, then, as this theory does, would rather seem to be a weakness of this theory which places the principle of relative individuation in quantified matter.

For this reason, *Suarez*,² and others with him, offer a different solution of the problem. According to them, the principle of relative individuation lies in the *contingency* and *finiteness* of creatural beings. God, because He is infinitely perfect, subsistent in virtue of His own essence, possesses the unity not only of individuality, but also of unicity: there can be but one God. With creatural beings the situation is radically different; since they are contingent and finite both in essence and existence, they are multipliable into any number of individuals of the same species. Here is the reason.

The possibility of any creatural being to acquire existence is derived from the *imitability* of God's infinite essence. Because God is imitable by created essences, His

omnipotence can create them. That, as was shown before, is the ultimate foundation of their possibility. Since, however, His essence is infinitely perfect, it is infinitely imitable, both *intensively* and *extensively*; if this were not so, it would not be infinitely perfect in itself. That His imitability be infinite 'intensively,' means that His essence can be imitated by all kinds or *species* of being without number; and that it be infinite 'extensively,' means that each kind or species of being can be represented by *individuals* without number. The actual number of such imitations will, of course, never exhaust the possibility of the imitability of God's essence, for the very reason that God's essence is actually infinite as an existing reality. Consequently, no creatural being can ever be so perfect in essence or existence that other individuals of the same species would not be possible. As a result of this, any number of individuals of the same species can receive existence through the omnipotence of God. And this is true both of pure spirits and of corporeal beings; there is no difference between them in this respect, because both classes are contingent and finite. To say that the various species of pure spirits could not be represented by a number of individuals, would seem to be tantamount to placing a limitation on the imitability, and thereby also on the perfection, of God. The principle of relative individuation, therefore, lies in the contingency and finiteness of creatural beings.

These are some of the problems which arise from the transcendental attribute of being as 'one.' They may not have much practical value, but they give us a better

understanding of the ultimate metaphysical constitution of things, and that is always something worth knowing.

SUMMARY OF CHAPTER XI

Transcendental properties or attributes of being in general are the supreme modes or attributes necessarily connected with every being, which are different phases of the same fundamental being, but are not explicitly contained in its concept as such. Such are the attributes of *one, true, and good*.

1. *The Concept of Unity.* Something is 'one' which is *undivided in itself* and divided from every other being. This transcendental oneness or unity must be distinguished from 'predicamental unity,' which is the unity of a quantitative being considered as a standard for measuring quantity.

2. *Classification of Unity.* Unity will be either real or logical.

Real unity is the indivision of a thing in its entity, independent of our mode of thinking. It is a unity of *simplicity*, when the indivision is such that the thing does not consist of any parts into which it could be divided. It is a unity of *composition*, when the thing is a whole not actually divided into the real parts of which it consists. If the compound (whole) consists of substantial parts, it is a 'substantial' unity; if the parts are united together because of something accidental, it is an 'accidental' unity. The unity of composition may also be metaphysical, physical, or moral, depending upon the fact whether the uniting bond is metaphysical, physical, or moral; it may also be a natural or artificial unity.

Logical unity is the indivision of a *universal idea* (class) considered as a conceptual whole of which the inferiors are the parts. In this sort of unity the things are actually divided from each other, independent of the mind, and form no real unity; but the mind unites them into a class-idea or conceptual whole, due to some common element in which they are similar.

3. *Convertibility of Being and Unity*. This means that every 'being' is 'one,' and everything that is 'one' is a 'being.' Every being has unity, either of simplicity or of composition. Everything that is 'one,' is a 'being.' If it were no being, it would be 'nothing' and 'nothing' can have no unity either of simplicity or of composition.

4. *Being and Individuality*. Individuality is a kind of transcendental unity, in virtue of which a being is one in itself and non-multipliable. The individual is opposed to the universal or class. The 'universal' represents a nature common-to-one-and-many; it applies to the class as a whole and to every member of that class. If a universal could exist as a universal, it would exist as 'one' and as 'many' simultaneously; but that is impossible: consequently, a being can *only exist as an individual*, not as a universal.

5. *The Principle of Absolute Individuation*. By this is meant the intrinsic principle which gives the unity of individuality to an existing being. There is only a *virtual* distinction between the 'specific nature' and the 'individuality' in an existing being, because the 'specific nature' cannot exist as a universal, but only as an individual nature.

6. *The Principle of Relative Individuation*. The problem is: What is the principle of individuation in virtue of which it is possible to have a number of individuals of the same species? *St. Thomas Aquinas* and others consider this principle to be matter affected by dimensive quantity. *Suarez* and others consider it to lie in the contingency and finiteness of creatural beings.

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¹ See St. Thomas Aquinas, *Summa theol.*, 3, q. 77, a. 2; *Contra Gentiles*, c. 65; *De Veritate*, q. 2, art. 6. T. Pesch, *Institutiones Logicales*, fl. 1285. D. Mercier, *Ontologie*, 36—42. Coffey, P., *Ontology*, fl. 32, pp. 128 f.

² *Metaph.* disp. 5, sect. 3, n. 17. See also Lehmann, *Lehrbuch der Philosophie*, p. 381

Chapter 12

IDENTITY AND DISTINCTION

UNITY OR ONENESS IS A TRANSCENDENTAL ATTRIBUTE OF BEING. Every being is one or a unit, and everything that is one or a unit is a being: 'being' and 'one' are convertible. As things they are identical, but as concepts there is a distinction between them.

The terms 'identity' and 'distinction' play an important role in philosophy. The terms, however, have a variety of meanings, and their indiscriminate use frequently gives rise to confusion of thought. It will be necessary, therefore, to give a somewhat detailed exposition of both terms. In its fundamental meaning, *identity* is a *sameness between concepts or things*; *distinction* is the *absence of sameness between concepts or things*.

'Things' are real beings, and as such have an entity independent of the mind's thinking process. 'Concepts,' on the other hand, are the result of the mind's activity, and as such have only a mental or logical entity. We, therefore, speak of a real or logical identity, and also of a real or logical distinction.

REAL IDENTITY

Real identity is the sameness (oneness) of things in themselves. A distinction between them may be made in the concepts of the mind. For instance, we speak of man as a 'being' and as a 'substance.' Mentally we make a distinction between these two; but as things they are identical: man's being is his substance, and his substance is his being. Hence, there is a real identity between being and substance in man, notwithstanding the distinction between their concepts made by the mind.

A real identity is a metaphysical identity, when a being is one with itself so that it *can absolutely not change in any manner*. Since God is infinitely perfect, He possesses all being and perfection without regard to past, present, or future. If He could gain or lose any degree of being or perfection, He would not be infinitely perfect. He must, therefore, possess His infinite perfection from all eternity and keep it through all eternity; and this means, that He can absolutely not change in any manner. God, then, is metaphysically identical with Himself, beyond and above all change.

A real identity is a *physical* identity, when a being is one with itself so that it *does not change in its essential reality*, although it can change in its accidental realities. Thus, the human soul, as will be shown in psychology, is spiritual in nature. It has the unity of simplicity, being devoid of any substantial parts into which it could be divided. A simple being of this kind can be annihilated, but it cannot undergo any change in its essence. It can, however, undergo an

alteration in its accidental realities. Every thought, for instance, involves the transition from the potentiality of thinking to the actuality of thinking, and that is an accidental change. Such a being, therefore, is physically identical in its essence.

A real identity is a moral identity, when a being is one with itself so that the *change which takes place in its essential being is successive and gradual*; although it undergoes a change, this change is such that, in the common estimation of men, it still remains the same. Due to this change, none of the original parts may possibly be left after a lapse of time; however, these original parts have been supplanted by new material, so that the fundamental structure or organization has remained intact throughout the entire process of change. A case in point is the human body. The vital functions are continually tearing down old material and replacing it with new material; but this change is so gradual and imperceptible that the general structure of the body remains fundamentally the same to the end of life. This is true of every organism, as long as it lives. So, too, a society or government or nation may retain its moral identity for a hundred or a thousand years and longer. After a few generations not a single original member will be living; nevertheless, the society or government or nation will continue preserve its moral identity, because the organization has not been dissolved, but has retained its structure intact through the successive and gradual assimilation of new members.

LOGICAL IDENTITY

Logical identity is the *sameness (oneness) of things based upon the same concept of the mind*. Logically identical things are not one in reality; they are a plurality of things, each of which is not entitatively the same as the other. They agree, however, in some similar element, and on account of this similarity the mind groups them into one concept and considers them *identical in this respect*. Such things, therefore, are really distinct, but conceptually the same. The similarity existing between such things will lie either in their essence or in their accidents; correspondingly, logical identity will be either in essential or an accidental identity.

An *essential* logical identity is the logical identity of things based upon the *similarity of their essence*. Peter, Paul, Napoleon, and all human beings agree in this that they possess a similar human essence; as 'men,' therefore, they are logically identical in their essence. Men, brutes, plants, and inanimate things are essentially similar to each other in so far as they are 'corporeal'; they are, therefore, conceived by the mind as possessing an essential logical identity. If the essence expressed in the concept represents the genus, so that the things are similar in their 'generic essence,' we have a *generic* identity; thus, men and lions are generically identical, because they possess a similar generic essence, namely 'animality.' If the essence, in which they are similar, is the 'specific essence' or species, we have a *specific* identity; for example, Peter and Paul and Napoleon are specifically identical, since they are alike in their species, namely 'humanity.'

An *accidental* logical identity is the logical identity of things based upon the *similarity of their accidents*. Any accident may be taken as the point of comparison between things, and a conceptual identity will thereby be established between them. If the accident, in which things are similar, is a quality, it will be a *qualitative* logical identity. Thus, snow, milk, sugar, and clouds are qualitatively identical so far as 'white color' is concerned. A toothache, rheumatism, and neuritis, from the standpoint of 'pain,' are qualitatively identical. If this accidental identity is based on similarity in quantity, it will be a *quantitative* logical identity. For instance, two men, each weighing one hundred and fifty pounds, or each having a height of five feet and ten inches, are quantitatively identical.

REAL DISTINCTION

Identity is the sameness between concepts or things; distinction is the absence of identity or sameness between concepts or things. And just as there is a real and logical identity, so there is also a real and a logical distinction.

Real distinction is the absence of sameness between *things different in their reality*, independent of the mind's consideration. The entity of the one is not the entity of the other, even though they be parts of the same totality. A tree and a house are really distinct, because the reality of the tree is different from the reality of the house. The various leaves and branches of a tree are really distinct among themselves, although they are parts of the same tree; and the foundation stones, the bricks, the boards, and the

plaster are really distinct with respect to each other, even though they belong to the house as a whole. A real distinction may be either a 'major' or a minor real distinction.

A distinction is a *major* real distinction, when there is an absence of identity between thing and thing to such an extent that they are distinct from each other as *entities*. Hence, if two or more beings are actually separate, and each exists for itself. they are really distinct beings, with a major real distinction between them; for example, stars, plants, animals, men, metals, buildings, and in general all the individual objects we perceive in the physical world. Again, entities may actually be united in a single being, but so long as they could exist separately, if they were actually divided, they are really distinct among themselves with a major real distinction; for example, the distinction between two substantial or integral parts of the same substance, like apple and apple tree, the branch and its leaves, the right and left side of a stone, the paws and legs of an animal, body and soul in man. So, too, the distinction between a substance and its accidents is a major distinction, if the accident confers a positive entity upon the substance in which it inheres; for example, a corporeal substance and its quantity. Finally, a major distinction exists between accidents, when the entity of each is of a different order; for example, quantity and quality, thinking and willing, warmth and seeing.

A distinction is a *minor* real distinction, when there is an absence of identity between a *thing and its mode*. A 'mode' is the actual determination of a being which is indifferent

toward this or that determination, but without the mode adding a new entity to it through the modification. It is of such nature that it confers no new entity upon its subject and is distinguished from 'nothing' through and in its subject only; the subject can exist without a particular mode, but the mode cannot exist outside the subject which it modifies. A 'mode' is more than a mere logical being (*ens rationis*), and as such is more than a fabrication of the mind; it really affects the subject, independent of the mind, by determining the indifferent subject to a definite manner of being or existence.

Perhaps an example or two will clarify our concept of a 'mode.' Place a coin on the table, with its face downward; and then reverse it, with its face upward. There is a real difference of position here, and it really affects the coin, independent of all thought; but the different positions add no new entity to the coin as such. You cannot separate this position of the coin from the coin itself; the coin is indifferent to various positions, but each position gives a definite 'mode' to the coin. Or, take a lump of modeling clay and shape it, first into a sphere, and then into a cube. This shaping merely shifts the outer limits or boundaries of the quantity of the clay, without adding any new entity to the quantity itself; the shape (sphere, cube, cone, etc.) is nothing but a 'mode' of the quantity (extension) of a body, in as much as it gives determination to this quantity which, of itself, is indifferent to various shapes. These shapes, though, are distinct, because they differ among themselves and actually modify the subject. Again, take curved motion and straight motion. The curvedness and straightness of the

motion are not entitatively different from the motion itself; but they are 'modes' of motion, which imply a difference of direction in the motion, giving this motion a definite determination. Such modes, therefore, are distinct from their subjects with a *minor* real distinction.

Besides a major and minor real distinction we also have an adequate and an inadequate real distinction. A real distinction will be *adequate*, when things are distinct *in their total being*. Such is the distinction between George Washington and Napoleon, between a book and a table, between one piece of gold and another, between two apples or pears or oranges, etc. A real distinction will be *inadequate*, when the things are distinct as *part and whole*. The whole thing is always really distinct from any one of its constituent parts, otherwise the part would be the whole and the whole would be only a part; the whole is the sum of all the parts taken together and cannot be identified with only one of the parts to the exclusion of the others. The whole, however, is *partly identified* with each of its constituent parts; there is, consequently, an inadequate distinction between them. Such is the distinction between a block of ice and its lower (or upper) half, between a dog and its tail, between a plant and its roots, between a house and its roof, between a man and his head, between a pipe and its bowl, etc.

We also speak of a positive and a negative real distinction. It is a *positive* real distinction, if the distinct things are *real (positive) entities* and differ in their entities. For instance, a tree and a stone, a pen and its ink, two books, two elephants, two magazines, two men. It is a

negative real distinction, if there is a *non-entity* either on one side or on both sides of the distinction. On one side: life and death, sight and blindness, health and illness, light and darkness, etc. On both sides: death and blindness, dumbness and deafness, illness and darkness, etc. It may be questioned how it is possible to have a real distinction between non-entities, since they are physically 'nothing.' The fact is that such non-entities are the absence or privation of *definite beings*; since these definite beings are really distinct from each other, their opposites are also really distinct from each other.

Signs of Real Distinction. Bilateral or unilateral preservation in existence after separation; for example, an apple and the tree on which it is growing, a lump of clay and its 'squareness' of shape. The *procession* of the one from the other as from its real principle; for example, light and the sun, child and parent, flower and plant. *Contrariety of concepts*, so that the concepts imply incompatible elements; for example, matter and spirit, man and brute, substance and accident.

LOGICAL DISTINCTION

Our experience shows us that the things in nature do not form one single reality. They are a plurality, a multitude of beings. They are different entities, and as such are distinct in thought and thing; there is a real distinction between them. It is equally true, however, that we often have different concepts of things that are really one in nature; they differ in thought, but not in the thing. Such a

distinction is called *a logical or mental distinction*, and it is defined as *the absence of sameness between concepts of the same reality*. In making this distinction between concepts of the same thing, there is either a reason in the thing itself for making it, or the reason for making it is only in the mind. Correspondingly we have a 'virtual' or a 'purely mental' distinction.

A *purely mental distinction* (*distinctio rationis ratiocinantis*) is the distinction between different concepts of one and the same reality, *without a foundation in the object itself* for making the distinction. The distinction is due solely to the distinguishing power of the mind itself (*ratio ratiocinans*). The content of the different concepts is identical, the meaning is the same; the difference between them lies merely in the difference of the manner of their representation. There are a few general types of this purely mental distinction.

Such are terms and ideas which are more or less *synonymous* in meaning. Examples of this type are: a ton and two thousand pounds; the sky, the heavens, the firmament, the welkin; the sun and the day star; Christ and the founder of Christianity; six and half a dozen. Each concept in its respective group represents the same reality, but in a somewhat different manner. Another type is that of *definitions* and of the *things defined*. Cases in point are: man and rational animal; plant and non-sentient organism; clock and mechanism for measuring time; intellect and rational faculty of thought; water and compound of two atoms of hydrogen and one atom of oxygen per molecule. The concept expressed as the definition is clearer than that

of the thing defined, but they evidently mean the same thing. Another type is found in certain *transcendental ideas*, namely 'being,' 'thing or reality,' and 'something' (*ens, res, aliquid*). The mind here makes a distinction between these concepts, but they are all really identical in meaning with respect to the object for which they stand. In all these types and instances there is a purely mental distinction between the different concepts of the thing, because there is no foundation or reason or basis in the thing itself for making these distinct concepts of it.

A *virtual distinction* (*distinctia virtualis, distinctio rationis ratiocinatae, distinctio rationis cum fundamento in re*) is the distinction between different concepts of one and the same reality, *with a foundation in the object itself for making the distinction*. Here the distinction is not due solely to the distinguishing power of the mind; the mind is induced to make the distinction because of the nature of the object itself, and the object, as it were, forces the mind to make the distinction (*ratio ratiocinata*). The limited power of the mind is incapable of expressing the whole reality of the object in one adequate concept and for that reason expresses it in a number of concepts, each of which expresses a phase of the one reality; the concepts are, therefore, not identical in meaning, when compared to one another, but they all refer to the same reality taken as it is in itself. This will become clearer when we consider the two kinds of virtual distinction, based upon the two kinds of 'foundations' which are possible: they are the virtual distinctions with a perfect and with an imperfect foundation in the thing.

The virtual distinction with a *perfect foundation* in the thing is the virtual distinction in which the concepts are so distinct in comparison to each other, although they apply to the same reality, that they are *objectively different in content*. They are so distinct that the concepts are not mutually inclusive, but each has a definition different from that of the other. The concept of man's essence is made up of these five distinct and objectively different concepts: 'rationality, animality, life, body, substance.' These concepts, however, as has been mentioned before, do not represent five distinct and entitatively different *realities* in man. If they did, a preposterous result would ensue for man. His 'substance' would be really distinct from his 'corporality'; these two would be really distinct from his organism or 'life'; these three would be really distinct from his 'animality'; and these four would be really distinct from his 'rationality.' Man would then be a five-part being. That, however, is not the case: man is one being, a *single substance*; and this substance is a single reality which is bodily, living, sentient, and rational at the same time. Man is not a 'substance' with one part of his being, a 'body' with another, an 'organisms with another, an 'animal' with another, and finally a 'rational being' with another: he is all these things at once and as one.

So far we have seen that we have five objectively different concepts for one and the same reality. Is this a purely arbitrary distinction on the part of the mind, without a foundation in the nature of man himself? On the contrary, man's *nature* contains the *foundation* or reason or basis because of which the mind makes these objectively different

concepts of the one reality of man. These concepts represent *grades of being* which, though really only a single essence in man, are rightly distinguished from one another, because they can be, and actually are, *separately realized in other beings*. Pure spirits, for instance, are 'substances,' but not bodily substances; here we see one grade of being, as found in man, separately realized. Chemical elements and compounds are substances, but they are '*bodily substances*'; here we see two grades of being of man separately realized. Plants are bodily substances, but they are '*living, bodily substances*'; here we see three of man's grades of being separately realized. Brutes are living bodily substances, but they are '*sentient, living, bodily substances*'; here we see four of the five grades of being present in man separately realized. Man himself is a sentient, living, bodily substance, but he is a '*rational, sentient, living, bodily substance*,' with an additional essential element of his own, namely 'rationality.' Each grade of being thus gives rise to a different type, when added to the other or others; in man, however, we find all five united into a single substantial reality. Here, in the very nature of man, we have the reason or basis or *foundation* for making a distinction of five different concepts concerning his one essence.

To sum up: When the mind forms objectively different concepts of the same reality, and these concepts have as their foundation the fact that they can be separately realized in nature in different kinds of being (though in this individual kind of being under consideration they stand for

one reality only), then we have a *virtual* distinction with a *perfect foundation* in the thing.

Man's essence was chosen as a typical example, because we are fairly familiar with it. But cases of such virtual distinctions are found in all creatural beings, whenever we distinguish between the various *metaphysical grades* of their essence. Virtualists also contend that the distinction between *essence* and existence in an actually existing being is only a virtual, not a real, distinction. A case in point, too, is the distinction which we make between the concepts of the *soul* in man, when we speak of it as a 'vegetant' soul, a 'sentient' soul, and a 'rational' soul. The soul is the life-giving principle in an organism. A plant demands a soul for its vegetant functions; a brute demands a sentient soul for its sentient functions; man's rational operations demand a rational soul. Since man has the triple vital functions of vegetancy, sentiency, and rational thought, we speak of a vegetant and sentient and rational soul in man. There are, however, not three souls in man; he has *one soul* which performs these triple functions. Since, though, we have a foundation or reason in the nature of the soul itself for making a distinction, the distinction we make in man between a vegetant, sentient, and rational soul is a virtual distinction with a perfect foundation.

Besides a virtual distinction with a perfect foundation in the thing we have a *virtual* distinction with an *imperfect foundation* in the thing. It is the virtual distinction in which the different concepts of the one reality are distinct in such a manner that they are not mutually exclusive but rather *include each other implicitly*. It will be manifest that, since

the one contains the other implicitly, they can never be realized separately, because the one cannot be present without the other. The reason, however, why the mind makes a distinction between them lies in the object itself. There is thus a *foundation in the thing*, but is not as adequate a foundation as the one of the virtual distinction with a perfect foundation. Examples will clarify the meaning of this.

Such a distinction exists between the concept of '*being*' and its inferiors. In man, for instance, there is no complete and perfect difference between 'being' and 'substance,' 'being' and 'body,' 'being' and 'life,' 'being' and 'sentiency,' 'being' and 'rationality.' By the concept 'being' we mean anything that is 'not nothing.' But that includes absolutely everything conceivable; consequently, 'being' includes within itself implicitly also substance, body, life, sentiency, and rationality. Similarly, these various concepts include implicitly the concept of 'being' within themselves, because their reality is a form of being. Hence, the distinction between 'being' and any particular kind of being is based upon an imperfect foundation.

We have another instance of this sort of distinction in the *attributes of God*. God's wisdom, mercy, power, intelligence, etc., are virtually distinct with an imperfect foundation. This is due to the *infinite* perfection of God's nature. In themselves the concepts of wisdom, mercy, power, intelligence, etc., are objectively different and can be separately realized: this is seen in creatures. When, however, it is a question of *infinitely' perfect attributes*, they cannot be separately realized. If infinite wisdom and

infinite power could be separately realized, it would mean that each would not include the other; but by that very fact neither of them would really be 'infinite,' because each would lack the perfection contained in the other. Each attribute of God is really identical with the other and with His essence; and a plurality of infinite perfections, separately realized and existing, is a contradiction in thought. Where, then, is the *objective foundation* for making the distinction between them? Not in God Himself directly, but in the creatures, in as much as we perceive wisdom and mercy and power and intelligence appearing separately in creatural beings. Hence, the objective foundation for making the distinction between these attributes in God is *imperfect*.

Another instance worthy of special attention is the distinction between *being, one, true, and good*. We have seen that every 'being' is 'one,' and that everything that is 'one' is a 'being.' The same will be shown later regarding truth and goodness. All these concepts are convertible. These concepts are distinct, and the distinction between them is not purely mental; but each contains the other implicitly, and they cannot be separately realized. Hence, the distinction between these concepts is a virtual distinction with an imperfect foundation in the thing.

From the above exposition it will be clear why these distinctions are styled '*virtual*.' The concepts are distinct and different. Since, however, they apply to a single reality, they do not stand for distinct physical parts in this reality, which together make a physical composition. Rather, they stand for *metaphysical parts* which are united together in a

metaphysical composition. These parts are present in the thing *not actually* as parts, but only potentially or *virtually*.

THE SCOTISTIC FORMAL DISTINCTION

John Duns Scotus (1266 [or 1274]—1308) is famous for his deep and sharp thinking. One of his noted doctrines is his *formal distinction, actual on the part of the thing* (*distinctio formalis actualis ex natura rei*). Scotus did not deny any of the distinctions mentioned above; he admitted a real distinction, a virtual distinction, and also a purely mental distinction. But he contended that there is still another distinction which must be placed between a real distinction and a virtual distinction; it is not as great as a real distinction, and it is greater than a virtual distinction which has only a ‘foundation’ in the thing.

Scotists claim that there are not only ‘entities’ present in an object, between which there is a distinction of thing and thing (real distinction), but an object also has certain *realities* or *formalities* which are actually, though not really, distinct from each other. A ‘real’ distinction would thus be a distinction between things, and a ‘formal’ distinction would be one between *formalities*. By a ‘formality’ (*ratio formalis*) Scotus understood a positive thought-content or reality, objectively different from another, which in the individual under consideration is so essential to it that the thing cannot exist without it, nor can this thought-content exist except in this individual. An illustration will help to understand the Scotists’ meaning.

Man is a rational animal. 'Rationality' and 'animality' are present in man's nature. These are two completely different concepts or *formalities*: 'animality' is one, and 'rationality' is another formality. Although both thought-contents represent one thing in man, they are two entirely different 'formalities' or, in other words, diverse concepts. This, they say, will be clear from a simple comparison. The 'animality' of man is the same as the 'animality' of the lion or of any other animal. But the 'animality' of a lion is *actually* distinguished from 'rationality.' Consequently, the 'animality' of *man* must also be *actually* (though not really, as between thing and thing) distinguished from his 'rationality.' Since, therefore, 'animality' and 'rationality' are not distinct as different entities and things, they are not really distinct in man; but they are *actually distinct* in man as *formalities*, independent of any mind. Hence, there exists between 'animality' and 'rationality' in man, due to his nature and independent of any mind, a formal distinction, actual on the part of the thing.

We must *reject* this Scotistic formal distinction as invalid, because it is impossible for a distinction to be actual without being also real. If something is actually distinct from another, *independent of the mind*, it must be *ontologically* distinct from this other, i.e., distinct in its being or entity. The Scotists themselves admit that a formal distinction is 'actual on the part of the thing (*ex natura rei*),' and that implies that the distinction is not logical, but ontological. Since every distinction involves plurality, an actual (or formal) distinction involves an ontological plurality, i.e., a plurality in being or entity. Hence, if these

‘formalities’ bring in an actual distinction in the nature of the object, independent of the mind, they thereby also bring in an ontological plurality, and this can only be a *plurality of entity*. But a plurality of entity means not one thing, but ‘different things’; and between one thing and another thing, between entity and another entity, there is a *real* distinction. Therefore, if the formal distinction is ‘actual on the part of the thing,’ it is a ‘real’ distinction and no longer merely ‘formal.’ In other words, the whole conception of the ‘formal distinction’ is invalid, because it amounts to a ‘real distinction.’ And since it is clear that ‘animality’ and ‘rationality’ (and all other metaphysical grades of being) are not really distinct, but form a single reality in man, the fact of the separate realization of ‘animality’ in the brute (e.g., in the lion) is merely the *foundation* for a difference of concepts on the part of the thinking mind. But this means a ‘virtual’ distinction with a foundation in the thing. It is obvious, then, that there is no special distinction, formal or other, midway between a real and a virtual distinction.

In the view of some modern Scotistic scholars, the interpretation of the Scotistic formal distinction, as given above, is based upon a misunderstanding of the true meaning of Duns Scotus. According to their opinion the formal distinction coincides essentially with the virtual distinction with a foundation in the thing. The former stresses the objective factors in the thing which give rise to the mental distinction, while the latter emphasizes the subjective factors of the mind which expresses the single (but equivalently multiple) reality with two or more distinct concepts. “Because of the well-known difference in mental

temperament St. Thomas, the Intellectualist, saw and felt the distinction primarily as a mental distinction, and so defined it as a *distinctia rationis*, admitting, however, that it has an antecedent and independent foundation in reality, whereas Scotus, with his more realistic temperament, was more powerfully impressed by the objective factor and so emphasized the fact that it is a *distinctio a parte rei*; adding, however, that it was not simply a real distinction between thing and thing, but only a distinction between a *res* and its *realities* that is, between a thing and its intrinsic modes (*formalitates*), and consequently admitting that it is a mental distinction in so far as we have two mental concepts representing one thing of nature."¹

If this view can be upheld, much of the opposition to the Scotistic distinction must be dropped. Most scholars, however, are convinced that Scotus maintained a 'formal distinction' which occupies a position midway between a 'real' and a 'virtual' distinction; such a distinction, as shown, must be rejected.

SUMMARY OF CHAPTER XII

Identity is the *sameness (oneness)* among two or more concepts or things. *Distinction* is the *absence of sameness (oneness)* among two or more concepts or things.

1. *Real Identity*. It is the *sameness (oneness) of things in themselves*, independent of the mind. It is a 'metaphysical' identity, when a thing is one with itself so that it can absolutely not change in any manner. It is a 'physical' identity, when it is one with itself so that it does not change in its essential reality. It is a 'moral' identity, when it is one with itself so that the change which takes place in its essential being is successive and gradual.

2. *Logical Identity*. It is the *sameness (oneness) of things based upon the same concept of the mind*. This is an 'essential' identity, if it is based upon a similarity of essence. It is an 'accidental' identity, if it is based upon a similarity of accidents.

3. *Real Distinction*. It is the *absence of sameness between things different in their reality*, independent of the mind. This is a 'major' real distinction, when the absence of identity between things is such that they are distinct from each other as entities. It is a 'minor' real distinction, when it is the absence of identity between a thing and its mode. A real distinction is an 'adequate' real distinction, when things are distinct in their total being. It is an 'inadequate' real distinction, when the things are distinct as part and whole. A real distinction is a 'positive' distinction, when the distinct things are real (positive) entities. It is a 'negative'

distinction, when there is a nonentity either on one side or on both sides of the distinction.

4. *Logical Distinction*. It is the *absence of sameness between concepts of the same reality*. A 'purely mental' distinction is the distinction between different concepts of one and the same reality, without a foundation in the object itself for making the distinction.

A '*virtual*' distinction is the distinction between different concepts of the same reality, with a foundation in the object itself for making the distinction. The virtual distinction will have a 'perfect' foundation in the object, when these concepts are objectively different in content. The virtual distinction will have an 'imperfect' foundation in the object, when these concepts include each other implicitly.

5. *The Scotistic Formal Distinction*. It is a distinction, maintained by Scotus and his followers, that has a position midway between a real and a virtual distinction: it is *actual*, though not *real*. By 'formality' in a thing is understood a positive thought-content or reality, objectively different from another, which in the individual under consideration is so essential to it that the thing cannot exist without it, nor can this thought-content exist except in this individual. Such 'formalities' are the metaphysical grades of being, like 'rationality' and 'animality' in man.

This formal distinction is *invalid*, because an *actual* distinction is a real distinction. Whatever is actually distinct from another, independent of the mind, must be *ontologically* distinct, i.e., distinct in its being and entity. Distinction involves plurality, and actual distinction must, therefore, involve an ontological plurality, i.e., a plurality in

being and entity. That, however, means a 'real' distinction. Consequently, the Scotistic formal distinction is a *real* distinction.

READINGS

Coffey, P., Ch. IV; Rickaby, J., Bk. I, Ch. IV; Hugon, Ed., Tr. II, Ch. I, art. 3; Mercier, D. Card., pp. 451, 452; Aristotle, *Metaph.*, V.

1 Berard Vogt, O.F.M., "*Note on the Formal Distinction' of Scotus*," in *Franciscan Studies*, Vol. 3, August, 1925, p. 40.

Chapter 13

BEING AND TRUTH

EVERY BEING, CONSIDERED IN ITS INNER CONSTITUTION, IS undivided and one. Unity or oneness is a transcendental attribute of being as such. Every being possesses this attribute absolutely and essentially; it is a unit in itself, even though no other being existed. As a matter of fact, however, no being is a completely isolated reality, because there is a vast multitude of beings in existence. This induces numerous relations between beings and beings.

Among these various relations, two are *transcendental* for every being: *truth* and *goodness*. Every being in its very nature has a relation to intellect and will, in virtue of which it is 'true' and 'good.' The will can only strive for something in so far as a thing is apprehended by the intellect as good; consequently, a being has a relation to the intellect before it has a relation to the will. Now, the relation of a being to the intellect is the *relation of truth*, because it is the purpose of the intellect to acquire truth. The truth of a being is, therefore, logically prior to its goodness. Hence, we must treat of the transcendental attribute of truth in a being before we treat of its goodness.

CONCEPT OF TRUTH

Truth always has a reference to the mind or intellect. Truth is an attribute of something that is *known*, and it is the mind or intellect that knows. Naturally, being what we are, truth exists *for us* primarily in our own intellect, and we come to understand the nature of truth by observing our own mental operations.

By 'truth' we ordinarily mean *true knowledge*, and by 'true knowledge' we mean *true judgments*. Ideas are more in the nature of a prerequisite for knowledge than real knowledge itself; they must be united in a judgment in order to be knowledge, and then this judgment is either true or false. To have the ideas 'weather,' 'warm,' 'cold,' and 'freezing' in the mind, is not a complete form of knowledge, nor can we say that such ideas are true or false. But if we make a pronouncement about the weather and assert that 'The weather is warm,' we have a mental judgment, and this judgment either agrees with the actual conditions of the weather or it does not; if the weather actually is warm, our judgment is 'true,' and if the weather is not warm, our judgment is 'false.' Correspondingly, we have 'truth' or 'falsity (error),' and both reside in the *judgment of the intellect* in so far as the intellect agrees or disagrees with the thing about which it judges. Here, then, truth is seen to be an attribute of our knowledge and judgment.

Truth, however, can be taken in a different sense. We also speak of the *truth of things*. It is a matter of everyday experience to hear people apply truth to things, but they may use the term 'genuine' instead of 'true.' People, for

instance, speak of 'true friends' and 'false friends,' 'true (genuine) diamonds' and 'false diamonds,' 'true (genuine) money' and 'false (counterfeit) money,' etc. The *objects themselves* are thus declared to possess truth or falsity. The meaning is obvious. Man has an idea of a thing in his mind, and this idea of the thing is expressed in a definition or mental judgment. This idea forms the type, the standard, the norm to which the object must conform in order to be 'true.' If the object under consideration actually agrees with this type-idea, it is 'true'; otherwise it is 'false.' In such a case, truth is an attribute of the thing and resides *in the thing*.

The truth-relation between a thing and the intellect is thus seen to be such that either the intellect agrees with the thing or the thing with the intellect. Both forms of truth have this in common that there is an agreement between intellect and thing. *Truth in general*, therefore, is the *agreement (conformity) between intellect and thing*. This is truth in its widest and most fundamental meaning. The definition does not state whether the intellect must agree with the object or whether the object must agree with the intellect. And this formulation of the definition is purposely expressed in such an indefinite manner, because truth may be had either way. The definition must cover both forms of truth, that of the intellect and that of the thing. Reversely, of course, *falsity (error) in general is the disagreement (disconformity) between intellect and thing*.

Our concept of truth and falsity, it will be observed, is evolved out of the relation which exists between objects and our own *human* intellect. This is simply due to the fact that

we are directly aware of no other mind but our own. It would be wrong, however, to think that truth exists only in the relation of an object to our own intellect. Truth must exist in the knowledge of *any intellect*, whether divine or creatural, because, wherever there is an intellect, there can be an agreement between it and an object.

From what has been said so far, it will be manifest that we must distinguish between truth and truth. This brings us to the *kinds* of truth.

KINDS OF TRUTH

Truth may be *ontological, logical, or moral*. The essential ideas underlying this classification have already been expressed in the foregoing exposition of the concept of truth, but an explanation of these kinds of truth will be of assistance in acquiring a better understanding of the nature and extent of truth.

Ontological (metaphysical, objective) truth is the *agreement of a being with the intellect*. It is of the nature of ontological truth that the intellect possesses an idea of the thing which is taken as the norm, the standard, the pattern, the type of the thing; and with this idea the thing must agree. In so far as the object agrees with the type-idea which the intellect has of this object, it is said to be 'true' — ontologically true. Ontological truth, therefore, resides in the *objects*, because they must conform to the intellect and its idea of the object. A few examples will illustrate the matter.

An artist desires to paint a picture of the Madonna. He has not seen her, but he has within his imagination an image or type which he intends to reproduce on the canvas. He paints the image. If the picture agrees with the image previously present in his mind, it will be ontologically true, because it is in conformity with the image as conceived before the painting was made. An architect plans a building, and an engineer designs a bridge; if the building and the bridge are erected according to plan and design, they agree with the preconceived idea of them and as such are ontologically true.

In the case of man, ontological truth can have only limited scope. Whenever man makes things agree with his intellect, he must take existing materials and fashion them into something which conforms to his plan. They are products of his ingenuity and skill, like buildings, machines, clothes, furniture, instruments, etc. In all these things, however, he does not make the intrinsic essence of the objects he assembles ontologically true, because they must already exist before he can use them for his purposes. The *intrinsic essence* of things is ontologically true because they are in conformity with the ideas of God who created them; He made them agree with His eternal ideas of their being.

Logical (mental) truth is the *agreement of the intellect with a thing*. Here the relation between intellect and thing is reversed: the thing is prior, and the idea posterior. This relationship constitutes *true knowledge* of a thing. It is obvious that every being has its own peculiar entity and reality, independent of the intellect which thinks of it; things are what they are, even though no mind forms an idea of

them. When, however, a mind does form an idea of a thing in order to have some knowledge of it, this knowledge will either correspond ideally with the reality or not; if it corresponds, it is 'true,' otherwise it is 'false.' The mind has knowledge of a thing when it forms ideas of its reality and unites them in a declarative judgment regarding this reality. Ideas represent reality. Truth can be had in affirmative as well as in negative judgments, so long as the fact expressed corresponds to the fact existing.

Besides ontological and logical truth, there is also moral truth, and it is defined as the *agreement of speech with thought*. When we make a judgment in our mind regarding a certain thing or fact and then make a statement in speech which expresses this judgment in words, we have 'moral' truth, because our speech agrees with our thought; but when our speech disagrees with our judgment, the discrepancy constitutes moral falsity (falsehood, lie). Thus, when a person is called upon to 'say the truth,' the meaning is that he should state, according to his understanding of the matter, what he judges to be the fact. He may, of course, be mistaken as to the real nature of this fact, but that is not the point. So long as his verbal statement agrees with his mental judgment, he says the truth, even though his statement does not actually agree with objective reality. On the other hand, if his verbal statement is the opposite of his judgment, he will be telling a lie, even though the falsehood happens to correspond to objective reality; in such a case the falsehood is intentional, while the objective truth is merely accidental.

Moral truth may be considered as a form of *ontological* truth, if we view it solely from the standpoint of an agreement between intellect and thing. The mind's knowledge is the standard in ontological truth, and the thing must conform to it in order to be true. In moral truth the mind's knowledge is also the standard to which the verbal statement, as a thing, must conform in order that the verbal statement may be considered true.

Of the three kinds of truth, *ontological truth* mainly concerns us here. Ontology treats of being in general in its supreme determinations, attributes, and categories. Ontological truth, like oneness, is a metaphysical and transcendental attribute of being and as such belongs to ontology proper. This cannot be asserted of logical and moral truth; they are not attributes of being in general. Logical truth involves the validity of our knowledge and belongs to epistemology, while moral truth has its proper place in ethics.

THE ULTIMATE FOUNDATION OF TRUTH

Because things are known by a mind, the mind possesses logical truth. The only reason, however, why the mind's knowledge about things is logically true is due to the fact that things consist of positive elements of being which the mind recognizes to be present in the things: things are 'knowable' by their positive elements of being, and it is by these elements that things are 'known' by the mind. *Logical truth*, therefore, has its foundation in the *being* of the things known, because man's mind presupposes the being

of the things 'knowable' before it can actually become 'known.'

With regard to *ontological* truth, the relation of the human mind to the things is reversed. Here the knowledge of the mind is the type or standard to which the things must conform in order to be true. This abstract knowledge is expressed in the definition, and this *definition* then becomes the standard or *type* to which a particular object must conform in order that it can be styled 'true.' The type-idea in the human mind, however, does *not constitute* or *make* the things; the beings in the world are what they are, independent of the type-idea present in the human mind. Consequently, the ultimate foundation of the ontological truth of the things in this world is not found in the human mind.

This will be clearer when we consider the fact that human *knowledge varies* from mind to mind concerning the true nature of things; regarding most things, man has *no accurate* and comprehensive knowledge at all; and of numberless beings in this world the human mind has *no knowledge* whatever. Man's knowledge is at best extremely fragmentary and subject to many errors, even in the most ordinary things. It is evident, then, that the ultimate foundation of the ontological truth of the things in this world cannot reside in the relation of agreement which these things have to the human mind. Water was 'true' water, and gold was 'true' gold, and the solar system was a 'true' solar system, long before a human mind existed to know them. But if these things possess ontological truth in their being *after* a human mind comes to know them, they

must have possessed a *fundamental* ontological truth *before* a human mind came to know them. Obviously, then, the type-ideas of the human mind are not responsible for the ontological truth of things, so as to be the ultimate foundation of their ontological truth.

Nevertheless, there can be no ontological truth in the things except in so far as they conform to an intellect and its type-ideas of these things. Since the intellect in question cannot be the human intellect, there must be some *intellect other than human* to which all things must conform; they will then owe their ontological truth to their agreement with this intellect. Ontological truth, as we have seen, lies in the *intrinsic reality* of the things; that intellect, then, will be the ultimate foundation of their ontological truth which is the ultimate foundation of their intrinsic reality. We thus see that the very reality and nature of all the things in this world demands an intellect over and beyond the world itself, and that is the Divine Mind. God gave all things their intrinsic reality by creating them. He created them according to the *exemplars or type-ideas* which He had of them before He gave them existence. These exemplars were, therefore, antecedent to the existence of the things created. By being created, the creatural things were made to *conform to God's ideas* of them, and therein consists the *ontological truth* of their being.

Even God's *infinite essence* possesses *ontological truth*. He is a being, a reality; as such, He is a 'true' being, 'true' reality. The agreement of His essence to His mind is an absolute agreement, because it is identical with it. God, therefore, is Truth. God is absolute, eternal, infinite

ontological Truth; creatures *have* relative, temporal, finite ontological truth. And this applies as well to all *possible* beings: they possess ontological truth, because they are in conformity with the type-idea which God has of them in His mind. Ontological truth, therefore, is an essential attribute of all being, divine and human, actual and possible, necessary and contingent. Consequently, *the ultimate foundation of all truth consists in the essential conformity of all things to the Divine Mind.*

CONVERTIBILITY OF BEING AND TRUTH

‘Being’ and ‘truth’ are convertible. This is to say: Every ‘being’ is ‘true,’ and whatever is ‘true’ is a ‘being.’ That should be clear from what has just been said.

Every being is either potential or actual; it is either finite or infinite. The *finite* being, whether actual or potential, has its actual or potential reality only because God can think it and make it. God, however, can think it and make it only because it is in some manner an imitation of His essence. But by imitating His essence they imitate His ideas, because His essence and ideas are identical in reality, due to the infinite perfection of His being (as will be shown in theodicy). Finite beings, therefore, whether actual or potential, have reality only by agreeing with the ideas of God. To agree in their reality with God’s ideas means to agree with His intellect; and that means to be ontologically true. Consequently, every finite being is ontologically true.

God is *infinite* essence. There is a conformity of His essence with His ideas, because His essence is identical

with His ideas; and this is the most exalted and perfect conformity possible. God's infinite essence, therefore, is ontologically true. Now, God's infinite essence and all finite beings, actual and possible, comprise all being. Consequently, all being is ontologically true, and *ontological truth is a transcendental attribute of being as such.*

We may even speak of all things as *ontologically* true in their relation to the *human* mind. This, of course, does not mean that the human mind has the correct idea of all things or even has a knowledge of all things; that would obviously be false. What is meant is simply that all beings, by the very fact that they are entities, have positive elements of essence and as such are intelligible, even though they are not actually known by the human mind. The mind *can know* them. So far as their reality is concerned, they are such that the human mind can make true *ideas and definitions* of them, to which they will always conform. Hence, even with regard to the human mind, things possess a *potential and fundamental*, if not an actual and formal, ontological truth.

Every being, then, is true. In order that 'being' and 'truth' be convertible, it will also be necessary to show that everything which is 'true' is a 'being.' The proof is simple. We have just shown that every being is true. Ontological truth is, therefore, a transcendental attribute of being. As an attribute of being, this ontological truth must be something. If it were not something, it would be 'nothing,' and 'nothing' cannot be the attribute of anything. But if ontological truth is not 'nothing,' it partakes of the nature of 'being.' Consequently, whatever is ontologically 'true' is a 'being.' Ontological truth and being are thus seen to be

convertible and identical: they are the same reality, viewed from two different standpoints.

THE EXISTENCE OF FALSITY

By falsity we understand the disconformity between thing and intellect. As there are three kinds of truth, there are also three kinds of falsity: moral, logical, and ontological.

Moral falsity is the disconformity of speech with thought or judgment. It is also called falsehood or lie. That lies are told, needs only be mentioned. *Logical* falsity is the disconformity of the intellect to the thing. 'Error' is another name for it. That logical falsity is often present in the mind is palpably demonstrated by all the mistakes, confused opinions, and conflicting systems of thought existing throughout the world at all times. The very fact that we change our views and correct our judgments is the surest indication that logical falsity occurs frequently in our judgments about persons, things, and events. There can be no question about the occurrence of moral and logical falsity.

The matter, however, is very different when we speak of the occurrence of *ontological falsity*, the disconformity of thing to intellect. Can we really apply ontological falsity to things? We certainly speak of false peace, false culture, false diamonds, false friends, false ideals, false teeth, and so on. In order to avoid confusion, we must distinguish between ontological falsity in an absolute and in a relative sense.

In an *absolute sense* there can be *no ontological* falsity. A thing that is ontologically true cannot be ontologically false; that would be a contradiction in terms. But every being is ontologically true, as we have just proved. Consequently, no being or thing can be ontologically false. In order to be ontologically false in an absolute sense, it would be necessary that such a being disagree with every possible intellect; if it agreed with a single intellect, it would no longer be ontologically false, but ontologically true. Now, every being, in so far as it has any reality at all, must always agree with the intellect of God, because it could not be what it is unless it agreed with His intellect: it is what it is, because God created it according to the type-ideas in His intellect. Hence, every being is ontologically true with regard to the ideas of God.

In a *relative sense* we may speak of ontological falsity, namely in relation to the *human mind*. That we do not always succeed in making the products of our skill and art agree with the plan or type we have in our mind, is a matter of almost daily occurrence. An artist is seldom satisfied with the work of art he produces. A typist intends to make an error-free copy, but all too frequently she will find a mistake. A builder seldom erects an edifice which is perfect in every detail of the plan. The mechanism which an inventor constructs does not always perform as smoothly as the genius of its maker expected. In the case of imperfect *artificial products*, therefore, we may legitimately speak of relative ontological falsity.

We do not, however, restrict the term 'ontological falsity' to artificial products made by man; we apply it very often to

natural things. Thus, we speak of German silver as 'false silver'; or we say that it is not true, not genuine silver. What do we mean? We mean that it has the general *appearance* of silver, and the mind in consequence is apt to judge that it is true silver. This, of course, would be a *false judgment*, since German silver is only an alloy of copper, nickel, and zinc. Hence, by means of an extrinsic denomination or analogy we transfer the falsity, which is really only in the judgment (logical falsity), over to the object itself (ontological falsity). But German silver is really and truly what it is, namely copper, nickel, and zinc, agreeing perfectly at all times with God's type-idea of it; and so it is always ontologically true with reference to God's mind. As a matter of fact, even with reference to man's intellect German silver cannot be said to be really ontologically false, because not all human minds will be deceived into judging it to be true silver; this is proved by the fact that we actually do know the composition of German silver as an alloy of copper, nickel, and zinc. If it were *really* ontologically false with reference to the human mind, no human mind would be able to discover its component elements.

No matter, then, what the appearances of things may be to man, they have an *intrinsic constitution* which is always ontologically true, at least so far as the mind of God is concerned; for man they may, of course, be the *occasion* of false judgment. 'False diamonds' are 'true paste'; 'false teeth' are 'true porcelain'; 'false virtue' is 'true vice'; 'false gold' is 'true pyrite'; 'false economy' is 'true waste'; 'false faces' are 'true masks': their true nature *can* be known by man and is known always by God. In an absolute sense,

therefore, ontological falsity does not apply to any being; in a relative sense, namely with reference to man, ontological falsity may be said to exist in a limited manner. Ontology, since it views all things from a metaphysical standpoint, treats of things in their intrinsic reality, without regard to the impression they may produce upon a fallible human mind; considered metaphysically, all beings, of whatever kind and nature, are and must be *ontologically true* under all circumstances.

SOME CHARACTERISTICS OF TRUTH

Truth is *primarily in the intellect*, not in the things. The whole import of language testifies to the fact that truth is considered to be principally a qualification of *knowledge*. Knowledge is 'true,' and knowledge is 'false'; judgments are 'true,' and judgments are 'false.' Even when speaking of God, truth is primarily predicated of His knowledge and His mind, not of His essence. Only secondarily, by means of an analogy, is truth attributed to the reality of things. For created minds the reality of things is the cause of logical truth, in as much as this reality makes an impression on the mind and enables it to conform to the thing; for this reason we call things 'true,' and this analogy is an analogy of attribution, just as food is called 'healthy' because it causes health in a body. *Ontological, transcendental truth*, however, is not applied to things fundamentally for the reason that they are the 'cause' of true knowledge. With regard to created minds this is clear, because every being is transcendently true, independent of all created minds.

Nor can we say that their transcendental truth is due to the fact that they cause God's knowledge to be true, because things cannot produce any effect in the Infinite Being; God's knowledge of them is true antecedent to their existence, and they possess ontological, transcendental truth precisely because they agree in their reality with the knowledge of them which exists in God's mind from eternity. They are made to conform to God's intellect, and because of this essential conformity of their reality to God's intellect, they are said, by an *analogy of proportion*, to be ontologically 'true.' True knowledge, and therefore truth itself, is primarily an attribute of God's intellect and only secondarily an attribute of things. Hence, truth is primarily in the intellect, not in the things.

It is frequently asserted that *truth is eternal*. Is this assertion correct? If we speak of God as the First Truth, it is evident that it must be eternal, because it is identical with His essence. If we speak of *created truth*, we must distinguish. *Logical* truth in creatural minds is not eternal in itself, because these minds are not themselves eternal, but temporal, and logical truth resides in these created minds as a qualification of their knowledge; this logical truth is, therefore, also temporal in character. Neither is the *ontological* truth of created beings, considered in itself, eternal; their ontological truth consists in their entity, viewed as conforming to (God's) intellect, and since their entity is created and temporal, their ontological truth must also be created and temporal. Considered, however, from the standpoint of God's eternal knowledge and power, created truth can be said to *be eternal with a sort of*

extrinsic eternity. This means, that things are eternally true, not because they possess any reality in themselves which would be eternal (for that is created and temporal) but because their reality (whether possible or actual) is eternally in conformity with God's eternal knowledge of them. Thus, it is eternally true that man is a 'rational animal,' because that is God's eternal idea of 'man,' even if as a matter of fact man himself is a created and temporal being so far as his existence is concerned.

This will also explain in what sense it can be said that *truth is immutable*. If something is eternally true, it is also immutably true. As 'things' things change, and their ontological truth changes with them. But if we consider their conformity to God's ideas of them, all created beings (whether possible or actual) are immutably true, because they must always agree with God's knowledge of them, even when they change in their being from moment to moment.

THE TRUTH OF CONTINGENTLY FUTURE EVENTS

Can judgments or statements about contingently future events be styled 'true' or 'false'? The question raises an interesting problem. In order to understand the issue properly, it will be necessary to explain the meaning of *contingently future events*.

It is *not* a question here of future events which are *predetermined* in their physical causes, so that they must and will happen according to the laws of nature. Such future events would be, for example, eclipses of the sun and

moon. Events of this sort are in themselves predictable, provided one has a sufficient knowledge of the causes which will produce this particular effect. The judgment that 'A solar eclipse will take place at 10:00 a.m. on July 4, 1960' is at this very moment definitely true or false. There either will be an eclipse at the time designated, or there will not; if there will be, the statement is true, and if there will not be, the statement is false. Such events of the future are not contingent; they are *determined* events, and there is no question about the truth of their occurrence or non-occurrence, even if we do not know them.

It is a question of *contingently future events*. A contingent event is one that can, but need not, occur; and if the event is a matter of the future, it is a contingently future event. It is an event which may or may not take place in the future, and the doubtfulness of its occurrence results from the fact that it is *not predetermined* in its cause. Rather, the cause is of such a nature that, although every requisite for action is present, it can act or refrain from action. This will be the case when an action or event is dependent on the decision of a *free will*. In the presence of all conditions necessary for action, a free will can perform the action or omit the action. For example: Shall I walk to the library tomorrow? This walk is a contingently future event, because it depends on my free choice. I myself do not know at the present moment whether I will or will not take this walk. Two statements are possible here: 'I shall walk to the library tomorrow' and 'I shall not walk to the library tomorrow.' These are contradictory statements, and one of them should be true and the other false.

Some philosophers claim that 'truth' and 'falsity' cannot be applied to contingently future events of this character. Neither of these two statements can be styled 'true' or 'false' *at the present moment*; they can become 'true' or 'false' only after the will makes its decision at the time of the event's occurrence, but not before. Other philosophers contend that one of these two contradictory statements is true and the other false *at all times*, whether present or past, and even from eternity. Who is right? Having specified the problem as given above, we must say that contradictory statements of contingently future events which depend on the free will are simply, as future events, *definitely true or false in themselves*. As such they are known to God from all eternity. And now for the demonstration.

Let us take the two contradictory statements given above, namely 'I shall walk to the library tomorrow' and 'I shall not walk to the library tomorrow.' Since these statements are contradictory, one of them will be *definitely true tomorrow* and the other definitely false. Supposing, as a matter of fact, I actually do walk to the library tomorrow afternoon. Then, as I walk, my walking to the library is a present definite occurrence, and the first statement is *then definitely true*; the second statement will of necessity be definitely false. In that case, however, if anyone states *today* that 'I shall walk to the library tomorrow,' he is making a statement which is also *definitely true today*, even though he is speaking of an event which is contingently future today and will only occur tomorrow. But if a contingently future event is definitely true at the present moment, it was also definitely true yesterday and last year and from all

eternity. And since God, who is infinitely perfect in His knowledge, must know all truth, He also knows all contingently future events, i.e., those dependent on the choice of free will.

The same argument can be formulated in a slightly different way. That I am writing *at this moment*, is an event which is dependent on my free will; I decided to write, and I am writing now. *Yesterday* my present writing was a contingently future event. Since, however, my writing is here and now a definitely true event, I can obviously make the definitely true statement that 'I am writing.' If, then, I had made the statement yesterday that 'I shall write tomorrow,' it would have been a definitely true statement yesterday; on the other hand, the contradictory statement would have been a definitely false statement. But if it was definitely true yesterday, it was definitely true for the whole past and from all eternity.

A past event is definitely true in itself, irrespective of whether its occurrence is due to a necessarily acting or freely acting cause; and since it occurred, the statement of its occurrence is definitely true, simply because of the entity and existence which it *then had in itself*. A *present* event can also be expressed in a definitely true statement, even if it be due to the free will, simply because of the entity and existence which it *now has in itself*. And for the same reason a *future* event, whether necessary or free, is definitely true in itself and can be expressed in a definitely true statement, simply because of the entity and existence which it will *then have in itself*. When the future event actually happens, it will be a fact; consequently, it is even

now a true future fact and can, absolutely speaking, be expressed in a statement which is also true. That man, in the weakness and limitation of his knowledge, cannot know these contingently future events, is beside the point: future events being future facts, God must know them simply because they *will* happen.

God's knowledge of contingently future events does not in any way militate against the freedom of their causes in acting. Such events will not happen because He knows them; He knows them because they will happen. Knowledge, whether past, present, or future, does not necessitate any action, because it is not the cause of the action. If an event is produced through a necessary cause, God will know the event as such, and if it happens as the result of free choice, God will also know that as such. All events without exception possess *ontological truth* in themselves and must conform to the intellect of God, because His mind encompasses everything that is true. That all contingently future events really possess ontological truth, is obvious: in all contradictory statements regarding such events (for instance, 'I will walk' and 'I will not walk'), one of these statements must agree with the actual event which will happen in the future, for it is impossible for both to happen and for neither to happen, due to the Principle of Contradiction and Excluded Middle; and the one alternative of the contradiction, the event which will actually occur in the future, will have reality and existence, and as such has ontological truth. Since, however, all ontological truth agrees with God's intellect, God knows it before it happens.

Such is the nature of truth. It is a transcendental attribute of all being, creatural and divine, possible and actual, necessary and free, past and present and future.

SUMMARY OF CHAPTER XIII

Just as every being is 'one,' so it is also 'true.' Truth is a transcendental attribute of being as such.

1. *Concept of Truth.* We arrive at the concept of truth from our own experience. Truth is true knowledge and consists in true judgments, in so far as our *judgments* agree with reality as it is in itself.

There is also truth in *things*. The definition of a thing is the norm or type to which things must conform in order to be called 'true.' Truth in general, therefore, is the *conformity between intellect and thing*. Falsity is the *disconformity between intellect and thing*.

2. *Kinds of Truth.* There are three kinds of truth: ontological, logical, and moral. *Ontological* truth is the conformity of a thing to the intellect. *Logical* truth is the conformity of the intellect to the thing. *Moral* truth is the conformity of speech to thought. Ontology is mostly concerned with ontological (metaphysical, objective) truth.

3. *The Ultimate Foundation of Truth.* *Logical* truth depends on the positive elements of being present in a thing, because it is the conformity of the intellect to the thing; its foundation, therefore, is the being of the thing known. Ontological truth, since it is the conformity of thing to intellect, must have its ultimate foundation in that intellect which is the ultimate foundation of the intrinsic reality of things. This is not the human intellect, but the intellect of God, according to whose type-ideas all things have been created. Even God's essence conforms to His

intellect, because it is identical with His intellect. Hence, the *ultimate foundation* of all truth. logical and ontological consists in the essential conformity of all things to the Divine Mind.

4. *Convertibility of Being and Truth.* Finite beings and also the infinite essence of God are all in conformity with His mind and as such are ontologically true. Therefore, every being is 'true.' Truth is a transcendental attribute of being, as just shown; since an attribute is not nothing, it must be something, and as such it partakes of the nature of 'being.' Consequently, all being is true, and whatever is true is a being.

5. *The Existence of Falsity.* That moral and logical falsity (lies and errors) occur, is a matter of daily experience. In an *absolute* sense, *ontological* falsity cannot exist, because all beings are transcendently true and agree at least with the Divine Mind. In a *relative* sense, i.e., with regard to the agreement of things with the human mind, things may be ontologically false in a limited way; products of skill and art often deviate from the plan in man's mind. If natural things are called 'false,' it is only because their appearance is the occasion of false judgments for man.

6. *Some Characteristics of Truth.* Truth is *primarily in the intellect*, not in the things. Truth is primarily considered to be a qualification of knowledge. Ultimately all things are true because they agree with God's knowledge; truth, therefore, resides primarily in God's knowledge and secondarily in the things.

Truth can be said to be eternal in so far as God's knowledge, with which all things must agree, is eternal.

And in so far as God's knowledge is immutable, the truth of things is also *immutable*.

7. *The Truth of Contingently Future Events*. Events are contingently future when they are dependent on a free-acting cause; the free will of man is such a cause. Can such events be termed 'true' or 'false'? They can. Contingently future events can be expressed in two contradictory statements, one of which must agree with the event that will happen; this statement will be true and its contradictory false. Since the future event will have ontological truth when it happens, it must agree with God's knowledge. God's knowledge being eternal, the contingently future event must be known by God from eternity.

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Chapter 14

BEING AND GOODNESS

SO FAR WE HAVE CONSIDERED TWO TRANSCENDENTAL ATTRIBUTES or properties of being, namely, unity and truth. Being, considered in itself, in its inner constitution, is undivided, one; it has the property of oneness or unity. This is an absolute property of being, because it pertains to every being, irrespective of the fact whether other beings exist or not. Being, considered in relation to a knowing intellect, is true; it has the property of truth. Truth always involves the relationship of intellect and thing, and truth is, therefore, not an absolute but a relative property of being. And just as being always has a relation to intellect and thus is true, it also has a relation to appetency and as such is *good*. 'Goodness,' with 'unity' and 'truth,' is a transcendental property or attribute of all being.

THE CONCEPT OF GOODNESS

Like the concepts of 'being,' 'one,' and 'true,' the concept 'good' is a primary and fundamental concept of the human mind. It is more easily recognized in the concrete than analyzed in the abstract. We can point it out more readily

than define it. We can, of course, define it in a descriptive manner, but the defining terms will, as a rule, hardly be more clear than the term to be defined. We must, therefore, begin by consulting our experience of the 'good' and end by formulating our experience in a descriptive definition.

When are things said to be 'good'? *Aristotle* gives this definition: "Good is what all desire."¹ A thing is good in as much as it is appetible or desirable; goodness, then, consists in the appetibility or desirability of a thing. Now, this is really a definition of the good by its *effect* in another being, namely, by the desire engendered by it in some being. This does not tell us anything about the thing itself, *what* in it is such that others should desire it. Why do things desire something? Evidently because this something is considered to be 'good' for it. Desirability or appetibility, therefore, presupposes *something in the thing* which is 'good' and on account of which it is actually desired or is at least desirable. There must be something positive in a being which influences another and causes this other to desire it as 'good,' and it is precisely this characteristic which must constitute its 'goodness.' What is it?

What a thing desires or seeks as good in another, depends entirely on the sort of individual the thing is. A magnet seeks iron, an ionized atom seeks a stray electron, a bee seeks honey, a lion seeks food, a plant seeks sunlight, a man seeks knowledge, etc. It would be useless to attempt to discover the various kinds of 'good' which each individual being strives for in the course of its existence. We must attempt to discover the *general feature common to all things* that are styled 'good,' if we wish to arrive at a

fundamental concept of goodness. Viewed in this light, we find that a being strives for something as good because the latter satisfies some need, some demand, some exigency, some natural tendency or aptitude; it helps it in some way, or completes it in some fashion, or gives it pleasure in some form, or actualizes some potentiality of its nature, or has the capacity to realize some end and purpose in it. These various viewpoints express the one fundamental fact that a thing is good because it agrees with some natural tendency or appetency. *Goodness*, therefore, is *the suitability of a thing to a natural tendency or appetency*.

‘Natural tendency’ or ‘appetency’ is used here in a very wide sense and includes every kind of *striving power*. This striving power may be a conscious appetency, as we observe it in man (rational appetite) and in the animal (sensuous appetite); or it may be unconscious, as we perceive it in the affinity of chemical elements. The affinity between protons and electrons to form an atom, or between chlorine and sodium to form salt, or between hydrogen and oxygen to form water, is as manifestly an instance of ‘natural tendency’ as is the striving of a cat for milk or of a man for knowledge. In each case we have the satisfaction of some natural need and demand, of some appetency,’ but in different ways. It is obvious, too, that in each case the one is ‘good’ for the other for that very reason.

By the very fact, though, that beings have such tendencies and appetencies, it is clear that they cannot have their *complete actuality* from the beginning. If they had all their entity, if they possessed all the reality they are capable of receiving, they would no longer tend toward, or

strive for, anything. To do so means that there is still some potentiality in their being which needs and demands realization. And in so far as something is suitable for this fuller realization and actualization of a being, it will be 'good' for it. What, in particular, is suitable to a being, will naturally depend upon what this being *needs* and what the other being has *to offer* for the satisfaction of this need. To designate each particular need of a being and its corresponding good would require a detailed description of each individual being — a task both impossible and unnecessary. This will explain why the definition of 'goodness' is worded so vaguely as the 'suitability of a thing to some natural tendency or appetency.' To define a good more closely would require a catalogue of individually suitable realities, and that would reach far beyond the scope of ontology which seeks to determine the 'good' in its widest and most fundamental concept, applicable to every type of specific and individual 'good.'

The general concept of 'good,' therefore, consists in this that something is suitable to a thing. Now, all beings have a nature of essence peculiar to themselves as members of a class and as individuals. And each such nature has a very real and definite *Purpose or end within itself* which it tends to bring to full completion and *perfection*. A thing is perfect when it has everything that it is supposed to have according to the exigencies of its nature. Perfection, then, is the full actualization of a being according to the exigencies of its nature relative to the purpose or end of its essence. This may be taken absolutely or relatively. Absolute individual perfection would be the complete and final actualization of

a being in its totality; relative individual perfection would be the actualization of a being at a particular *stage of its development* as demanded by it at this point. In either case it would at the moment have as much reality as its nature demands.

For instance, a chemical element has a limited nature whose purpose or end reveals itself in its tendency to unite with other related elements so as to form a definite compound with them. A plant has the natural purpose of developing as a vegetant body into a mature plant. A brute has the natural purpose of realizing itself as a sensuously conscious animal to the full extent of its powers. Man, being a rational animal, has the natural purpose of actualizing himself as a fully developed sense-organism and rational person. What serves man's natural end or purpose would not necessarily be good for a being in a lower order; and what serves the purpose of a chemical compound or plant need not be good for a brute or man. Each nature thus implies a specific natural tendency within itself, and things will be 'good' for it in so far as they suit its nature. Nothing, however, will suit the nature of a being more than the very entity of this nature; that is an 'intrinsic' good for a being. Consequently, all natures or *essences are good* for the individuals who possess them. On the other hand, any *outside beings* which help to develop or actualize their natures or natural tendencies will be good for them; they are an 'extrinsic' good for a being. Sunshine, for example, is an extrinsic good for a plant: food, for the bodily welfare of man.

In the light of this analysis of the data of our experience we find that the concept of 'good' and 'goodness' has a very wide range of application. And thus we may eventually define the *good* as any *reality which suits the nature of the being which strives for it*. This definition would fit the nature itself which desires and strives as well as the reality which this nature desires and for which it strives. 'Goodness' in the abstract would then be defined as the suitability of a reality for the nature of the being which strives for it.

CLASSIFICATION OF GOODNESS

There are various standpoints from which we may view the good, and correspondingly we may distinguish between different kinds of good. The main divisions are as follows:

Ontological, Physical, Moral Good. A thing is an ontological good, when it is a good in its very *entity or reality*. Every being, since it possesses a certain amount of entity or reality, is an ontological good; this is due to the fact that its entity or reality is suitable for the tendency of its own nature to be what it is and to perfect itself and to retain its perfection. In as much, too, as things are good in themselves by possessing their own entity, they are capable of being desired and striven for, so as to perfect the nature of some other thing. Ontological goodness is also called 'transcendental' or 'metaphysical' goodness, because, like unity and truth, it is convertible with being. All beings are thus an ontological good, considered in themselves and for themselves.

A thing is a *physical* good, when it satisfies the demand of the *nature of a being*. Each being has its own specific and individual nature, and as such it has a very definite end and purpose. The physical exigencies of man, for instance, differ from those of a horse, a cow, a cat, an oak, or an apple. He is supposed to have a head, a trunk, two arms, and two legs; two eyes, two ears, two hands, two feet; well-functioning organs of sense, digestion, locomotion, etc. These things, for man, are physically good, and none of them may be missing or defective, if man as a whole is to be considered physically good. And so it is with every physical being.

A thing is a *moral* good, when it has everything demanded of it by the *moral law*. An action may be ontologically and physically very good, but it may be morally very bad. An example will clarify this statement. A soldier defends his country in a just war. In an attack by the enemy, he kills an enemy soldier with his rifle. On another occasion an enemy soldier comes toward him, carrying a flag of truce; him he also kills with his rifle. In both cases his action kills a human being: in so far as the action is an entity, it is ontologically good; in so far as his aim is true and physically successful for the purpose of man-killing, it is physically good. But there is a difference in the morality of the action in the two cases. In the first it is justifiable homicide and morally good, because it is in accord with the moral law which demands of him the defense of his country as a duty; in the second it is murder and morally bad, because the moral law requires that he respect the enemy's person when he carries a flag of truce.

Absolute and Relative Good. This is another division of 'good.' An *absolute* good is anything which is suitable *to a being itself*, irrespective of other beings. Any reality which a being possesses, whether substantial or accidental, is an absolute good. A *relative good* is anything which is suitable to another being. Thus, human nature, including every part and function which belong to this nature, is an absolute good for man. Food, drink, clothes, shelter, etc., are a relative good for man. Absolute and relative *good*, however, must not be confused with absolute and relative *perfection*; the concepts are by no means synonymous. Perfection always implies that a being have everything that it is supposed to have according to the requirements *of its nature*, either its complete and final actualization (absolute perfection) or that amount of actualization which it requires at a particular stage of its development (relative perfection). But the actualization of any nature is an absolute good for itself; hence, perfection, whether absolute or relative perfection, is a subdivision of 'absolute good,' and it cannot be a 'relative good,' since the latter is always a good for another. Again, a being may be good without being perfect. For example, if a man is blind in one eye, his vision is still an absolute good for him, but this vision is imperfect, because man is supposed to have vision in both eyes. It may be well to remember, however, that terms like 'perfect' and 'perfection' admit of a variety of interpretations, and in many instances 'goodness' and 'perfection' are used more or less synonymously; the context of the discussion will then fix the meaning of the terms employed.

Objective and Subjective Good. By *objective* good we mean anything that is good in *itself*. Any absolute or relative good, as just defined, is an objective good in this sense. By *subjective* good we mean the actual possession of an objective good. Thus, a diamond ring, considered in itself, is an objective good; the ownership and possession of it is a subjective good for the one who owns and possesses it.

Real and Apparent Good. A good is *real*, when it is judged to be good for a being, and it *actually is* good for that particular being. Such is physical well-being for an animal, knowledge for man, sunlight for a plant, rain for the soil, etc. It is an *apparent* good, when it is judged to be good for a being, but it is *actually not good* for it. Food may seem a 'real' good for a critically ill patient, but it may be very harmful; under the circumstances it is an 'apparent' good. Pleasure is a physical good; but if its enjoyment is in opposition to the moral law, it is an 'apparent,' rather than a 'real,' good. This does not mean, of course, that such things are not ontologically or physically good in *themselves*; as such each is a real good. Relative *to another*, however, they may do harm; viewed from this standpoint, they are an apparent and not a real good. The difference of standpoint for the judgment should be carefully noted; the difference is often overlooked, resulting in a serious confusion of ideas and ideals. Thus, love of country, when it engenders in the citizenry a great spirit of service and sacrifice for the welfare of all, is a lofty patriotism and a real good; but when it urges national aggrandizement at the cost of right and justice, it is a false ideal and only an apparent good.

The distinction between real and apparent good is especially important in the case of man as a composite being of *body and soul*. He is a rational animal. This composite nature of man gives rise to conflicting tendencies and needs. As an animal or sentient being, he may crave for satisfactions in a multitude of ways. As a rational or moral being, he may desire and demand satisfactions of a sort at variance with those of his natural body. The result will be a conflict between his 'higher' and 'lower' tendencies, and in this conflict tendencies of a rational and moral character must obtain primary consideration, because man is distinctively 'human' in consequence of his rational and moral nature. A proper balance must be struck between these opposing tendencies and needs. To accede to the lower demands at the expense of the higher would be irrational and immoral. *For man*, therefore, considered as a rational and moral being, much that is a physical good for his body must be adjudged an 'apparent,' and not a 'real,' good for his person.

Disinterested, Delectable, and Useful Good. A *disinterested good* (*bonum honestum*) is any good considered merely as giving perfection, irrespective of any pleasure derived from its possession. The perfection which the disinterested or upright good is capable of conferring may be physical, intellectual, or moral in character. Health, knowledge, and virtue are such. A *delectable good* (*bonum delectabile*) is a relative good which gives pleasure and enjoyment to another. What is really desirable here is the thing itself which gives pleasure; oftentimes, however, the pleasure itself becomes the object of desire. Food, drink,

and the proper use of sex are delectable goods; in many instances, though, the pleasure which accompanies these things becomes the sole object of the will. A *useful good* (*bonum utile*) is a relative good which is desired as a means to acquire perfection or pleasure. There is always an ulterior end in view when a good of this kind is striven for. Examples are: clubs, balls, and links, for a game of golf; automobiles, trains, airplanes, and boats, as means of transportation.

GOODNESS AND VALUE

Much is written by modern philosophers on *value* and the metaphysical nature of value. In so far as we are interested in a thing, care for it, desire it, seek it, strive for it, this thing shows itself to be invested with 'value,' to be 'valuable.' Wherein precisely does the 'value' of a thing consist? Why is it considered 'valuable'?

Obviously, to be 'valuable' and to be 'good' are closely related terms; for something is said to be 'good' when it is the 'object of desire,' when it is 'suitable' for a being, and that, as will be observed, is practically equivalent to saying that it possesses 'value.'

The immanent and final end and purpose of every being is its own *perfection*. All things which a being desires and seeks are desired and sought in order to realize this ultimate end and purpose. Whatever, then, helps to perfect it, is in so far 'good' and 'valuable' for it; it is viewed as means to this end. Ultimately, of course, this perfection is

also desired and sought and so becomes the ultimate, intrinsic 'good' and 'value' for the being.

Value, therefore, can be viewed either as an end or as means. As the ultimate and intrinsic end it is the perfection of a being. As means it is the capacity or suitability of a thing to perfect another. 'Value,' then, is either perfection itself or the ability to give perfection; whatever is perfect or is perfective, is thereby 'valuable.' Hence, we can define *value* as that which is *perfect or perfective*.

What, then, is the *relation* between 'goodness' and 'value'? Value, considered as perfection, coincides with the absolute or intrinsic good, because it is identical with the reality, substantial and accidental, which a being possesses. Considered as perfective, it is the relative or instrumental good, because its perfection is a good for another being. Everything, therefore, has value in so far as it is a good for itself or for another.

'Goodness' and 'value' are thus seen to be synonymous terms, when viewed in their metaphysical implications.

THE CONVERTIBILITY OF BEING AND GOODNESS

Goodness, like unity and truth, is a transcendental and meta physical attribute of being and as such convertible with it That is to say: Every being is good, and whatever is good is being.

Every being is good. This, of course, must be rightly understood. It means that every being is *ontologically good*; every being, in so far as it is a reality at all, is good. An individual nature need not be a perfect specimen of its

class; it may be very imperfect and even defective in many respects. Nevertheless, the entity that it actually possesses is ontologically good. The correct sense of the thesis, therefore, is this: Every being in so far as it is a positive reality, possesses intrinsic or *Ontological goodness*.

Every being is either a substance or an accident and as such has its own individual nature and essence. Whatever is suitable for a nature and essence is good. But nothing could be more suitable for the nature and essence of any thing than the very *entity* of this nature and essence. The entity, however, of the nature and essence of a thing makes this thing to be a 'being.' Consequently, every being, i.e., every substance and accident, is entitatively or ontologically good. Hence, every being is good.

St. Thomas Aquinas formulates his argument in the following manner: "Every being, in as much as it is being, is in some way perfect, because every actuality is a certain perfection. But what is perfect involves the idea of 'appetible' and 'good.' Hence it follows that every being as such is good."²

Besides, all beings are the object of Divine Omnipotence and therefore also of the Divine Will, in as much as God either directly wills them or indirectly permits them to exist and have their being. Hence, they agree with His appetency or will. But for anything, in its existence and being, to agree with God's appetency or will, means that it is ontologically good. Hence, all things are good.

And just as every being must be an ontological good, so also *whatever is good is a being*. This hardly needs demonstration. The 'good' is certainly not nothing, but

something; it is something desirable, something suitable. 'Nothing' is not suitable for anything and as such cannot be the object of an appetency. Consequently, whatever is good is a being. The concept of the 'good' always implies the concept of something positive, some reality or actuality, something that can perfect its possessor. This, however, implies that whatever is good is a 'being.' Hence, every good is a being.

THE CONCEPT OF EVIL

Evil is the antithesis of good. As the good in general means the suitability of a thing for an appetency or appetent being, so *evil* is the *unsuitability of something for a natural tendency or appetency*. This definition might seem to indicate that 'something' can itself be an evil, so that evil would be a positive reality of some kind. That would be a misunderstanding of the meaning.

Evil is no being, but it is not a mere absence of being. It is the absence of a reality which ought to be there, of a *reality due a thing*; it is a defect, a *privation of reality*. An example will make this clear. There is an absence of sight in a stone; the stone is 'sightless.' This sightlessness is the absence of a reality in the stone, but is no evil for it. When there is an absence of sight in a man, he is said to be 'blind,' not merely 'sightless' like a stone. This blindness in man is not a mere absence of a reality; it is an 'evil' for him. What is the difference between a stone and a man in this absence of sight, so that the former is considered to be merely 'sightless,' while the latter is declared to be 'blind'? Why is

sightlessness for the stone a mere absence of perfection or reality, and for man an evil? The difference is this: sightlessness in man is the *direct defect* of a good which ought to be there, and that constitutes it an evil for man; the stone, however, is not supposed to have sight, and consequently its absence is no direct defect or evil for it, but only the absence of a reality not due its nature.

It will thus be observed that the concept of 'evil' does not imply a positive reality, but a *strict privation* or defect, namely, the privative lack of an entity due a being. Since evil is essentially a privation or defect of entity, it must be obvious that it cannot exist for itself but always *presupposes a subject* which lacks something which the subject ought to have; as such it is always something *relative*, i.e., relative to the individual nature in which the defect is found. But, if evil needs a subject which it affects, is then evil not an 'accident'? It is not. An accident is a positive reality inherent in a subject, contributing some positive entity or determination to its subject, while evil is a defect of a being in its subject: between the two lies the difference between an 'entity' and a 'privative nothing.' Evil, therefore, can also be defined as the *privation of a required good* (*privatia boni debiti*).

KINDS OF EVIL

Since evil is the privation of a good, there will naturally be as many kinds of evil as there are kinds of good. The following are typical.

Ontological, Physical, and Moral Evil. An *Ontological* (metaphysical, transcendental) evil is the privation of an ontological good. Strictly speaking, this means that a thing, *as a being*, is evil in itself. The question, whether an ontological evil as such can exist, will be treated shortly; at present we are concerned only with its concept and definition.

A *physical* evil is the *privation of a physical good*. Thus sickness is a physical evil, because health, of which sickness is the privation, is a physical good. The absence of any member, organ, or function, which normally belongs to a being of a certain class, will be a physical evil. Such would be the absence of a finger or an arm in man, of a tail in a dog, the loss of sight or hearing in a mammal. This applies, of course, merely to the individual member, organ, or function considered for itself. That the removal of an inflamed appendix or other part of a body may be, indirectly and relatively, a physical good for the organism *as a whole*, is obvious; the physical good of the whole always supersedes the physical good of a part of the whole. For the organism as a whole, general debility, sickness, or death would be physical evils.

A *moral* evil is the *privation of the proper relation* between an action or its omission and the *moral law*. If the moral law demands a certain action and this action is unduly omitted, the omission is a moral evil. Man, as a creature, for example, is obliged to recognize the sovereignty of God and adore Him; if he fails to do this, the omission is a moral evil. On the other hand, the moral law may forbid a certain action; if the action is performed

nevertheless, it will be a moral evil, because the proper relation between the law and the action is not maintained. The cashier of a bank, for example, may withdraw his own money from the bank and spend it, but if he takes other people's money and spends it, he is guilty of a crime. All lies, thefts, robberies, sexual irregularities, unwarranted personal injuries to one's self or others, etc., are a departure from the demands of the moral law and are evil. In Christian ethics such violations are styled 'sin.' Violations of the laws of society or of a government are not always violations of the moral law; some of these laws are merely penal laws, and their transgression involves no moral evil.

Absolute and Relative Evil. The term 'absolute' can be taken in different meanings. Here it is taken in the sense in which it was used when speaking of 'absolute good.' An *absolute* evil, then, is the *privation of an absolute good*, and an absolute good is anything which is good for a being itself, irrespective of other beings. When a being is deprived of such an absolute good, this privation is said to be an 'absolute' evil. The two arms which man has are an absolute good for him; to be deprived of one or both, is then an absolute evil. Sight is an absolute good for a cat; to be blind, is an absolute evil for it. Life is an absolute good for every organism; death is, therefore, an absolute evil for it. A *relative* evil is the *privation of a relative good*, and a relative good is anything that is good for another. Food and drink are a relative good for man; to be deprived of sustenance is a relative evil for him. A leash on a dog is a relative evil, because it deprives him of freedom of

movement. A red-hot rod of iron, when grasped by the hand, is a relative evil, because it burns and causes pain.

Objective and Subjective Evil. An *objective* evil, as the term indicates, is the *privation of an objective good*, and the latter is anything that is good in itself, whether absolutely or relatively. Examples will be found in the preceding paragraph. A *subjective* evil is the *privation of a subjective good*, namely, the privation of the actual possession of an objective good. Thus, the loss of the possession of an automobile, of a house, of health, of sight, or of any other objective good, considered as a state or condition of the former possessor, is a subjective evil.

Real and Apparent Evil. A real evil is the *privation of a real good*, of something that is judged to be good for a being and actually is good for it. Examples are: a broken wing for a bird, disintegration for an element, vice for a human being. An *apparent* evil is the *privation of an apparent good*, the privation of something that is judged to be a real good for a being but is really not good for it. In an apparent evil, therefore, we have the privation of a real evil, since an apparent good is actually an evil; the net result is the cancellation of the evil, leaving a 'real good' in the being. Food for a critically ill patient, for instance, is an apparent good, but a real evil; to deprive such a patient of food in such circumstances, is an apparent evil,' but it is actually a 'real good.' A sharp knife as a plaything is an apparent good for an infant, though it is actually a real evil; to take this knife away from the infant, therefore, is an 'apparent evil,' but it is actually a 'real good.'

It should be fairly obvious that our judgment of evil as real or apparent, will depend upon the standpoint from which we view an evil. Depending upon the circumstances of the case, an evil may be 'real' from one standpoint and 'apparent' from another. The removal of a gangrened arm is a real evil, if we consider the loss of the arm as such; since, however, this removal may be necessary to save the life of the patient, the loss of the arm under the circumstances is more an apparent evil than a real evil. Physical suffering, taken by itself, is a real evil; but if it is the occasion of strengthening the character of the suffering person, it is rather an apparent evil.

THE EXISTENCE OF EVIL

Evil and its existence has always been a serious problem for religion and philosophy. In all ages there have been those who have asserted that evil exists as a sort of perverse positive reality. Evil, however, is a privation of some good, a 'privative nothing.' This matter must now be examined a little closer. Since all evil can be reduced to an ontological, physical, or moral evil, we can restrict ourselves to the problem of the existence of these three forms of evil.

The Existence of Ontological Evil. Can a being, *as a being*, be evil, and can ontological evil thus become a fact? This is the crux of the whole problem. A little reflection should convince us that an ontological evil in the true sense of the term cannot exist. Good is a transcendental property of all being: every being is good, and whatever is good is a being. But if every being, *as a being*, is transcendently

good, it is *ontologically* good, because then it is good precisely in so far as it is a *being*, and that is what is meant by saying that something is 'ontologically' good. If every being, however, is an ontologically good being, no being can be an ontologically evil being. Now, only a 'being' can exist; consequently, since every being is ontologically good, no ontologically evil being can exist. Hence, ontological evil (concretely, an ontologically evil being) cannot exist. It follows then, that every being, in so far as it has *any reality* at all, is good. Evil, therefore, can consist only in the privation of some reality; as such it is essentially a privative non-entity, and a non-entity, of course, is incapable of existence.

But is the above not open to a serious objection? Tuberculosis, for instance, is a disease caused by germs; these germs are, therefore, an evil. But these germs are beings. Hence, some beings are an evil. These germs exist; therefore, some evil beings exist. Certainly, the germs exist and are an evil. But are they an *evil in themselves*? Or are they an evil *for another*, e.g., for the lungs of man? In order that they be adjudged ontologically evil, it would be necessary that they be an evil in themselves. That, however, is not the case. All germs are organisms, and as such they are beings with a very definite nature of their own. Their nature is good *for the germ*; it is as good for the germs as man's nature is good for himself. Germs have their proper place in the scheme of things; their essences have their own particular purpose and end. The material of man's lungs is food for them and is a good for them. That this material happens to be taken from man's lungs, makes them an evil

for man. They are thus an evil for another (relative evil), but they are good in themselves (ontological good). The same is true of all germs, tumors, cancers, etc. As living cells they are good in themselves; relatively, of course, they may be an evil for other beings. This line of thought can be applied to anything that could possibly be conceived as an ontological evil, and it will be found that it is, for itself and in itself, ontologically good. Hence, no being can be, strictly speaking, ontologically evil.

Are not *Satan* and the *evil spirits* ontologically evil beings who actually exist? It is doubtful whether philosophy, with the use of reason alone, unaided by divine revelation, could prove their actual existence. However, accepting their existence as a fact on the authority of Christian revelation, we must remember that even Satan and the evil spirits are not entirely evil. They are created beings and, so far as their nature and essence is concerned, they were *ontologically good when created*. They did not lose this nature and essence when they sinned; they still possess the same nature and essence which they received from the hand of God in their creation. Consequently, they *still are* ontologically good in their nature and essence. Whatever evil is in them resides in their depraved will, in as much as their will is in eternal disconformity with the will of God, and that is a moral, not an ontological evil. As existing beings, therefore, even Satan and the evil spirits are not ontologically evil.

The Existence of Physical Evil. Physical evils are an established fact in the world. Many beings lack some reality which they ought to have. Sickness and injuries deprive

living beings of that physical integrity which their essence naturally demands. But it must be borne in mind that beings are physically evil only in so far as some *entity is missing* in them. Whatever entity they possess is in itself good. Thus, a tubercular lung is a physical evil only because certain portions are infected or missing; the remaining parts are good. A severed arm is a physical evil for a man, because he is now deprived of a portion of his being. But the rest of his body is not a physical evil; nor is the severed arm itself, considered from the standpoint of its constituent elements, physically evil: it is the privation of the proper relation between body and arm that is an evil, and this privation is not an entity in itself. Physical evil, therefore, consists in the *privation of being*, relative to an individual's needs, not in any positive reality as such.

The Existence of Moral Evil. That moral evils are present among men is all too evident. Sin is an undeniable fact. Grime is an everyday occurrence. But here again, it would be false to consider a moral evil as a positively existing entity. In fact, the sinful action as an action is ontologically good, because it is a being; and if the action is performed in a manner conducive to the natural purpose of the act, it is also physically good. Since, however, this ontologically and physically good act is not in accordance with the requirements of the moral law, it is morally evil. There is no morally evil *entity* here, but rather the defect or *privation of an entity*, namely, the defect of the proper relation between the act and the demands of the law. A child, for example, is playing. The mother calls the child into the house, but the child disobeys and keeps on playing. If the act of playing

was ontologically and physically good before the mother's call, it is still ontologically and physically good after the call, because the act has not changed in this respect. But the attitude of the will has changed, in as much as it is disobedient to the properly constituted authority. Nothing in the *entity* of the act has changed, but there is now a *defect of proper relation* between the entity of the act and the law which governs it; the entity as such still remains good. Moral evil, therefore, does not consist in a positive entity or reality, but in privation; whatever there is of entity in the action, is in itself good.

SOME THEORIES OF EVIL

Evil is not a primary concept; it presupposes the good as the primary concept, because evil is the privation of a good. The good must exist *first*, before there can be a privation of it; evil can only follow the good. For the same reason the presence of evil is always dependent on the presence of the good; where there is no good there can be no privation of it and therefore no evil. The good can exist without evil, but evil cannot exist without the good. First, then, was the good. Evil came later. These principles should enable us to pass a correct judgment on some theories of evil which have become prominent in the course of time.

Pessimism, as a philosophic theory, maintains that evil predominates over good, because the world at large is essentially bad. Conscious life, particularly in man, is a constant struggle, fundamentally and inescapably painful in character, so that life is not worth living and consciousness

is in itself a state of misery; the best escape from it is in unconsciousness and death. Such are the main tenets of *Buddhism* and of the modern pessimism defended by philosophers like *Schopenhauer*, *von Hartmann*, and *Nietzsche*. That pain and suffering are facts of life, no one denies; but that life, consciousness, and the world in general are intrinsically evil, cannot be admitted. Whatever is, is good; evil is only incidental to the good. That our limited knowledge cannot fathom completely the *Why* of evil is no valid argument against the essential goodness of the beings which constitute the world. When beings are limited in nature and action and are mutually dependent on each other for the full actualization of their inherent reality, it is inevitable that the gain of one involves loss for another. Evil is thus relative, not absolute; the scheme of things as a whole is harmonious and ontologically good.

Excessive Dualism is another false theory. In this view all the good present in the world is due to a supreme Principle of Good, and all the evil to a supreme Principle of Evil. These two principles are independent of each other and are usually conceived as being co-equal, co-extensive, and co-eternal. Such is the theory of *Zoroastrianism*. According to *Zoroaster* (or Zarathustra), a Persian philosophic religious reformer who lived in the seventh or sixth century B.C., the forces of good and evil are waging a constant battle for supremacy in the universe. The supreme Principle of Good is Ahura-mazda (Ormuzd), and the Supreme Principle of Evil is Anra-mainyu (Ahriman); the former is the source of all good in the world, and the latter the source of all evil. In the third century A.D., *Manes* introduced this doctrine and

founded the sect of *Manicheism*. God is the supreme Principle of Good, and 'matter' the Principle of Evil. His interpretation of 'matter' as the Principle of Evil harks back to the doctrines of some of the earlier Greek philosophers. In every theory of excessive dualism the Principle of Evil is *conceived as a positive being*, either conscious or unconscious. This, of course, is an erroneous conception, because evil is a privation of being, not a positive reality; it cannot be present except in so far as it is a privative defect affecting some ontological good. Besides, we know, from what has been said before, that every existent being is an ontological good in its nature and essence. Consequently, also this supreme Principle of Evil must be ontologically good, because it possesses a nature or essence; as such it must derive its ontological goodness from the supreme Principle of Good; in that case, however, it cannot be co-equal and co-eternal with the Principle of Good, but must be dependent on the latter. The Principle of Evil, therefore, is contradictory in its very concept.

Summing up our investigation of the transcendental properties of being in general, we arrive at the following results: Being, one, true, and good are convertible ideas. Every 'being' is one, true, and good. Every 'one' is being, true, and good. Every 'true' is being, one, and good. Every 'good' is being, one, and true. These realities are inter-identical; they include each other implicitly. Between them there exists only a virtual distinction with an imperfect foundation in the thing.

SUMMARY OF CHAPTER XIV

Goodness, like unity and truth, is a transcendental attribute of being.

1. *The Concept of Goodness.* Good is what all desire. Something is good in so far as it is suitable to a natural tendency or appetency. The 'good' can be defined as any reality which suits the nature of the being which strives for it.

2. *Divisions of Goodness.* The following are typical divisions of the good, viewed from different standpoints:

- *Ontological, Physical, and Moral Good.* Something is an *ontological* good, when it is a good in its very entity or reality. It is a *physical* good, when it satisfies the demand of the nature of a being. It is a *moral* good, when it has everything demanded of it by the moral law.
- *Absolute and Relative Good.* An absolute good is anything which is good for a being itself, irrespective of other beings. A relative good is anything which is suitable to another.
- *Objective and Subjective Good.* An *objective* good is anything that is good in itself. A *subjective* good is the actual possession of an objective good.
- *Real and Apparent Good.* It is *real*, when it is judged to be good for a being, and it actually is good for it. It is apparent when it is judged to be good for a being, but it is actually not good for it.

- *Disinterested, Delectable, and Useful Good.* A *disinterested* good is any good considered merely as giving perfection. A delectable good is a relative good which gives pleasure to another. A *useful* good is a relative good which is desired as a means to acquire perfection or pleasure.

3. *The Convertibility of Being and Goodness.* Every being is good, and whatever is good is a being. Every being is in some way perfect, because every actuality is a certain perfection. But what is perfect, even in a limited way, is appetible and therefore good. Whatever is good is also a being; this is clear from the fact that it cannot be 'nothing,' since 'nothing' is not suitable to anything.

4. *The Concept of Evil.* Evil is the absence of a reality which ought to be present; it is the privation of a required good.

5. *Kinds of Evil.* There are as many kinds of evil as there are kinds of good. In each case the evil will be the privation of the respective kind of good. For example, an *ontological* evil is the privation of an ontological good, a real evil is the privation of a real good, etc.

6. *The Existence of Evil.* Evil is not a positive reality; it is the *privation* of a required good and as such a privative nonentity. Pessimism, which considers all things as essentially evil, is therefore false. So, too, are Zoroastrianism and Manicheism, since they maintain the existence of a supreme Principle of Good and a supreme Principle of Evil.

READINGS

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1 Κατώς ἀπεφάναντο ἰαγαθόν , οὐ παντ' ἐφίεται. Lib. 1, *Eth. Nic.* C. 1. 96

2 *Summa theol.*, I, q. 5, a. 6

Chapter 15

BEING AND BEAUTY

BEAUTY IS A MOST ELUSIVE QUALITY. ITS NATURE IS SO TENUOUS that it always seems to escape in the very moment of its capture. There is hardly a term in any language which is used more and abused more than 'beauty.' The conflicting varieties of its definition are truly amazing — a sure indication of the complexity of its nature and of the many-sided character of its appeal. Beauty manifests itself in so many and in such divergent forms that it is extremely difficult to discover the general element common to them all.

The concept of the beautiful is closely related to the concepts of unity, truth, and goodness, the transcendental attributes of being; it is even considered by some philosophers to be a transcendental or quasi-transcendental property. Like all fundamental and primary ideas, it is more easily recognized in a concrete experience than abstractly defined in words. The best method of acquiring a serviceable knowledge of the beautiful will be to analyze our experience of the beautiful and thus gradually enucleate a more formal definition.

OUR EXPERIENCE OF BEAUTY

Beauty pleases. Universal experience and judgment show this. We do not consider that to be beautiful which displeases and annoys us, at least not under this particular aspect of being 'beautiful.' Whatever is beautiful, whether it be a poem, a painting, a melody, a piece of sculpture, or an architectural structure, is always considered to be such that it pleases, gratifies, and gives enjoyment.

Beauty gives *disinterested* pleasure. The pleasure derived from beauty is styled 'aesthetic pleasure.' We do not consider our pleasure to be aesthetic when our main concern on seeing an apple is to eat it; this is a selfish food-pleasure, and it is not founded on the beauty of the apple. We experience aesthetic pleasure, when we derive pleasure from *beholding* it. If a man owns a painting and takes pleasure in it because he knows he can sell it at an advantage, he is not said to have aesthetic pleasure; but if he is satisfied to *contemplate* it and thus enjoy it, then he is enthralled with its beauty. There is beauty in the seas, in the stars, in the sunrise, in the waterfalls, in the mountains; but there is no selfish enjoyment in these things. The agreeable and pleasurable feelings engendered in us through the mere possession of an object or through the satisfaction of the lower sentient appetites, are not aesthetic, for they are too *organic* and *selfish*. Things may taste and smell and feel 'agreeable,' but such pleasure is not the delight encountered in the enjoyment of the beautiful.

The *primary object*, therefore, of desire in beauty is not the pleasure derived from profit, consumption, possession,

or even use, but the pleasure aroused through the *contemplation* of the beautiful. Hence, the *ear*, the *eye*, and the *imagination* are the sense faculties properly engaged in the production of aesthetic delight, and they are mainly perceptive in character.

Beauty gives disinterested *intellectual* pleasure. The intellect is necessary for the enjoyment of beauty. Man is the only animal which appreciates beauty. Brutes do not contemplate the beauty of the flowers, the hills, the woods, the sunsets, etc., nor do they manifest anything of the joy that we feel in the contemplation of these things. They remain indifferent in the presence of all the beauty of nature and are concerned with beautiful objects only in so far as they are of assistance to them in the struggle for existence. The reason why brutes cannot enjoy beauty in any true sense is plain: *order, proportion, unity, appropriateness, the agreement between the ideal and the real*, are fundamental elements of beauty, and the knowledge of these elements rests upon a more or less conscious comparison of the parts in themselves and with the idea expressed in the whole. This, however, is a matter of rational judgment, and an intellectual being alone has the faculty for this. Beauty, therefore, must have an intelligible content.

Beauty gives a disinterested *intellectual-sensuous* pleasure. The intellect is necessary for the perception of the beautiful, because beauty has an intelligible content. But the intellect perceives it through the mediation of the senses. The intelligible, supra-sensible quality or 'idea' must be perceived in a *sensibly pleasing appearance* in order to

be beautiful. It is a universal demand that the artist pleasantly impress the senses with images and plastic forms. Naked thoughts leave us cold. Ideas alone, free from the beauty of form, are found in science, mathematics, and philosophy; but no one looks upon these as being the proper medium and vehicle of beauty. We go to art and to the artist for beauty and its enjoyment. Hence, the idea, or truth, alone does not suffice to make a thing beautiful; the idea, or truth, must be embodied in a sensibly pleasing form before we can consider it beautiful. The scientist, the mathematician, and the philosopher may present the idea, or truth, in a far clearer and more convincing manner than the artist; they enlighten, but they do not, strictly speaking, give us aesthetic delight. The artist may express the same idea, or truth, less exactly, but he clothes it in form and figure; and we are impressed, animated, delighted, pleased.

The reason is this: Like pleases like, *simile simili gaudet*. As we are one in essence, consisting of mind and body, so the beautiful is one in nature, consisting of *idea* and *form*. The way of art is therefore twofold: the idea may be first and then the form, or the form may be first and then the idea: true idealism and sound realism, the idealized real and the realized ideal. It is the happy combination and fusion of idea and form which constitutes beauty, corresponding to the composite nature of man. Consequently, there must be an *equilibrium* established between the *intellectual* and *sensible* elements. An overcharge of idea or a lack of form would mean a lack of beauty, abstractness, too much intellectuality; an

overcharge of form or lack of idea would mean shallowness and extravagance.

Beauty gives a disinterested intellectual-sensuous pleasure due to the *radiant perfection of a thing*. Most philosophers acknowledge that beauty is not purely subjective in character, but that it has its foundation in the things themselves and that we experience the delight of beauty in consequence of some objective factors present in the objects.

Beauty is not mere appropriateness. The arrangements of a barn may be very appropriate, but the ordinary barn can hardly be said to be beautiful. Nor is beauty the inner perfection of a thing, considered as such. Many ugly things are intrinsically perfect, for instance, the caw of a crow, the bray of a mule, a toad, a factory, a three-legged stool; but these are seldom considered to be beautiful.

Beauty is the *perfection* of a thing manifested in a *pleasing, happy manner*. Just as light, splendor, radiance, and color produce a pleasing impression on the eye, so also we call beauty in general 'resplendent, radiant perfection.' That perfection and goodness are fundamental properties of beauty, is shown by the fact that beauty pleases. Now, something that pleases is desirable, and the desirable is, as such, good.

Beauty gives a disinterested intellectual-sensuous pleasure due to the radiant perfection of a thing, primarily in so far as it exerts an *appeal to our cognitive faculties* and not to our will. Order, harmony, rhythm, unity amid variety, etc., are essential elements of beauty, and their appeal is evidently to the *perceptive* powers of the mind. Experience

proves this. Things like a colorful landscape, a symphony of Grieg, a poem of Francis Thompson, a drama of Shakespeare, a Madonna of Raphael, a cathedral of Rheims, or a statue of Praxiteles, produce in us primarily a satisfaction of intellect and imagination. Their apprehension and appreciation afford us the pleasure peculiar to beauty; but apprehension and appreciation are acts of the cognitive faculties, not of sense-appetency or will.

It is only after we have apprehended and appreciated the inherent beauty of something, that aesthetic pleasure follows as a natural result.

St. Thomas Aquinas furnishes us with a succinct elucidation of these points. "Since that is good which all desire, it belongs to the concept of the good that the appetency come to rest in it. But it pertains to the concept of the beautiful that the appetency come to rest in its contemplation or knowledge (*in ejus aspectu seu cognitione*). Whence it happens that those senses are primarily concerned with the beautiful which are mostly cognitive in character, namely, sight and hearing in the service of the mind; for we speak of beautiful sights and beautiful sounds. Concerning the objects of the other senses, we do not use the term 'beautiful'; for we do not speak of beautiful tastes or odors. And thus it is clear that the beautiful adds to the good the relation of the cognitive faculty, so that we call that good which directly agrees with the appetitive faculty, and beautiful that whose apprehension pleases."¹ He summarizes the beautiful in the following terse expression:

*"Things are beautiful which please when seen."*² The context shows that by 'seen' he meant as much as 'known, apprehended, imagined, perceived, contemplated': which agrees with our contention that beauty appeals primarily to our perceptive powers and not to our sense-appetency and will.

If we now analyze the data of our experience, we perceive that whatever is 'beautiful' possesses certain objective elements.

OBJECTIVE ELEMENTS OF BEAUTY

By the objective elements of beauty we understand those *elements or factors in the object itself* which enable us to recognize the object as 'beautiful.' Some of these factors are more general and others are more particular. The *general elements* of beauty agree to a great extent with the transcendental attributes of unity, truth, and goodness; but not altogether. There is a close relation between *beauty and unity*. Unity amid complexity is a perfection and aids the intellect in grasping the underlying meaning of things without distracting its attention and weakening its vigor of activity. The grace of line in an Apollo Belvidere, the magnificence of St. Peter's in Rome, the charm of a Bach minuet, the grandeur of Michelangelo's *Last Judgment*, the glory of Homer's *Iliad* — is not a goodly amount of their imperishable beauty due to the proportion, the harmony, the rhythm, the symmetry of their manifold and intricate details? But to admit this is to admit that beauty is intimately connected with 'unity.'

Beauty, however, implies more than mere unity. We find unity also in a mathematical theorem, in a scientific deduction, in a philosophic syllogism, and in a mechanical contrivance; but these are not necessarily beautiful on that account. We may acknowledge their unity and still not experience any delight in their knowledge. It takes more than unity to make a thing beautiful.

There is also a close relation between *beauty and truth*. The appeal of beauty, as just shown, is mainly to the perceptive powers, and especially to the intellect. The fact that animals show no appreciation of beauty in the strict sense, is alone sufficient to prove this. All beauty possesses an *intelligible* quality which transcends the ordinary realm of sense-perception. It is not sufficient to 'perceive' beauty; beauty must also be 'apprehended' and 'understood' in order to be appreciated. This shows that there is an element of truth in everything beautiful.

Again, however, beauty must not be identified in every respect with the true. Truth as such merely commands our assent, but it does not necessarily afford us aesthetic delight. In many instances truth may even displease, annoy, and pain. The truth of statistical facts is aesthetically barren. The truth of a chemical analysis leaves us cold. The truth of an algebraic calculation is devoid of the emotional response associated with the contemplation of beauty. Truth as such is not beauty.

Similarly, there is a close relation between *beauty and goodness*. Beauty satisfies, pleases, delights; and satisfaction, pleasure, and delight have a natural reference to an appetency, because an object which has these

characteristics is a delectable good. Such emotional releases are, of course, a subjective element in the enjoyment of the beautiful, but they are elicited by the object itself when contemplated by the observer. The element of goodness, therefore, is also present in the beautiful.

On the other hand, there is a difference between beauty and goodness. The good satisfies the appetency directly, as something to be acquired, possessed, and retained, not because it is known and perceived. Beauty, however, is the good in so far as it delights the beholder through its perception and contemplation. The good is always something suitable to a striving power, and for that reason it is desired by an appetency; an appetency, therefore, is somewhat selfish in its trend. But beauty gives satisfaction and pleasure through the simple contemplation of it, without the presence of any acquisitive tendency. One can be thrilled while listening to a selection by Kreisler or Paderewski, and never desire either their gifts or their instruments of music.

The general elements of unity, truth, and goodness are thus seen to be present in the beautiful; but beauty is not a transcendental attribute of being, so that every being would of necessity also be beautiful. *Being and beauty are not convertible concepts*, like being and unity, being and truth, being and goodness. Everything beautiful is a being, but the converse statement is not true. While these concepts are undoubtedly closely related, they are not identifiable: there is a difference between beauty and unity, truth, and goodness.

TURNING NOW TO THE *PARTICULAR ELEMENTS* OR FACTORS OF beauty, we find that a number of properties must be present in an object in order that it may be styled 'beautiful.' Beauty elicits joy and delight in the beholder, and these emotions are the concomitant result of the normal, healthy, full, vigorous exercise of any faculty. The joy and delight engendered by the beautiful will, therefore, be supreme when all the faculties involved in the contemplation and appreciation of the beautiful are aroused to such an exercise of their powers. Three fundamental properties are required for this.

Integrity or completeness is the first. Any noticeable defect or mutilation in a thing makes an unpleasant impression on the beholder. The mind is dissatisfied with this incomplete condition and makes an effort to restore the missing part in its imagination; this effort disturbs its poise and hinders it from coming to a proper state of rest and calm in its contemplation. As a result of this mental disturbance the aesthetic enjoyment is marred by a certain amount of annoyance and irritation. We observe this when contemplating a dilapidated building, a damaged painting, a crippled body, an awkward dance; or when listening to a melody out of tune and to the badly memorized lines of a drama; or when reading the poorly constructed verses of a mediocre poet. Of course, in some instances the defects may be so completely overshadowed by the resplendent beauty of the object as a whole, that small mutilations or blemishes escape our notice almost entirely; in that case we

would experience the full enjoyment of beauty by simply concentrating our attention on the object as a whole. But defects, as defects, detract from the beauty of an object; and if these defects force themselves constantly on our attention, the object cannot be said to be really beautiful.

Proportion or balance is another requisite. It is the index of a mind which works in an orderly fashion. Just as the mind experiences pleasure in evolving order out of confusion, so it also experiences aesthetic pleasure in detecting an orderly arrangement in what at first seems to be chaotic confusion. A mere jumble does not please. A heap of stones is not an aesthetic object; but if they are arranged in the orderly construction of a building, provided there be symmetry and balance in the arrangement, they form an object of beauty. An orchestra tuning its instruments is a mere confusion of irritating noises; but when the instruments weave the same sounds into the intricate harmony of an operatic overture, we have beauty of a high order. Irregular daubs of paint are unaesthetic; when these colors, however, are applied by an artist to a canvas, they become an immortal masterpiece of exquisite beauty. The secret is proportion, balance, harmony, symmetry — in a word, *unity amid variety*. Unity without variety is not beautiful, because in that case the energy of the perceptive faculty will be exercised in an unbroken, unrelieved strain; and that would produce tension and fatigue, but not pleasure. Variety without unity is not beautiful, because then the mind's energy would be scattered and spent without being able to come to rest; and that would disturb and hinder the normal, healthy, full,

vigorous activity of the faculties. Unity amid variety acts like a focus, concentrating the attention along certain definite lines, bringing harmony into the manifold elements and making of them a simplified whole; this facilitates the mind's activity, gives it a feeling of restful completeness, and thereby produces in it the joy and delight so characteristic of beauty.

Clarity or splendor is the third requirement. To be beautiful, an object must have a certain amount of compelling force; it must be impressive; it must possess a vivid presentation; it must attract and charm through its very appearance. Only then will it be able to call forth a vigorous activity on the part of the contemplating person. The elements of beauty may not be obscure or hidden, otherwise they will demand undue labor and effort of the mind to discover them; and that would beget strain and pain, not joy and delight. Joy and delight must be spontaneous, must spring up in the heart like a fountain and overflow into the emotions; and that will be the case only when the clarity of beauty exercises the perceptive faculties in such a way that they function with ease and liveliness. That is why all the arts use contrast as an effective technique to set the splendor of beauty in a sharper light; the elements of aesthetic value then fairly leap into the central position of attention and thereby give the mind the proper perspective which enables it to survey the parts and the whole in a comprehensive glance.

Such, it would seem, are the main objective elements present in objects which are called 'beautiful.' Many individual quantities have been pointed out and analyzed in

the various kinds of natural and artistic beauty; upon examination, however, they all appear to be reducible to these fundamental attributes and qualities. In some forms of beauty the one or the other attribute or quality is embodied in a predominant manner, but every form of beauty contains them all in some measure. Beauty, of course, never appears in absolute purity, for the simple reason that no finite thing is perfect. There will always be an over-stressing or under-stressing of some particular element, so that it is next to impossible to find any object which is altogether beautiful.

THE DEFINITION OF BEAUTY

To define beauty adequately is a most difficult task. Beauty manifests itself in such a multitudinous variety of forms, that an enucleation of its fundamental and essential character is well-nigh impossible. The history of aesthetics proves this. From Socrates to the present day beauty has been the subject of analysis and discussion. Never, however, has any philosopher, scientist, or artist been able to formulate a definition of beauty capable of satisfying everybody. The definitions range all the way from expressions of the crudest naturalism to those of the loftiest idealism.

How, then, shall we define beauty? From what has been said, we venture to propose the following definition: *Beauty is a blending of the unity, truth, and goodness in a thing, characterized by completeness, proportion, and clarity of presentation in an intellectual-sensuous form, so as to*

produce a disinterested emotional pleasure in a rational perceiver. If this definition seems complicated, it at least attempts to do justice to the subjective and objective elements involved in the perception of beauty.

This definition, of course, views beauty from the standpoint of *man's* nature. The reason is obvious. The beauty which we know is the beauty which appeals to us, and we are human beings consisting of body and soul, animality and rationality. The nature of beauty *for us* must, therefore, partake of the nature of man: it must be intellectual and sensuous, the embodiment of an intelligible *idea* in a material *form*. Its appeal must be an appeal to the whole man in his composite nature, not merely to the one or the other side of his being. What the objective elements of beauty would be for a pure spirit or for God, we have no way of knowing. No doubt, they will be purely spiritual in character. God must be infinite, transcendent, absolute Beauty. For spiritual beings beauty consists perhaps in the full agreement of reality with its thought-ideal.

Will the definition of beauty given above enable us to point to a particular object and immediately recognize it as beautiful or not beautiful? Hardly. The reason for this distressing deficiency in every definition of beauty lies in the fact that we first intuitively feel something to be beautiful and only then attempt to discover the elements which make it beautiful. Aesthetic pleasure as a sensation is an *ultimate psychological experience incapable of complete analysis*. It is found to be present, and must be accounted for. The enjoyment of beauty is as much a subjective affair as it is objective. It is precisely in the subjective field of

man's emotions that so much diversity occurs, due to differences of individual temperament, educational standards, and cultural environment. This accounts for the extreme fluctuations of opinion regarding beauty in general and beautiful things in particular, and this condition finds expression in the oft-repeated phrase: There is no accounting for tastes, *de gustibus non est disputandum*.

Nevertheless, the definition may be of service in acquiring a fuller understanding and a deeper appreciation of beautiful things when we experience the aesthetic pleasure which accompanies the contemplation of beauty. Perhaps St. Thomas' definition of the beautiful is after all the best: *Pulchra sunt quae visa placent*, 'things are beautiful which please when perceived.'

SUMMARY OF CHAPTER XV

Beauty is an elusive quality of things. Our experience of beauty must guide us in acquiring a proper conception of beauty.

1. *Our Experience of Beauty.* Beauty, as experience shows, gives a disinterested intellectual-sensuous pleasure due to the radiant perfection of a thing, primarily in so far as it exerts an appeal to our cognitive faculties and not to our appetitive faculties. “Things are beautiful which please when seen.

2. *Objective Elements of Beauty.* There are general and particular elements present in things called beautiful. The general elements are unity, truth, and goodness. Beauty, however, does not coincide completely with these transcendental attributes of being. Being and beauty are not convertible ideas. The *particular* elements of beauty are integrity or completeness, proportion or balance, clarity or splendor.

3. *The Definition of Beauty.* From the above, beauty can be defined as a blending of the unity, truth, and goodness in a thing, characterized by completeness, proportion, and clarity of presentation in an intellectual- sensuous form, so as to produce a disinterested emotional pleasure in a rational perceiver. Perhaps the definition of St. Thomas Aquinas is after all the best: “Things are beautiful which please when perceived (seen).”

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Coffey, P., Ch. VII; Rickaby, J., Bk. I, Ch. IV; Hugon, Ed., Tr. II, Qu. 1, art. 8; Mercier, D. Card., *Ontologie*, nn. 266-282, *Manual*, pp. 564-570; McCormick, J. F., Ch. V, pp. 84-90.

1 *Summa theol.*, Ia, IIae, q. 27, art. ad 3.

2 *Idem.*, Ia, q. 5, art. 4 ad I: *Pulchra dicuntur quae visa placent*

PART III

THE SUPREME CATEGORIES

Chapter 16

THE CATEGORIES

ONTOLOGY TREATS OF BEING IN ITS MOST GENERAL ASPECTS. The various particular kinds of beings belong primarily to the special sciences; they are considered by ontology only in so far as they exhibit characteristics which pertain to being in general.

The first part of our investigation examined being and its primary determinations. This included an elucidation of the concept of being, the contraction of being to its inferiors, the supreme principles based on the concept of being, act and potency, change and the principle of change, and essence and existence. The second part treated of the transcendental attributes of being which are always present whenever being is present. These are the attributes of unity, truth, and goodness. Though different in concept from being as such, they are in reality identical with it.

In this third and last part of ontology we must investigate the different modes in which real being is found to be actualized and determined in nature. Since, however, philosophy is interested only in the 'ultimate' reasons, causes, and principles of things, ontology seeks to know the

ultimate and *supreme modes of being*. This leads us to a consideration of the *categories or predicaments*.

THE CONCEPT OF THE CATEGORY

Aristotle coined the term 'category,' as it now is used in metaphysics. Originally, the term had application only in a court of law or in a forum (Gr., *κατηγορεῖν*, to accuse, charge, demonstrate, attribute; *κατηγορία*, accusation, attribution), and referred to the accusation or charge lodged against someone in a judicial tribunal. In making a charge, something is always attributed to the accused. Aristotle perceived a similarity between a court of law in its verdict and the mind in its act of judgment ('judgment,' as will be observed, is also a forensic term), in as much as the mind in its judging attributes something (the predicate) to another (the subject). The mind acts like a judge and passes judgment on the matter under consideration. Thus, when the mind states that 'Man is a rational animal,' it attributes the predicate 'rational animal' to the subject 'man,' and the result is a judgment and sentence. Due to this similarity of attribution in the judgment of the court and in the judgment of the mind, Aristotle transferred the term 'category' to philosophy and gave it a logical meaning, namely, the *logical attribution* of a predicate to a subject. In a technical and philosophic sense, then, Aristotle understood the categories to be *the supreme and ultimate genera or classes of predicates*, as found in our judgments and sentences. The philosopher Boethius translated the Greek term into the Latin *praedicamentum*, from which we

derive the English term *predicament*. The term 'predicament' does not, of course, mean anything like a perplexing or embarrassing situation; it is used here in the technical meaning of a 'class of predicates.' 'Predicament' and 'category' are synonymous terms.

It will be noted that Aristotle employed the term 'category' or 'predicament' primarily in a *logical* sense, as a classification of the predicates used in our judgments. In as much as the predicates are direct, universal ideas applied to individual subjects, he considered the categories or predicaments to be the ultimate and supreme classes or groups of direct universal ideas. Taken in this sense, the categories belong to logic.¹ Aristotle, however, did not restrict the meaning of 'category' to this logical sense; he also used the term in an *ontological* sense, and that with just reason. Ideas stand for things, objects, beings; an idea is the intellectual representation of a thing. And that is also true of judgments; judgments represent facts about things. Ideas and judgments express *reality*. When we say that 'Air is transparent,' we do not merely wish to state that the idea 'transparent' is a predicate which the mind in its judgment attributes to the idea 'air' as a subject; we mean to state that 'transparency' is a physical quality which belongs in reality to the physical substance 'air' as it exists in nature, independent of the ideas and judgments of our mind. Ideas and judgments thus express things and facts about things.

Since our universal ideas represent real beings, the categories must be classifications of real beings just as well as they are classifications of universal ideas. Besides the *logical* meaning, we thus have also the *ontological* meaning

of categories or predicaments: they are not only the ultimate and supreme classes of *predicates*, but also the ultimate and supreme classes of *beings*. And since 'being' is the proper subject matter of ontology, the categories must receive special treatment in this department of philosophy. From an ontological or metaphysical standpoint, then, the *categories or predicaments* are defined as the *ultimate and supreme modes of real being*. These modes are expressed in the predicates of our judgments, and these predicates attribute various 'modes of reality' to the things designated by the subjects; in this manner our judgments are an interpretation of reality and form the basis of true knowledge.

Consider, for instance, judgments like the following: 'This man is a *substance*; he is *white*; he is *five feet and eight inches tall*; he is the *father* of a two-year-old son; he *works* hard; he has been *injured*; he lives in *Chicago*; he was born in *A.D. 1900*; he owns a *beautiful home*.' Each one of these predicates expresses a mode of being or reality as it is found in this individual and gives us information about him. The items of information which could be predicated of an individual are incapable of complete enumeration, because they change and multiply from moment to moment. Something could be said about every single portion of his being during every single moment of his existence. The result would be a total confusion of ideas, unless order can be brought into this itemized information. To reduce this chaotic multiplicity of ideas about a thing to *order and system*, is the purpose of the categories. At the same time, the categories will arrange the manifold *modes of reality*,

which determine a being, into the order and system of a few *supreme classes*, so that our mind is able to survey all reality from a few general viewpoints. This systematization and classification of real being will be a great aid to understanding and interpreting the things of this world.

This leads us naturally to the question: How many categories are there? Or, to put it in a different way: What are the supreme classes or modes of real being?

THE PRINCIPLE OF THE CATEGORIES

Since it is the purpose of the categories or predicaments to bring order and system into our knowledge of reality as experience it in and around us, the number of categories should *be neither too small nor too large*. If too small, the categories would give us little aid in clarifying our knowledge, since too many divergent kinds of reality would be grouped under a single class. If too large, the categories would defeat their purpose, because the mind would be confused in contemplating a multitude of classes. Whatever the number, it should not be arbitrary, but natural, i.e., based on the things themselves as they are found in nature; the categories must be *natural divisions of the modes of being*, the result of observation and experience. Again, the categories must contain a *complete classification* of being. Every being and every determination of being must be reducible to the categories; they would fail in their function if any real being or mode of being would find no place in the system. Such are the requisites of a truly serviceable list of categories. Of course, if the nature of real being, as actually

found in the world, would lead us to a very small or a very large number of categories, we could do nothing but accept them; in that case, however, we could derive little benefit from them.

The categories, then, possess a double purpose and function: the ultimate division and classification of our 'ideas,' and the ultimate division and classification of the 'modes of being.' This double purpose and function of the categories will show us the *principle of division* according to which we can arrive at the proper number of categories. Now, 'being' and its 'modes' can be found only in individual beings, since only individual beings can have actual existence. *Individual being*, therefore, is the basis and principle of all predication in our judgments; and it must, for that reason, also be the basis and *principle for the division* and number of the categories.

Because of this close connection between the different kinds of predicates and the different modes of being, the most natural method of discovering the proper number and order of categories will be to investigate the *fundamental questions* which can be asked about an individual being. The answers to these questions will give us the ultimate classes of predicates attributable to the subject, and these predicates will in turn give us the ultimate modes of being according to which the individual being is determined and actualized in nature. In this manner we arrive at the *ontological categories*.

The categories are a challenge to the ingenuity and resourcefulness of the philosopher. Aside from the fact that a list of categories is a working necessity for science and

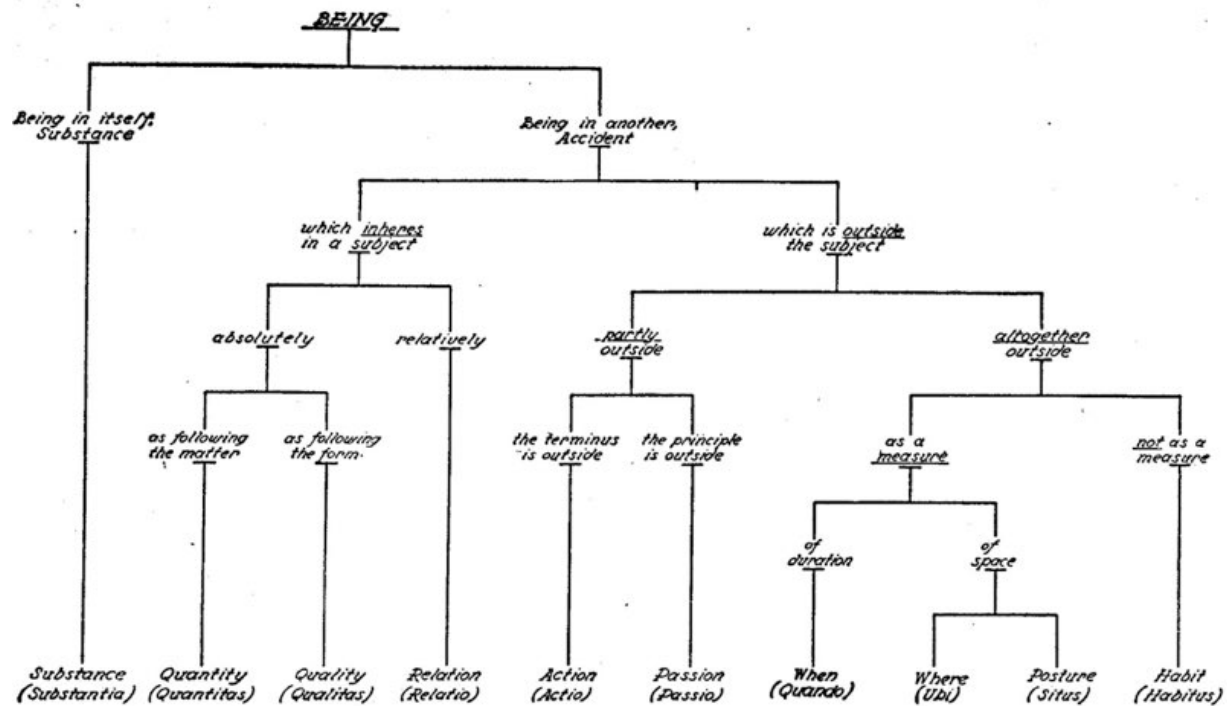
philosophy, the very difficulties involved in such a selective list have been a constant spur to the philosophers to devise a system of categories which will be both serviceable and correct.

THE CATEGORIES OF ARISTOTLE

Before the time of Aristotle, the problem of a list of categories does not seem to have occurred to the minds of the early philosophers. We find certain classifications of things, but they hardly deserve the name of 'categories.' Perhaps the closest approach to anything resembling the categories, as we understand them, was made by the Hindu philosopher *Kandda* (sixth century B.C.). He enumerates six classes of existence: substance, quality, action, genus, individuality, and concretion or co-inherence. The crudeness of this list is apparent. The *Pythagoreans* (sixth century B.C.) had a list of ten classes of opposites: light and darkness, one and many, good and evil, rest and movement, masculine and feminine, right and left, finite and infinite, even and odd, straight and curved, square and oblong. Plato made no attempt at an enumeration of categories, although he seems to divide all things into being, rest and motion, same and other.

The genius of *Aristotle* (384—322 B.C.) attacked the problem in a definite manner. He distinguishes ten distinct categories: substance (οὐσία) and nine accidents (συμβεβηκότα). The nine accidents are: quantity (ποσόν), quality (ποιόν), relation (πρός τι), action (ποιεῖν), passion or reaction (πάσχειν), where or place (πού), when or time

(ποφῆ), posture (κεῖσθαι), habitus or external condition or state (ἔχειν). In the fourth chapter of his *Organon*, Aristotle enumerates them as follows: “Of things incomplex enunciated, each signifies either substance or quantity or quality or relation or where or when or position (posture) or possession (habitus) or action or passion. But substance is to speak generally, as ‘man,’ ‘horse’; quantity, as ‘two’ or ‘three cubits’; quality, as ‘white’; relation, as ‘greater’; where, as ‘in the forum’; when, as ‘yesterday’; position, as ‘he sits’; possession, as ‘he is shod’; action, as ‘he cuts’; passion, as ‘he burns.’ Each of these ten categories expresses an attribute that can be predicated of a subject, and as such also represents some distinct mode of being which can be found in an individual. Each category is an answer to a question that can be asked about a thing. In order to understand properly this list of supreme modes of being, a brief explanation of the single categories may not be amiss.



Substance is any being which exists in itself, needing no other as a subject in which to exist. Examples: man, lion, tree, stone. It is the answer to the question: 'Who or what is this thing?' For instance: 'The oak is a plant; iron is a metal.'

Quantity is an attribute of the material (determinable) element in a being; extension, number. Examples: weight, size. It is an answer to the question: 'How big or how much is it?' For instance: 'The pole is ten feet long; it weighs one hundred pounds.'

Quality is an attribute of the formal (determining) element in a being. Examples: intelligence, strength, health, warmth, color, faculties of body and mind. It is an answer to the question: 'What sort of thing is it?' For instance: 'The rose is *red*; man is *intelligent*.'

Relation is the bearing of one being to another, a bond connecting concepts or things. Examples: paternity, equality, superiority, likeness. It is an answer to the question: 'To what or whom does it refer?' For instance: 'He is *older*, or younger, than __; the two are *equals*.'

Action is the production of an effect in another; it is expressed by the active, transitive verb. Examples: painting, baking, shooting, sawing. It is an answer to the question: 'What does it do?' For instance: 'The dog is *gnawing* a bone; the man *drives* his car.'

Passion (reaction) is the reception of an effect from another, in the sense of 'bearing, enduring, suffering, receiving, being acted on'; it is expressed by the passive voice of the transitive verb. Examples: being heated, being killed. It is an answer to the question: 'What is happening to it?' For instance: 'The anchor is *dropped*; the man is *shot*.'

When is situation in time. Examples: today, tomorrow, soon, in the beginning. It is an answer to the question: 'When, at what point of time?' For instance: 'He was there last year; the ship is docking *now*; the train will arrive in *five minutes*.'

Where is position in space. Examples: upstairs, in the country, on the table, at home. It is an answer to the question: 'Where is it?' For instance: 'He is downtown; he lives in *New York*; the book is on the *shelf*.'

Posture is the disposition of parts among themselves, in the sense of 'attitude'; immanent or intransitive action expressed by an intransitive verb. Examples: walking, sitting, upright, standing, sideways, flat. It is an answer to the question: 'In what attitude?' For instance: 'The tower is

leaning; the dog is *running*; the tree lies *prone* on the ground.'

Habitus is the condition resulting from clothing, equipment, physical adjuncts; or a condition or state, expressed by the reflexive verb. Examples: clothed, shod, hatted; praising one's self, hurting one's self. It is an answer to the question: 'How surrounded, equipped; how conditioned?' For instance: 'He *wears* gloves; he is *disgusted* with himself.'

IN SURVEYING THIS LIST, IT IS BUT NATURAL TO ASK WHAT *LINE OF reasoning* Aristotle used so as to arrive at this particular number. We do not know. Nowhere in his writings does he explain his method of selection. Again, *must* there be just *ten* categories? Aristotle himself at times omits one or the other from his enumeration.² He gives the impression that he was not always sure in his own mind as to the necessity of this exact number. Eventually, however, he seems to have settled definitely on the list as given previously. Since Aristotle does not give us his reasons for this classification of the supreme categories, other philosophers have attempted to show that they are *grounded in nature* and have a foundation in things as we experience them; they have, then, objective value and are not the result of an arbitrary arrangement or of an *a priori* deduction. St. Thomas Aquinas offers the following explanation³ for the Aristotelian categories:

Being either exists in itself, without inhering in a subject, and then it is substance; or being merely affects and

modifies a substance, and then it is an *accident*. Accidents modify a substance intrinsically or extrinsically. Among those accidents which affect a substance 'intrinsically,' some may inhere in the substance relatively, and then we have *relation*. Others may inhere in the substance absolutely; if such an absolute accident follows the matter of the physical substance, we have *quantity*, and if it follows the form, we have *quality*. Among those accidents which affect a substance 'extrinsically,' some are partly extrinsic and others are altogether extrinsic. Among the 'partly extrinsic' modifications, the term of activity may be outside the substance, with the principle of activity within the substance, and then we have *action*; or the principle of activity may be outside, with the term of activity within the substance, and then we have *passion* or reaction. Among those accidents which are 'altogether extrinsic' modifications, some will affect the substance as a measure of its duration, and then we have *time*; or they will affect it as a measure of its place in space or as a measure of the disposition of its parts relative to themselves and to space, and then have either place or posture. Other 'altogether extrinsic' modifications are not a measure of the substance at all, but merely affect it as belonging to its surroundings and conditions, and then we have *habitus*. The diagram on [previously] gives a schematic arrangement according to the ideas of St. Thomas.

This searching analysis shows that Aristotle was justified in drawing up his list of ten categories. They flow naturally from the very concept of being. The number is neither too small nor too large; and the compactness and complexity,

the unity and flexibility of the list is such that it is serviceable for all practical purposes. It establishes order in our knowledge, by giving us a systematization and classification of the ideas attributable as predicates to the subjects in our judgments and of the various modes of being attributable to individual things as they occur in our experience. The Aristotelian categories have been accepted through the centuries, with some exceptions, as the finest set devised by the mind of man. In general, the scholastic philosophers of the Middle Ages and of modern times have embodied them in their system without alteration.

Some philosophers, as must be expected, are not altogether satisfied with the ten categories of Aristotle. They claim that some of them are not mutually exclusive and irreducible. Causal change, for instance, viewed from the standpoint of the agent, is 'action,' and viewed from the standpoint of the recipient, is 'passion' or 'reaction'; action and passion are thus only two phases of one and the same process. While this is true enough, it must not be overlooked that in most cases the agent and the recipient are two really distinct entities, and the causal change affects each one differently; there is reason, then, for making the distinction. In a real sense, too, 'quantity' enters into the concept of 'time,' 'place,' and 'posture.' Nevertheless, there is a difference in these concepts, and this difference seems large enough to warrant the placing of these ideas and modes of being in the list as separate categories. Even though only a *logical*, and not a real, *distinction* exists between some of these concepts, that should be sufficient, as long as there is a *foundation in the*

things themselves for making the distinction. A 'real' distinction hardly seems required, because it is the purpose and function of the categories to classify 'being,' not in an absolute sense, but according to the various modes in which it is attributable to some individual and according to the various ideas as predicated in our judgments. We must remember that Aristotle intended the categories to be primarily a system of *concepts* (universal ideas), and here a distinction in concepts suffices to list them as separate categories; only secondarily, in as much as concepts represent modes of being, did he intend them to be *ontological* categories. Hence, a logical distinction between the various categories, as long as there is a foundation for the distinction in reality itself, should suffice to give them a separate standing in the list.

In modern times, various attempts have been made to improve or supplant the categories of Aristotle. None were successful. The most ambitious of these substitutes are the categories of Kant. The objections against the categories of Aristotle are not of enough weight to offset the eminently practical division of all beings in the world as exemplified in this classification. Besides, tradition has sanctioned their use to such an extent that they have become almost an integral part of our language and mode of thought.

THE CATEGORIES OF KANT

Emmanuel Kant (1724—1804) sought to stem the tide of phenomenalism and skepticism which was running strong in his day, due to the philosophy of Hume. Kant's philosophy

ended in a phenomenalism even worse than Hume's. It is not within the province of ontology to give an exposition of Kant's principles; that belongs to epistemology.⁴ Suffice it to say, that he distinguishes between things-in-themselves and their phenomena. The things-in-themselves, or noumena, are the objects in the real world, independent of our thinking; but of these the mind can know absolutely nothing. The noumena excite our sensibility into action, and the result of this action is the production of phenomena or sense-intuitions through the subjective, innate sense-forms of 'space' and 'time.' These phenomena are the only things we can know, but they bear no resemblance to the things-in-themselves. The subjective forms of 'space' and 'time' are *a priori* present in the mind, anterior to all experience, and it is through them that experience becomes possible.

In order to obtain *intellectual knowledge*, our intuitions or phenomena must be brought under certain concepts or *categories* of the understanding; only in this manner can these intuitions become intelligible to us. The 'categories,' just like 'space' and 'time,' are subjective, innate, *a priori* forms of the understanding, and they must be united to the phenomena in order to make judgment and thought possible. These categories, therefore, are not derived from experience in any way; they are given with the mind itself and proceed from the mind. The things-in-themselves do not prompt the mind to form judgments about things by means of these categories. The application of the categories to the representations contained in the phenomena is altogether the action of a subjective law of the mind, and the resultant judgments tell us nothing about the things-in-

themselves and their modes of being; the latter are forever excluded from our knowledge.

Such is, in brief, Kant's doctrine of the categories. There are *twelve categories*, and for each there is a specific type of judgment. They are:

<i>Categories</i>	<i>Judgments</i>	<i>Example</i>
Quantity:	Quantity:	
(1) Unity	(1) Singular	This S is P
(2) Plurality	(2) Particular	Some S is P
(3) Totality	(3) Universal	All S is P
Quality:	Quality:	
(4) Affirmation	(4) Affirmative	S is P
(5) Negation	(5) Negative	S is not P
(6) Limitation	(6) Infinite	S is not-P
Relation:	Relation:	
(7) Substantiality	(7) Categorical	S is P
(8) Causality	(8) Hypothetical	If A is B, S is P
(9) Reciprocity	(9) Disjunctive	S is either P or Q
Modality:	Modality:	
(10) Possibility	(10) Problematic	S may be P
(11) Existence	(11) Assertoric	S is P
(12) Necessity	(12) Apodictic	S must be P

A glance at these Kantian categories will reveal the difference between them and the Aristotelian categories. The difference is fundamental and essential. The Kantian categories are *a priori mental forms*, absolutely independent of, and anterior to, all experience and the knowledge derived from experience. The Aristotelian categories are supposed to classify our knowledge of *reality*

as it exists outside the mind and as it is acquired through experience.

The Kantian categories have value *only for the mind* and its subjective operations. They merely bring the sense-intuitions or phenomena into a scheme of unity and give them necessity and universality. Since, however, the sense-intuitions or phenomena contain only knowledge which is purely subjective in character and does not reach to the noumena or things-in-themselves, the categories cannot tell us anything about the noumenal reality which lies outside and beyond the mind. Hence, the Kantian categories are not supreme classes of universal ideas and modes of being, but classes of *judgment-forms and modes of mental relations*. These categories give us no information about the objective content of the predicates or of the modes of being present in the things-in-themselves.

Kant calls these mental forms 'categories,' but the term is a misnomer. The notion of 'category' was clearly defined by Aristotle, and the term thereby acquired a definite technical meaning. This meaning had been accepted in the sense given by Aristotle for a period of over two thousand years and as such became fixed and traditional in the history of philosophy. For Kant, then, to use the term 'category' in the way he did, amounted to a distortion and falsification of philosophic language. This was unwarranted and unjustifiable, because the new meaning attached to the term 'category' was bound to produce a confusion of ideas. Aristotle and Kant simply do not mean the same thing, when they speak of 'categories.' As such, therefore, Kant's categories must be rejected as *arbitrary*. In no way can they

be considered a satisfactory substitute for the categories of Aristotle.

Following the subjectivistic trend of Kant's philosophy, modern theories of knowledge are more or less phenomenalist or idealistic. Quite naturally, these theories of knowledge affect the entire outlook on the external world. Many scientists and philosophers contend that we can know only the *appearances* of things, without being able to penetrate to the real nature of things. Notions like 'substance,' 'causal action and reaction,' 'time,' 'space and place,' and so forth, are undergoing radical changes. In consequences of such views the Aristotelian categories no longer carry the same meaning for many thinkers of our day as they did in times gone by. What the final outcome of these tendencies will be, no one can foretell. Up to the present, however, the categories of Aristotle can still be considered the best classification of the modes of being, and it is unlikely that they will be superseded.

PLACEMENT IN THE CATEGORIES

All things and modes of being must belong under some category, and it must be possible to place them there. This does not mean that all things and modes of beings, as we *conceive them in thought*, can be brought under a category directly. Due to the abstractive power of our mind, we often separate things in our thought which are united in reality and combine things in our thought which are not united in reality. Hence, it happens that we frequently conceive things to be different than they really are, and this

difference is manifested in our concepts and language. The 'family,' for instance, is considered as a unit in our concept, but in physical reality it consists of individual, really distinct beings. This general fact must be borne in mind, when we attempt to place something under a definite category. Philosophers, therefore, distinguish three different ways in which something may be placed in a category: *directly, indirectly, and reductively*.

In order that something fall under a category *directly*, a number of conditions are required. First of all, it must be a *real being*. It is the purpose of the categories to classify the modes of being which determine an 'individual being,' and it is only a 'real' being that can be an individual being. It is not necessary that a being actually exist, in order to be 'real,' because a possible or potential being is also 'real.' An actual or possible being belongs directly under a category; but a conceptual or logical being does not, because such a being is not a thing that can, as such, have reality except in the mind. Concepts like 'vacuum,' 'illness,' 'blindness,' 'paralysis,' etc., cannot be brought directly under a category; but concepts like 'man,' 'stone,' 'water,' 'iron,' 'body,' etc., are brought directly under a category.

Another condition demands that a thing must be, not an accidental, but a *natural unit* in its being; it must be a single essence, either simple (e.g., a pure spirit) or compound (e.g., a man). The reason for this condition is that what is not a natural unit in its being contains parts which may fall under more than one category. This condition excludes *collective* ideas, like 'family,' 'army,' 'flock,' 'library,' etc.; *complex* ideas, like 'paleface,' 'historian,' 'yellow orange,'

'black cat,' etc.; and *concrete adjectives* used as substantives, like 'sage,' 'American,' 'Indian,' etc. There is a double element in every such concept which hinders it from belonging to a single category. Thus, the term 'historian' involves two distinct concepts: a man (category: substance) who has a 'knowledge of history' (category: quality). But orange, man, dog, cat, water, wood, etc., are things with a natural unity in their physical being, as expressed by the concept itself, and they fall directly under the category of 'substance.' When, however, accidents are taken *abstractly*, like 'whiteness,' 'philosophy,' 'history,' 'warmth,' 'paleness,' etc., they belong directly to a category, because in such cases the concepts express only a single element or essence.

Furthermore, for direct placement in a category, a thing must be a complete being, and not a mere part of another being. We consider things here principally as they do, or can, exist as individuals. This condition excludes all *integral* parts of things, such as hands, feet, head, wings, heart, etc.; all *substantial* parts, like matter and form, body and soul; the *generic* element (e.g., 'sentiency,' in man) and *specific difference* (e.g., 'rationality,' in man), taken by themselves; and *modifications of accidents* (for instance, the 'intensity' of heat, the 'pitch' of sound, the 'voltage' of electricity, etc.). Complete beings, like man, horse, tree, gold, fish, bird, etc., are placed directly under a category.

Finally, only *finite beings* can be brought directly under a category. Only things, in which the term 'being' is used *univocally*, are predicamentally alike and belong together in the same category. It would be a case of logical violence

to place God and creatural beings together in the same class of 'substance,' because the distance which separates the infinite from the finite is immeasurable. The concept of 'being' or 'substance,' as applied to God and creature, is not univocal, but analogical. God is indeed a 'substance,' but a substance infinitely superior in every way to the substantiality of His creatures and as such infinitely beyond the category of creatural substance. The categories apply to beings of the *same order* only; consequently, they must be restricted to beings in the finite universe. God belongs to no category.

Such are the conditions for direct placement in the scheme of categories. Although not all realities can be brought directly under a category, they can be brought under them either *indirectly or reductively*. The differences which distinguish the *genera* and *species* of substances fall 'indirectly' under the category of 'substance.' Such would be concepts like 'rationality,' 'sentiency,' 'vegetancy,' 'materiality,' and 'spirituality.' *Parts* of things, beings with an *accidental or artificial unity*, and also *logical entities*, are brought 'reductively' under their corresponding categories. Thus, 'hands,' 'feet,' etc., 'family,' 'army,' etc., 'sage,' 'American,' etc., belong to the category of 'substance'; the 'intensity' of heat, the 'pitch' of sound, etc., to 'quality'; 'blindness,' 'illness,' 'paralysis,' 'toothache,' etc., to 'quality'; 'mathematical point,' 'curve,' 'triangularity' etc., to 'quantity.'

It might be asked: Why are not the nine categories, distinct from the category of 'substance,' placed under the *common genus of 'accident,'* so that there would be but two supreme categories, namely, *substance and accident*? For

one reason, the number would be too small, and the system of categories would no longer be serviceable in this abbreviated form. It would still be necessary to subdivide 'accident' into the other nine, in order to introduce a proper differentiation among the various concepts and modes of being. Besides, the concept of 'accident' cannot be said to apply univocally to the nine modes of being characterized by the various categories. An accident is defined as a being which needs a subject (substance) in which to inhere in order to exist. The common element in all accidents is that they 'inhere' in a substance. But this 'inhesion' is quite different in the various types of accidents. 'Thinking' and 'willing,' for instance, confer a distinct and new entity upon man; but 'place' and 'time' cannot be said to do that. Hence, the concept 'accident' applies only *analogically* to the various modes of being expressed by these nine categories. In that case 'accident' is not a true genus, and it is better to retain the separate standing of each category. However, even though one were to consider 'accident' a true genus, with a univocal application to everything that is not a substance, the practical purpose of the categories would still demand their separate enumeration.

After this general explanation it should be fairly obvious that the Aristotelian categories form a valuable framework for the classification of our knowledge of being and its modes.

SUMMARY OF CHAPTER XVI

The third part of ontology will treat of the ultimate and supreme modes of being. These are the *categories or predicaments*.

1. *Concept of the Category*. Aristotle changed the term 'category' from an expression in a court of law to a technical expression of philosophy and used it in the *logical* meaning of a supreme class of predicates in our judgments. Since, however, the predicates represent reality, he also gave the categories an ontological meaning. The ontological categories are the *ultimate and supreme modes of real being*.

2. *Principle of the Categories*. The number of categories must be neither too small nor too large; they must be natural divisions of the modes of being; and they must contain a complete classification. Since they are the supreme classes of the modes of being, and since 'being' and the 'modes of being' can be found only in individual beings, individual being must be the principle for the division and number of the categories.

3. *The Categories of Aristotle*. Aristotle distinguishes ten categories: substance, quantity, quality, relation, action, passion, place, time, posture, and habitus.

4. *The Categories of Kant*. Kant's so-called 'categories' are not categories in the accepted and traditional sense. They are *judgment-forms* and modes of *mental relations*. They are innate mental forms which tell us nothing about noumenal reality or things-in-themselves, since, according

to Kant, our knowledge is restricted to phenomena, and phenomena are only subjective constructs of the mind.

5. *Placement in the Categories*. All beings and modes of being can be placed in the categories either directly, indirectly, or reductively. For a *direct* placement the following conditions must be observed: the thing to be placed must be a 'real' being; it must be a 'natural unit' in its being; it must be a 'complete' being; it must be a 'finite' being. *Indirectly*, the differences which distinguish genera and species fall under a category. *Reductively*, parts of things, beings with an accidental or artificial unity, and logical entities are brought under categories.

READINGS

Aristotle, *Categories*; Urráburu, J. J., Disp. IV, cp. II; Coffey, P., Ch. VIII; Pesch, Tilmann, ff. 1433-1454; Osgniach, Augustine J., *The Analysis of Objects*, Ch. I, II, III.

¹ See the author's *Science of Correct Thinking*, p. 49 ff

² For instance, in his *Physics*, Bk. V, Ch. I, 225b, he omits posture and habitus.

³ In *Metaph.*, lib. 5, lect.

⁴ See the author's *Reality and the Mind*, p. 108 ff., and 272 ff.

Chapter 17

SUBSTANCE AND ACCIDENT

HAVING EXAMINED THE GENERAL NATURE OF THE CATEGORY and the reasons underlying its division into ten, we must now turn our attention to the single categories. The first and most important of these is substance. The other nine can, in a broad sense, be placed under the common heading of accident, for whatever is not a 'substance' is classified as an 'accident.' The division of all beings into 'substances' and 'accidents' is traditional in philosophy, but this tradition must be justified and cannot be taken for granted without proper proof. It is the duty of the ontologist to investigate the matter and furnish the reasons which prompt philosophers to divide all things in this manner.

CONCEPT OF SUBSTANCE AND ACCIDENT

A substance is a being whose nature it is to exist in itself and not in another as in a subject. An accident is a being whose nature it is to exist in another as in a subject. In order to obtain a better understanding of these definitions and of the nature of substance and accident, it will be necessary to analyze them somewhat more in detail.

From the *logical* standpoint of experience and knowledge, we first come to know the accidents of quantity, quality, and activity of things: namely, size, shape, weight, color, heat, odor, flavor, motion, growth, and similar realities. Then, observing the relative permanence and identity of the thing, notwithstanding the manifold modifications and changes which occur in it, we come to know the underlying subject or substance. The substance, therefore, is conceived as being the underlying subject or support (Lat., *substantia*, *substans*, from *substare*, to stand under, bear, support) of the accidents, while not being supported in its being and existence by another. The accident (Lat., *accidens*, from *ad* and *cadere*, to fall to or upon, to rest on) is conceived as being something which requires a subject to inhere in, so that it has the necessary support for its being and existence, because it cannot exist except in another being. From the *ontological* standpoint of being and existence, the substance is first and the accident follows, because the accident is only a modification of the substance and therefore presupposes the presence of the substance before it can itself have being and existence in the substance.

A substance, then, is a being which possesses sufficient entity of its own to exist independently, so that it does not exist in another as *in a subject* which must support it in existence. The meaning is: Among beings and realities existing in the universe, substances are mutually independent beings, each capable of existing in itself as a self-contained thing, without the need of another being in which it must inhere in order to have existence. Shape and

size, for instance, exist in man as in a subject; but man himself is an ultimate thing which does not again exist in something else.

We may look at 'substance' in two ways: as a thing in itself, and as a support of accidents. Obviously, the *primary* concept of substance is that it is a *thing in itself*; it is a secondary concept to consider it as a subject of modifying accidents. It is but natural that a thing must be something in itself before it can be something *for others*. Even if it had no modifying accidents at all, it would have its own entity and as such would be a true substance, because it would still be a thing existing in itself. In this manner God, who has no accidents in His being, is a substance *par excellence*, because He already possesses in the infinite perfection of His substance whatever entity accidents could possibly confer upon Him. Accidents necessarily presuppose the concept of 'substance,' but substances do not postulate the concept of 'accident.' Consequently, we do not define 'substance' as the subject of accidents, but as a being whose nature it is to exist in itself and not in another as in a subject.

THE ACCIDENT IS DEFINED AS A BEING WHOSE NATURE IT IS TO exist in another as in a subject. The categorical accident always presupposes a subject of which it is a modification, and this subject is ultimately a substance. 'Ultimately'; because it would be erroneous to think that every accident must inhere immediately in the substance. One accident may inhere *in another accident* as in its *direct* subject;

shape, for example, is an accident directly modifying quantity, and quantity is an accident directly modifying a material substance, so that shape modifies the substance only indirectly. Ultimately, of course, shape modifies the substance and must inhere in the substance as its fundamental subject and support.

Every accident demands inherence in a substance. However, one must avoid a too crude conception of this *inhesion*. Accidents are not a sort of outside coating or covering for the substance, nor are they to be considered as foreign and extraneous realities attached to the substance or permeating its being. Accidents are rather *determinations and differentiations* of the determinable and indifferent substance. The substance has certain potentialities which demand development and actualization, and the accidents are the *actualizations* of these potentialities. To give some examples. The human soul possesses an intellect, but the intellect needs the determination of active 'thinking' in order to become actualized; this active 'thinking' is, therefore, a perfecting accident of the intellect. Man also has the power or potentiality of sense-perception, but this potentiality must be actualized before it can be of any use to man; this actualization takes place in the acts of sight, touch, hearing, etc., and these acts of sensation are accidents which bring the power of perception to its natural completion. Thus all accidents are a fuller realization of the substances which they modify.

The definition of accident was formulated in such a manner that it was said to be 'a being whose *nature* it is to

inhere, etc.’ It was advisedly not stated to be a ‘being *which inheres* in another.’ Strictly speaking, it is not essential to an accident to *actually* inhere in another as in a subject. Science and philosophy, it is true, know of no case where accidents exist outside their substance. Nevertheless, the essence of an accident would still be the same, and an accident would always remain an accident, even if it were to exist outside its subject, provided its *nature* requires that it normally exist in a substance. To exist outside its subject would indeed be an abnormal condition for an accident. This, however, would not change its essence, because it would retain the *natural necessity* and *aptitude* to inhere in a subject. It could never lose this ordination toward its substance. The essence of an accident naturally demands inhesion and this demand would accompany it even outside its subject; it would, therefore, never become ‘substantialized’ by the mere fact of being detached from its substance.

This distinction between actual and aptitudinal inherence of an accident in its substance is of great importance in the doctrine of the Holy Eucharist, where the accidents of shape, color, extension, etc., are deprived of the natural support of the bread-substance and wine-substance after consecration and are preserved by divine power outside any substance. Because of the natural aptitude and exigency of inhesion, they are still ‘accidents’ and do not become substances.¹

Hence, this ‘aptitudinal inherence’ is an essential characteristic of an accident, but the ‘actual inherence’ is

only a normal condition for it; God's omnipotence could detach an accident from its substance without destroying its essence.

KINDS OF SUBSTANCE

Substance can be viewed from different standpoints. A number of divisions of substance can be made, each representing a different *kind* of substance. We will now examine the main classes.

Primary and Secondary Substance. For a proper understanding of this division of substances, we must go back to the days of Plato and Aristotle. *Plato* (427 or to about 348 B.C.) made a serious attempt to account for the universality and necessity of our scientific knowledge. Since our scientific knowledge is supposed to be universal and necessary in its scope, it must be a true representation of *reality*; as such, then, the reality, from which our knowledge is derived and which our knowledge represents, should itself be 'universal' and 'necessary.' Plato could find no such universal and necessary realities anywhere in the physical world as we observe it: all things are individual, not universal; and they are not necessary, but in a continuous process of generation and dissolution. The things of this world, therefore, Plato contended, cannot be the reason for the universality and necessity of our knowledge. Since, however, the 'concepts' or 'ideas' of our mind represent the essence of things, he concluded that the 'concept' or *Idea* is the only reality which is permanent and unchangeable. The *Idea* must, then, be the very essence of the reality' of

‘being’ and of the reality of scientific ‘knowledge.’ Such Ideas would have to be universal and necessary, existing independently for themselves, apart from the concrete things in the world and from the concepts of our mind; they would be the patterns or exemplars according to which these concrete things and our concepts are fashioned. The physical objects would be faint copies of these Ideas, and our concepts would be intellectual copies of these same Ideas. These Ideas exist in a world of their own as essences and substances, unchangeable and eternal. Hence, these *Ideas* are the *primary substances* and the *individual substances are secondary substances*.

Aristotle attacked Plato’s ‘world of Ideas’ as fanciful, poetic, and superfluous. He contended, and rightly, that we derive our universal ideas of things from our observation of the *things themselves*, not from a contemplation of eternally existing Ideas. When we form the universal idea ‘man’ as applicable to the whole class of men and to every individual man, we do so through a process of mental abstraction; we leave aside the individuating characteristics which differentiate one individual man from another and select (‘abstract’) those elements which all individual men have in common with each other. In this manner we arrive at the universal idea of ‘man’ or of a ‘rational animal’; it applies to all men as a class (e.g., ‘*Man* is mortal’) and to each individual man (e.g., ‘*This man* is mortal’). Aristotle is correct in his view that we derive our universal ideas through abstraction from individuals.² The concept ‘man,’ therefore, applies primarily to the individual human being and only secondarily to the species or class. Therefore, the

individual ('this man') is the *primary substance*, and the substance expressed by the *universal idea* ('man' in general, as a species or class) is a *secondary substance*.³

Every individual substance is a primary substance: every single inanimate body (every bit of gold, paper, wood, air, etc.), every single plant (every rose, elm, bush, grapevine, etc.), every single animal (every dog, elephant, etc.) and every single man (Washington, Napoleon, Lincoln, etc.). *All universal ideas*, representing substance as a class, are secondary substances: man, animal, organism, body, substance, plant, fish, bird, etc., taken as a species or genus.

Complete and Incomplete Substances. All primary substances are either complete or incomplete. A substance is *complete* when it exists in such a manner that its nature demands no further union with a substantial co-principle. When a substance is complete, it possesses everything that its constitution and essence requires for its existence and for the proper functioning of its natural activities. Thus, every human being, consisting of body and soul, is a complete substance, capable of existing and of performing its natural functions of vegetancy, sentiency, and rational life; in like manner, every brute, plant, and inorganic body are complete substances.

A substance is *incomplete* when its nature demands that it be conjoined with some other substantial co-principle, so as to constitute a complete substance. Each substantial part or principle, taken alone, would be insufficient to exist, or, at least, would be insufficient for all the functions of an individual of that particular species. It must be borne in

mind that we are speaking of *substantial parts*, not of accidents. Thus, man soul alone, without his body, could not perform the functions of vegetancy and sentiency (for example, digestion and sight) which functions are also natural operations for man; man needs a material body for them. Neither could man's body alone, without the soul, perform the functions of thinking and willing; man needs an intellectual soul for them. Hence, body and soul, each considered alone and in itself, are incomplete substances; they are substantial parts or co-principles which must be united into a single whole, in order to make a compound nature capable of all the functions proper to it.

A substance may be *incomplete* in two ways; in the line of 'substantiality' or in the line of 'specific perfection.' It is incomplete in the line of *substantiality*, when it cannot perform any functions of the complete substance *alone*; it must always be united with its substantial co-principle. In this way, the brute soul and plant soul cannot exist outside the matter which they inform and cannot, therefore, be active in any manner unless united with matter; the functions of these types of being are such that they are dependent on matter at all times for their existence. Matter, the other co-principle, is incapable of performing any activity of its own, because it is altogether indeterminate and cannot exist except in conjunction with a substantial form or soul. Matter and form are the two substantial co-principles which unite to constitute a bodily substance; and in every bodily substance below the level of man these substantial co-principles are incomplete in the line of substantiality.

A substance is incomplete in the line of *specific perfection*, if it can, when alone, perform *some* but *not all* activities proper to the complete substance. Thus, the human soul, being spiritual (as will be shown in rational psychology), can survive the dissolution of the body and in this disembodied condition perform some functions proper to man, for instance, thinking and willing. This is possible because such functions are spiritual and as such intrinsically independent of matter. Other operations, however, like nutrition and sense-perception, demand the participation of bodily organs and cannot be performed by the soul alone. Man, as man, though, must be able to perform all three types of activities vegetancy, sentiency, and rationality. Hence, man's soul is complete in the line of 'substantiality,' because it is independent of the body in its existence; but it is incomplete in the line of 'specific perfection,' because it cannot perform *all* human operations independent of the body.

SIMPLE AND COMPOSITE SUBSTANCES. ALL COMPLETE SUBSTANCES are either 'simple' or 'composite' in their nature. They are *simple*, when they do not consist of entitatively distinct *substantial parts*. Such simple substances are called *pure spirits*, for instance, angels or God. Complete substances of this kind are 'absolutely simple.' However, one can speak of certain substances as 'naturally simple' in a wider sense of the term 'simple.' By 'naturally simple' substances one would then understand substances which consist of parts which are material and entitatively distinct, but naturally

indivisible and inseparable. The ultimate physical components of the universe (perhaps protons and electrons) would be 'naturally simple' in this sense; and also, according to the view of some aristotelian-scholastic philosophers, the forms or souls of plants and animals.

A *composite substance* is a complete substance consisting of incomplete *substantial parts*, entitatively distinct among themselves, in such a manner that their union results in a single, *unified nature*. In a composite substance neither of the incomplete part-substances inheres in the other as in a subject of inherence; they complement each other, making a single principle of natural functions through their union. Man, for instance, is a composite substance consisting of body and soul. The soul does not inhere in the body, as an accident inheres in its subject; nor does the body inhere in the soul. Neither do soul and body merely co-exist side by side, as if each were independent of the other in its functioning. Soul and body form a natural unit, a *single nature*, so that man is not two things, but *one substance*; in consequence of this substantial composition man, as a unit, is capable of spiritual and material vital activities. Our consciousness testifies to the fact that we are not two things or substances, but one. Man, therefore, is a composite substance. So, too, is every animal and plant; they possess not only chemical and physical properties and activities, but also properties and activities which are immanent and therefore vital. Whether chemical elements (e.g., radium, helium, hydrogen, oxygen, etc.) and chemical compounds (e.g., water, carbohydrates, carbon monoxide, etc.) are

composite substances with a single substantial form, is a mooted question. The theory of matter and form (hylomorphism) belongs properly to cosmology and will be treated there.

Every composite substance is, then, a *substantial unit* (*unum per se*), not an accidental unit (*unum per accidens*). A thing is said to be an 'accidental unit,' when it consists of two or more complete substances collaborating in a unified combination and action, while each component retains its substantial entity in the arrangement of the whole. A few examples will clarify this notion. A 'hive' of bees is a unit; since, however, each bee remains a complete substance in itself, a colony of bees is only an accidental unit. Soldiers and officers form an 'army' with a unified action; but an 'army' is only an accidental unit, because the soldiers and officers are obviously not merged into a single substance and nature. The difference between such an 'accidental unit' and a man or an animal or a plant as a 'substantial unit' is evident: the compound of body and soul in man and animal and plant is such that they are a single principle of action, a single nature, a single substance; their functions proceed from the *whole* as a *unit*, and that 'whole' is not accidental or artificial, but substantial and natural.

KINDS OF ACCIDENTS

Accidents, like substances, can be viewed from different standpoints and classified accordingly. The following are the main kinds of accidents.

Relative and Absolute Accidents. By 'relation' we mean the bearing which one thing has to another. There are always two terms to a relation: the 'relative' or thing relating, and the 'correlative' or thing related to. A *relative accident*, therefore, is an accident that has its being in a subject only because of the bearing which one thing has to another. More will be said about relative accidents in a subsequent chapter.

An *absolute accident*, on the other hand, is one that confers a *real perfection* upon its subject. *Extension* or quantitative dimension is such an accident. To be 'large' or 'small' is a matter of comparison with another object, but no object can be styled 'large' or 'small' in any sense unless it inherently possesses quantitative dimensions in *itself*, so that it can be compared with the quantitative dimensions of other objects. It is because of such dimensions (extension) that a body occupies space, is measurable, and can be divided; but all this presupposes parts beside parts in the object. Such parts are a real perfection for a thing. Again, *qualities* are absolute accidents. The potential energy of physical bodies; the power of nutrition, growth, and reproduction in plants; the faculties of sensation in the various sense-organs of an animal; intellect and will in man: all these things are a perfection for these respective substances. Furthermore, *activities* are absolute accidents. The physical actions of bodies as effected through kinetic energy, the vital functions of plant, animal, and man — these are accidents which confer perfection upon the substance performing these activities. When we walk,

digest, see, hear, feel, think, and will, our nature actualizes its powers and acquires perfection thereby.

Strictly Absolute and Modal Accidents. There are two kinds of absolute accidents: strictly absolute and modal. A *strictly absolute accident* is one which affects a substance in such a manner that it actually confers upon it some *positive* and *new entity*. Such an accident, though it inheres in a substance and needs the substance as a support for its existence, possesses an entity of its own, distinct from the entity of the substance. Such would be the various types of accidents mentioned above in the preceding paragraph.

A *modal accident* or accidental mode is the definite disposition or determination of an indifferent and determinable entity, without conferring any positive and new entity upon the substance. It is something real, but it does not possess any entity of its own, distinct from the entity of the substance itself. Shape, being in motion or rest, being in time (*quandocation*) and place (*ubication*), and posture belong to this class.

Such modes are something *real*; they are not 'nothing,' nor are they logical entities existing only in the mind. It makes a difference in the real order, whether a thing have this or that shape, whether it be at rest or in motion, whether the motion be straight or curved, whether it be in a high or a low place, whether its movements occur today or tomorrow, whether it have this or that posture. These modes *change* in the real order of things, and that shows that they are neither 'nothing' nor a mere logical entity.

Intrinsic and Extrinsic Accidents. *Intrinsic accidents* are such as affect the *being* of the subject in some way or other;

as such they are internally united to the subject and modify it entitatively. Absolute accidents are of this kind. The quantity of a 'body' as manifested in its three dimensions of length, breadth, and depth, is a positive accidental entity affecting the being of the material body. All qualities, whether material or spiritual, have the same character. All actions of bodies, immanent as well as transient, also belong to this class of accidents.

The case of *extrinsic accidents* is very different: they are accidents which *do not affect the being* of their subject; but they affect it indirectly by modifying the subject's immediate surroundings. *Habitus* is such an accident. It makes a difference to a person to be clothed or unclothed, to be barefooted or booted, etc. It is obvious, however, that such modifications are entirely *exterior* to the person and do not affect his being as such in any direct and intrinsic manner.

KNOWLEDGE AND SUBSTANCES

David Hume (1711—1776) denied the existence of all substance, material and spiritual. "I would fain ask those philosophers, who found so much of their reasonings on the distinction of substance and accident, and imagine we have clear ideas of each, whether the idea of *substance* be derived from the impressions of sensations or reflection? If it be conveyed to us by our senses, I ask, which of them; and after what manner? If it be perceived by the eyes, it must be a color; if by the ears, a sound; if by the palate, a taste; and so of the other senses. But I believe none will

assert, that substance is either a color, sound, or taste. The idea of substance must therefore be derived from an impression of reflection, if it really exist. But the impressions of reflection resolve themselves into our passions and emotions; none of which can possibly represent a substance. We have, therefore, no idea of substance, distinct from that of a *collection of particular qualities*, nor have we any other meaning when we talk or reason concerning it."⁴

Hume's argument for the sole validity of our knowledge of phenomena underlies many modern theories of knowledge. The only means of contact that man's mind has with the outside world is the system of his senses. Consequently, the mind of man can know nothing but phenomena. For the mind to attempt to penetrate beyond the phenomenal world is a futile and illegitimate procedure. We must deny the existence of anything beyond phenomena, or, at least, we must treat that which lies beyond as the 'unknown and unknowable.' Phenomenalism may admit the existence of motion, weight, color, extension, action, thought, volition, and similar realities of a passing character; but *there is no thing underlying them* which moves, is heavy, is colored, is extended, acts, thinks, wills, etc. If we still think of some 'hidden substance' as the support of these phenomena, this is but a creation and fiction of the mind. The concept of 'substance' has no objective value.

What are we to think of this argument and its implication? Is it conclusive? Is our mind irrevocably restricted in its knowledge to the phenomenal? Is there no

way of penetrating the veil of appearances? The array of opposing opinions is certainly formidable and must not be treated lightly.

We admit that our senses, as such, do not and cannot perceive 'substance,' but only the *qualities* of things or phenomena. In this sense it is true to say that we do not *experience* that which we call 'substance.' If our knowledge is absolutely circumscribed by 'sense experience,' we must admit that we can have no knowledge of 'substance.' However, is this truly so? Empiricists, sensists, materialists, and phenomenologists in general all assert this to be the case. We deny this most emphatically. Unfortunately, the entire question of the validity of human knowledge plays an essential part in the solution of this problem. The problem of human knowledge, however, is the problem of epistemology, not of ontology. The ontologist presupposes the validity of human knowledge as already definitely established. Hence, a few remarks must suffice in this connection.

Man's knowledge is not restricted to experience; it is based on *experience* and *intellection*. Man has not merely a number of senses, but also *understanding* and *reason*. Reason is as much a part of man's mental equipment for acquiring knowledge as the senses are. Knowledge for man begins in sense experience, but is completed, extended, and perfected by reason. There can be no science or philosophy without the use of reason; the senses alone are inadequate for this. Animals have sense experience like man; but, unlike man, they manifest no signs of science or philosophy. Reason must be accepted *as a legitimate source of*

knowledge. To deny this means to deny the legitimacy of all sciences and philosophy. But in that case the phenomenals refute themselves, because their theories are not 'experience' but 'philosophy.' They use their *reason* to arrive at the conclusions of their theory of knowledge: they do not taste or smell or see or hear or feel them. Now then, reason either is a legitimate means of knowledge, or it is not: if it is, phenomenals are wrong in restricting our knowledge to sense experience and phenomena; if it is not, their theories must be rejected as futile, because they are based on the conclusions of their reason.

As a matter of fact, no one can deny the legitimacy of reason and reasoning without falling into universal skepticism. Reason must *interpret* the data of sense; only in this manner can we have science and philosophy. Though our senses can directly perceive nothing but the qualities or phenomena in nature, our *reason can draw necessary conclusions* from the data of these qualities or phenomena. *Science* does this continually. It deduces the laws of nature from phenomena and expresses them in exact mathematical and logical formulas. These laws and formulas, however, are not objects of sense in any manner; they are conclusions of reason, based on the data of sense. As such they go 'beyond and behind' the phenomena which are perceived in sense experience. If this procedure is illegitimate, then science itself is illegitimate. And in that case all thinking and reasoning is illegitimate. That, however, would be skepticism and the bankruptcy of all knowledge. The legitimacy of reason and reasoning, therefore, must be upheld and maintained as a means of knowledge.

If, then, reason forces us to the conclusion that the phenomena alone are an insufficient explanation of the facts as revealed in sense experience, we must follow the dictates of reason to its logical conclusion. And if this means that reason demands the existence of an underlying substrate or 'substance' for the phenomena, in order that we can account for the existence of these phenomena themselves, we must perforce accept the existence of 'substance.' To refuse to accept such a 'substance' would then do violence to reason, and that would be the suicide of reason and the destruction of our knowledge in all its departments. *Sense and reason*, experience and intellection, must go hand in hand and guide us in our investigation of the problem. Experience without intellection would give us merely a chaotic mass of facts, but not the systematic interpretation of science and philosophy; intellection without experience would give us a world of abstract and speculative ideas, but would tell us nothing of the universe around us. Hence, the problem of the existence of 'substances' in the universe can only be solved by our *reason*, applying itself to the data furnished by *sense experience* and drawing the necessary conclusions.

THE EXISTENCE OF SUBSTANCE

In proving the existence of substance it should be borne in mind that it is not essential for a substance to possess accidents inhering in it; so long as it exists in itself and not

in another, it must be designated a 'substance' in the traditional sense.

Our first argument is based on *reality and the concept of substance* as just given. All that we presuppose for this argument is the concept of 'substance' and 'accident' and the existence of actual beings. The existence of *actual beings* cannot be denied. We ourselves, at least, exist. Were anyone to deny his own existence, he would prove his own existence by his very denial: for no one can possibly make a denial, if he does not exist. And as long as one admits one's own existence, one cannot logically deny the existence of other beings. Actual beings, therefore, must be admitted, otherwise there would be no sense in arguing about the reality of 'substances' and 'accidents.' The opponents all admit the existence of phenomena; there is only a question about the existence of substances. The argument is really quite simple:

Actual beings exist. Whatever exists, exists either *in itself* and not in a subject, and then it is a substance, or not in itself but *in another*, and then it is an accident. This exhausts every possible way of existing. To admit the first alternative settles the question, because one thereby admits that substance exists. Hence, if phenomena exist without underlying subjects, they are simply 'substances' in the sense defined. The opponents, in denying the existence of substances, have no other choice but to say that whatever exists must exist in another. But this, too, ultimately proves the existence of substance. Since it exists in an-other, they must necessarily postulate this 'other in which it exists as in a subject; this 'other,' however,

supporting it in its existence as a subject of inherence for it, is a 'substance' thereby. Hence, substance exists.

Their only means of escape from this conclusion would be to assert that every accident (quality, phenomenon) exists in *another accident* (quality, phenomenon), and this second in a third, and so on; we would thus have a *series* of supporting accidents. This series, however, is either finite or infinite. If *finite*, there must be a last one at the end of the series; this one, being the last in the series, has no other to exist in; it must exist in itself and not in another; and it is, in consequence, a substance supporting the other accidents, because it fulfills the conditions contained in the definition of a 'substance.' If *infinite*, then we have an infinite number of accidents inhering in each other serially. However, the assumption of an infinite number of accidents piled upon each other, simply to explain the red color of a rose or the round shape of a ball or the incandescence of a filament, is really too absurd. Besides, an actually infinite number, as will be shown later, is self-contradictory. But if the opponents still insist on an infinite number of accidents, one inhering in the other, then the following point can be urged. Does this infinite series exist in itself or in another? If *in itself*, it is a being which exists in itself and not in another as in a subject; as such it would be a substance, and thus a 'substance' would again exist. If *in another*, this infinite series of accidents would presuppose this 'other' as the subject of its inherence; this 'other' must be a substance and cannot again be an 'accident,' since there would then be an 'accident' which is *outside* the infinite number (series), giving a number which would be *one plus*

the infinite number. This is absurd, because it is impossible to have a number greater than infinite: in that case the supposedly 'infinite' number never was infinite, but finite. Since an infinite series of accidents inhering in each other is thus seen to be impossible, the number can only be *finite*; a finite number of accidents, however, demands an ultimate subject for the series, and this ultimate subject is a 'substance.'

Since, in short, things do exist and not all can be accidents, some must be substances. Hence, substances exist.

Our second argument is based on the *conscious Ego and the concept of substance*. Our consciousness, as was indicated above, is a clear witness to the fact that our Ego is the permanent subject of our willing, thinking, walking, resting, working, eating, smoking, growing, pleasure, pain, anger, love, etc. This means that the Ego, our 'self,' is the subject of all these changes, modifications, and qualities, bodily and mental. We perceive not merely the presence of these phenomena or passing states as existing realities; we recognize them undeniably *as our own*, i.e., that our *Ego possesses* them. This is evident from the way we speak of them. We say: '*I think,*' '*I walk,*' '*I love,*' etc. If the Ego were not the underlying subject of inhesion for these various states and activities, we could have a knowledge of their 'existence' only; our conscious experience should never prompt us to refer them to a non-existent Ego as the one to whom they belong and in whom they occur.

And this Ego as subject is also recognized as a *substantial* subject of these phenomenal realities. We know

through self-consciousness that the Ego is not an act or a state or a modification of some *other* subject underlying itself; it is an *ultimate* reality, existing in itself. The Ego never refers its states and activities to an ulterior being beyond itself as to their subject.

All the functions of mental life, like thinking and willing and emotional states, are referred to the Ego; so, too, are the bodily activities, like walking, eating, and growing. The Ego is the ultimate reality to which they are referred as their *possessor*, and nothing is experienced which could be designated as the ulterior possessor of the Ego. Hence, our Ego must be adjudged 'a being existing in itself and not in another as in a subject.' Since we may not doubt the testimony of our consciousness, the Ego must be a *substance*, because the definition of 'substance' applies to it.

Now, just as we must conclude that the Ego is a real substance, we must conclude that there are subjects for the changes and modifications (phenomena) in the world about us. There can be no 'extension' in the world outside without there being 'something extended'; there can be no 'squareness' or 'roundness' without there being 'something square' or 'something round'; there can be no 'motion' or 'action' without there being 'something moving' or 'something acting'; there can be no 'heaviness' or 'solidity' without there being 'something heavy' or 'something solid.' These qualities are phenomena; but the '*something qualified*' must be a *substance*. This is a legitimate conclusion, based on our own internal experience and carried over to the field of our external experience.

SINCE THE DAYS OF LOCKE, IT HAS BECOME CUSTOMARY TO THINK of 'substance' as some sort of hidden, inert, inactive core upon which the qualities rest. This is a misconception. It is *no such inert, inactive being*. Water may flow, boil, freeze, turn to steam. Just what is the 'substance' here? It is the very 'water' itself. Gold is a metal, yellow, malleable, ductile, heavy. What is its substance? The 'gold' itself, which is actualized as metal, yellow, malleable, ductile, heavy. The substance is the *intrinsic* nature of things, considered as the source of the various states and activities which we perceive. *Something* certainly *remains constant* and *permanent* in such changes and activities; it is the 'nature' of the thing, and this 'nature' is the 'substance.'

Again, opponents labor under a misconception when they speak of substances as something 'unknown and unknowable.' Of course, if they mean that we do not have direct sense-apprehension of substance, they are correct. But neither do we have a direct intuition of atoms, electrons, and similar things; yet we know a great deal about them through their *effects*. The same is true of 'substances.' Every physical body is a substance, and science tells us many things about bodies. Everything we know concerning the quantity, quality, and activity of a thing is a manifestation of its substance, because they are the *actualizations* of the substance. What things *do*, tells us what they *are*. After all, the knowledge of science is, to a very great extent, just this kind of knowledge. For example, our knowledge of the energies of nature consists entirely in

what they can or cannot perform; and such, too, is our knowledge of the molecular, atomic, and sub-atomic world. Molecules, atoms, protons, electrons, and kindred realities, are substances. Needless to say, all bodies like minerals, metals, solids, gases, fluids, chemical compounds, plants, animals, men, and stars, are substances. No one can say that such things are unknown and unknowable. In calling them 'substances,' we merely wish to indicate the *manner and mode of their existence*, namely, that they are beings which exist in themselves and not in another as in a subject. The distinction, therefore, between such things (substances) and their modifications (accidents) simply adds one more important item of information to our store of knowledge concerning them. If the opponents understand anything else under the terms of 'substance' and 'accident' than this traditional definition and explanation, they place a false interpretation upon them and are guilty of fighting straw men of their own making.

EXISTENCE OF ABSOLUTE ACCIDENTS

Descartes denied the real distinction between accident and substance, contending that there are no *absolute accidents*, i.e., no accidents which communicate a positive and new perfection or entity to the substance which the latter would not already possess as a substance. His view, and that of his followers, was that accidents are only 'determinations' of substance which consist in a difference concerning the *position* and the external connection of the *parts* in a substance, or in a difference concerning the *bearing* of one

substance toward another. This would mean that there are only *relative accidents*.

This view is *erroneous*. Certainly, many accidents are merely relative; for instance, those of 'similarity' and 'equality' between two individual substances. The mere fact that two persons or trees are five feet and ten inches tall, does not give to either of them any positive and new perfection or entity beyond what they already possess; their 'equality' in height consists entirely in this 'point of comparison or relation. The same applies to the 'similarity' between a horse and a cat, because they resemble each other in this that both are 'white' in color. But not all accidents are of this kind. *There are absolute accidents*. In proving this statement, we will restrict ourselves to facts revealed by our own internal experience, because no philosopher can doubt this evidence without destroying the ultimate possibility of all valid knowledge.

Our *internal experience* testifies to us that there are various modifications within us, like thinking, willing, seeing, hearing, feeling, walking, working, and various kinds of productive activity. To deny these activities is to make an illusion of our internal experience as a source of knowledge. These activities are a *reality*, distinct from our fundamental essence or substance. They are present for a time and then disappear; we exert ourselves to increase or decrease their intensity; we are actively engaged in bringing them forth or stopping them. These activities confer a new perfection and entity upon us which was not there before. Would anyone assert seriously that a blind and deaf person does not lack something which one who

sees and hears possesses through the activity of sight and hearing? Or, that a healthy person does not possess a perfection and entity which a critically ill person has lost? If so, then there is no real distinction between blindness and sight, deafness and hearing, health and illness; but that is obviously false. However, while these activities come and go, we still retain our *essential identity* as an abiding and permanent reality throughout the origin and passing of these transient modifications. But this proves that we are a *substance*, while these acts are a positive perfection and entity consisting in something more than the mere relation of one thing to another; more, for instance, than the relation of 'similarity' between the light of an electric lamp and the light of a star.

Knowledge, too, is more than an accidental relation. If it were nothing real superadded as an entity to the mind, then the mind with knowledge would not be really different from the mind without knowledge. Ignorance and knowledge would really amount to the same thing for a mind. But the mind undergoes a *change*, when it passes from a state of ignorance to a state of knowledge, as our consciousness clearly testifies. Change, however, implies that something is actually acquired (or lost) in the process. Reversely, when we forget or are the victims of amnesia, we realize that we have lost something definite in the line of a perfection for our mind; not the mind itself, of course, because that we still possess, but something that the mind had and now is deprived of. If knowledge were not a real perfection, we would acquire nothing when we learn, and we would *lose* nothing when we forget; there would then be

no real distinction between the erudition of a great thinker and the vacuity of an idiot. Hence, knowledge is *something* that can be acquired and lost, an accident that is a reality distinct from the mind. The *effort* we put forth in order to learn proves the same thing. It takes no effort on our part to be similar to another in the color of our complexion or equal to another in our size. But to acquire a knowledge similar or equal to that possessed by another, demands distinct effort and labor. And this proves that knowledge is more than a mere relation or relative accident; it is an absolute accident.

This brief examination of the various kinds of substances, accidents, and modes should give us a better understanding of the different ways in which 'being in general' is realized in the things which constitute the totality of the universe.

SUMMARY OF CHAPTER XVII

The division of all beings into 'substance' and 'accident' is traditional in philosophy.

1. *Concept of Substance and Accident.* A *substance* is a being whose nature it is to exist in itself and not in another as in a subject. An *accident* is a being whose nature it is to exist in another as in a subject. This 'aptitudinal inherence' is the essential characteristic of an accident, while 'actual inherence' is its normal condition.

2. *Kinds of Substances.* Primary and secondary substances. The former are the individual substances; the latter are the class-substances (e.g., species and genus) expressed by universals. *Complete* and *incomplete* substance. The former is one which demands no further union with a substantial co-principle; the latter demands a union with a substantial co-principle in order to constitute a complete substance. *Simple* or *composite*. The former does not consist of entitatively distinct substantial parts; the latter consists of incomplete substantial parts, entitatively distinct.

3. *Kinds of Accidents.* *Relative* and *absolute* accidents. The former have their being in a subject only because of the bearing which one has to another; the latter confer a real perfection upon their subjects. Absolute accidents are either *strictly absolute* or *modal*. The former confer a positive and new entity upon the substance; a mode is the definite disposition or determination of an indifferent and determinable accidental entity in such a manner that it

does not confer a positive and new entity upon the substance. *Intrinsic* and *extrinsic*. The former affects the being of the subject in some way; the latter merely affects the subject's surroundings, but not its being.

4. *Knowledge and Substance*. Hume and the phenomenologists contend that we can know nothing of 'substances,' because our senses can reach only the qualities of things. Reason, however, is also a legitimate source of knowledge. Science and philosophy are based on *experience and intellection*. Hence, if reason demands the acceptance of 'substance,' we must conclude that 'substance' exists.

5. *The Existence of Substance*. Actual beings exist *either in themselves or in another*. If in themselves, then 'substance' exists, because that is what is meant by the term. If in another, then this 'other' is the subject supporting the former in their being and existence; in that case, 'substance' exists, because this 'other' exists in itself and not in another as in a subject. It is impossible for all beings to exist in another serially, because that involves an infinite number, and an infinite number, actually existing, is absurd.

Our *conscious* Ego is the *possessor* of all internal states of our being. The Ego is the ultimate subject to which all such states are referred, but the Ego itself is not referred to any ulterior subject. Hence, it exists in itself and not in another as in a subject; and that is the definition of a 'substance.'

6. *Existence of Absolute Accidents*. Not all accidents are relative; some are absolute. Our internal experience

testifies that we actually acquire a positive and new perfection or entity through thinking, sense-perception, and other activities.

READINGS

Coffey, P., Ch. VIII; Rickaby, J., Bk. II, Ch. I; Hugon, Ed., Tr. III, Qu. I, art. 1, 2, 3; Qu. III, art. 1, 2, 3; Aristotle, *Metaph.*, IV, V, VII, IX; Urráburu, J. J.. *Disp.* V. cp. I; Phillips, R. P., Ch. VI, VIII; McCormick, J. F., Ch. VI; St. Thomas, *De Ente et Essentia*; Osgniach, A. J., Ch. IV-VII.

1 This was formerly a footnote in the original edition. I have elevated it and a few others to a primacy of importance.

2 See the author's *Reality and the Mind*, Ch. xiii, xiv

3 *Categorie*., 5

4 *Treatise on Human Nature*, Part I, 6. (Italics mine — Author.)

Chapter 18

ESSENCE, NATURE, HYPOSTASIS, PERSON

A NUMBER OF CONCEPTS ARE CLOSELY ALLIED TO THAT OF 'substance.' Their meanings are so very much alike that they are frequently used synonymously. These concepts are *substance, essence, nature, hypostasis, and person*. It would be incorrect, however, to consider them as strictly synonymous; there is a distinction between them which it is important to note. These terms have occurred many times in the preceding chapters, with the exception of 'hypostasis.' We must now give them serious attention, in order to see in how far they agree in meaning and in how far they disagree. In the course of the history of philosophy these terms have given rise to some problems which have occasioned considerable controversy; these we must attempt to solve.

SUBSTANCE AND ESSENCE

We have already discussed the meaning of *essence* (see Chapter 10). In a general sense, it is defined as that through which a being is just what it is. Taken in this general sense, every being of whatever kind has an

‘essence,’ because every being without exception ‘is what it is,’ and there must, therefore, be that in it which makes it to be ‘what it is.’ And since all being must be either ‘substance’ or ‘accident,’ it follows that every substance has an ‘essence’ which makes it to be a ‘substance,’ and every accident must have an ‘essence’ which makes it to be an ‘accident.’

In a concrete, individual being it is the *substance* which makes it to be ‘*what* it is.’ Accidents have no being and existence of their own, except in so far as they receive it from the substance of which they are a modification and actualization. The substance can exist without the accidents, but the accidents cannot exist naturally without the substance; the substance, therefore, is the primary reality in a being, while the accidents are only secondary realities in it. That, however, ‘through which a being is what it is,’ is the *primary* reality in it, namely, the essence. In concrete, individual beings the ‘essences must be, in this stricter sense, the *ultimate intrinsic principle of being*. And since this definition applies only to the substance, and not to the accidents, the ‘essence’ of a concrete, individual being consists in its ‘substance.’ It follows from this that ‘essence’ and ‘substance’ are, so far as their reality is concerned, identical.

However, though really identical in a concrete, individual being, ‘substance’ and ‘essence’ are *conceptually distinct*. The concepts of both are somewhat different, which can be seen from their definitions. The definition given in the preceding paragraph is the definition of ‘essence,’ not that of ‘substance.’ The essence, considered in itself, is this

‘ultimate intrinsic principle of being’; considered in the mode of its being and existence, it exists ‘in itself and not in another as in a subject,’ and that is the definition of substance. While really identical, ‘essence’ and ‘substance’ are thus conceptually different.

SUBSTANCE AND NATURE

A similar situation prevails concerning the concepts of ‘substance’ and ‘nature.’ The term ‘nature’ is taken in many meanings. Very frequently it is used to designate the totality of all objects in the universe, or the sum of all the forces operating in bodies according to the laws controlling these bodies. In ontology, however, we do not speak of ‘nature’ in this sense, except incidentally. Here we speak of the nature of a concrete, individual thing, and the term applies to immaterial as well as to material things. In this ontological sense, we understand *nature* to be the *ultimate principle of all operations* in an individual being.

The kind of activities a thing can perform depends upon the kind of being it is: action follows being (*agere sequitur esse*). Specifically different beings have specifically different activities. Water does not act like gold, nor gold like iron, nor iron like radium, nor radium like argon, nor argon like hydrogen. As long as a thing remains what it is, its activities must remain specifically the same. It is because of this fact that the inductive process of reasoning employed by scientific investigators is a valid form of inference and leads to a valid knowledge of physical laws: since the nature of a specific type of bodies remains the

same, their activities must, under identical conditions, produce identical results, i.e., these bodies must act according to a definite physical law. Given the same cause, the same effect must follow.

The activities of things do not simply happen; they are determined by some principle within the thing itself. Since an infinite regress within the being of a concrete thing is impossible, there must be an *ultimate intrinsic principle of activity*. This determining principle is called its nature. And since there is but one single ultimate principle in each being, namely, the 'essence,' this 'essence' is the 'nature' which determines all the activity of the thing. The essence of a thing, however, is identical with its 'substance.' Hence, the 'nature' of a thing is in reality identical with its 'substance,' because two things, identical with a same third, are identical with each other.

But here, too, there is a *conceptual distinction* between 'nature' and 'substance.' The same essence, considered as the 'ultimate principle of operation' in a thing, is called its 'nature'; and the same essence, considered as something which 'exists in itself,' is called a 'substance.' The three concepts differ in meaning and definition, although they are identical in their reality.

SUBSTANCE AND HYPOSTASIS

Another concept, closely allied to substance, essence, and nature, is that of *hypostasis* (Gr., ὑπόστασις). In Latin it is called *suppositum*. There is no equivalent term in English,

although the word '*supposit*' is employed at times. We will use the Greek word 'hypostasis.'

It has been shown that accidents belong to their substance and inhere in it; accidents, therefore, do not exist completely in themselves. Secondary or universal substances, as expressed in concepts designating species and genera, are communicated to, and predicated of, the individual substances; they also do not exist completely in themselves. Substantial parts belong to the whole of which they are parts; they, too, do not exist completely in themselves. But an *individual, concrete substance* exists completely in itself. By this we mean that it is incommunicable to any other being; it does not belong to another; it is the whole or unit containing all the parts; it is the ultimate reality to which all functions, powers, and perfections of that particular being are referred; it is the possessor of its entire nature; it is self-contained and autonomous, i.e., it controls its own actions independent of any other individual (creatural) being; it is complete in the order of its essence and in the order of its existence: it is, in a word, *sui juris* ('of its own right'), its own possessor.

For example, I perform my own acts and my Ego is the ultimate reality from which they originate and to which they must be referred; my actions are 'mine' and belong to no one else. Hence, I act 'of (in) my own right'; my Ego is *sui juris*. This sort of existence has a special name; it is called 'subsistence.' The phrase '*sui juris*' may be rendered in English as 'self-contained and autonomous.' Subsistence, therefore, is that mode of existence in virtue of which a thing is self-contained and autonomous in its operations.

When we speak of a *suppositum* or *hypostasis*, we mean a *complete individual substance which has subsistence*, i.e., a substance which is self-contained and autonomous (*sui juris*) in its operations. This definition applies to every individual substance as it actually exists in the universe, including every inorganic body, plant, brute, and man.

The fundamental reason why such beings are 'subsistent' is that they are a *single* 'substance,' 'nature,' and 'essence.' It is because of this that they are self-contained and autonomous in their being and existence. Hence, it follows that a hypostasis is nothing but the 'substance' considered as *sui juris*, i.e., as subsistent. And since it is identical in its reality with 'substance,' it is also identical with the 'nature' and 'essence' of the thing. Hypostasis, however, differs in concept from these three, because it includes within its concept the mode of *subsistence*, namely, that the 'substance,' or 'nature,' or 'essence,' is self-contained and autonomous; 'subsistence' is not included in the concept of these others. We see, therefore, that we may call a concrete individual being a 'substance,' an 'essence,' a 'nature,' and a 'hypostasis': they are conceptually distinct, but in reality identical.

SUBSTANCE AND PERSON

The term 'person' is peculiar. There is no question as to what or to whom the term applies; but there is considerable controversy among modern philosophers as to what actually *constitutes* 'personality.' In this connection we do not take 'personality' in its popular sense as the sum of

those qualities of temperament and character which distinguish one human being from another. In philosophy we understand by 'personality' that particular mode of being which makes an individual to be a 'person.' The important question, then, is this: *What specifically constitutes a person?*

The term has been in constant use, and for centuries there never has been any ambiguity in its use and application. In this respect the term 'person' is not vague like the terms 'substance,' 'essence,' and 'nature,' which are rather loose in meaning and are applied in a variety of meanings to many diverse types of things, being used at times in a stricter and at times in a wider sense. When used by philosophy, these terms must always be narrowed down to a specific meaning and defined accordingly, so that they will apply to a very definite group of beings and to no other. In the case of the term 'person,' its use has become restricted to a definite group of beings and to no other. Although the group to which the term is thus definitely known, the exact meaning implied in the term 'person' is far from clear. To arrive at a distinctive definition of 'person,' we must consider the *type of beings* to which the term is invariably applied and, by means of a careful analysis of their nature, discover in them the *specific element* which constitutes their 'personality.'

It is an easy task to designate the *types of beings* to which the term 'person' is or is not applicable, *inorganic* beings like gold, silver, carbon, are never styled 'persons.' Neither do we use the term 'person' when speaking of a *plant*, like a rose, a geranium, a pumpkin. No *brute* is called

a 'person,' no matter how highly developed in the scale of life; thus, no amoeba, fish, reptile, bird, or ordinary mammal, is a 'person.' These types of beings do not possess that specific element which we invariably associate with the concept of 'person.'

Every being, however, *above the level of brute animality is styled a person.* Every *human* being is a 'person,' irrespective of age, sex, color, or condition. A child, even though unborn, is a 'person' in the strict sense of the term, and the courts of law recognize it as a potential heir to an estate. That an octogenarian or centenarian is still a 'person,' need hardly be mentioned. Even deformed and insane people are real 'persons.' A corpse is not called a 'person,' because it is no longer a human being. Hence, from the universally accepted use of the term we must conclude that *living human* beings are 'persons' and possess that specific element which constitutes 'personality.'

God and *spirits* are also 'persons.' It is true that God, in the meaning of the pantheists, of the absolute idealists, and of some pragmatists, can hardly be said to be a 'person'; but these philosophers are a small minority in comparison with the vast bulk of Christian and other peoples and philosophers who have considered God and the angels real 'persons' in a truly philosophic sense. In the traditional sense, and that is the one taken here, God is a 'person' in the highest degree.

From the above it is clear that any kind of being below man is not a 'person,' while man and all beings higher than man are 'persons.' This being the case, the specific element

of 'personality' must consist in something absent in the former and present in the latter; and although men, spirits, and God are so diverse in nature, there must be an element common to them which constitutes them as 'persons.' What is this *common element*, present in man, spirits, and God, which is absent in inorganic beings, plants, and brutes?

It cannot be *materiality*. The spirits and God are not material beings, though man has a material body. It cannot be *life*. Plants and animals possess life, but they are not 'persons.' It cannot be *simplicity of nature*. God and the spirits are simple in nature, while man is a compound of body and soul; yet all are 'persons.' It cannot be *immortality*. God and the spirits are immortal in their essence, while man is mortal. It cannot be *infinite perfection*. God is infinitely perfect, but the spirits and man are entirely finite. It cannot be *substance* or *essence* or *nature* or *subsistence*. All individual beings, from inorganic bodies up to and including God, possess these degrees of reality. Then what is it?

The only discoverable element which is distinctive of God, spirits, and man and which is lacking in all beings below the level of man, is *intellectuality*. Of course, the intellectuality of God is of an infinitely higher order than that found in spirits or man; it is one with all His other perfections, and all His perfections are a single, identical, infinite reality. Nevertheless, the perfection of intellectuality is truly present in God. We are now in a position to state what specifically constitutes a *person*: a person is *an intellectual hypostasis, i.e., an individual, complete, subsistent, intellectual substance*. It is customary to define

a person as a '*rational* hypostasis.' The term 'rational,' however, means 'having reason' or 'having the faculty of reasoning,' and as such does not apply to God; God is an 'intellectual,' but not a 'rational,' being. On the other hand, 'intellectuality' is an attribute which is applicable to God, spirits, and man. We therefore use the term 'intellectual' rather than 'rational' in our definition.

It will be clear from the above that hypostasis may be either non-intellectual or intellectual. If it is *intellectual*, it has the special name of person. Every person is thus a hypostasis, but not every hypostasis is a person. The subsistence of a person has a greater perfection than that of an ordinary hypostasis, because an *intellectual* being is to a far greater extent the possessor and master of itself and of its operations. Since, however, every person is a hypostasis and every 'hypostasis' is really identical with 'substance,' 'essence,' and 'nature' in an individual being, it follows that 'person' is only conceptually distinct from them in man, spirits, and God.

From the definition of 'person' it is evident that the *human soul*, considered by itself, cannot be called a 'person.' The soul is only a substantial part of man, the formative principle in the human compound of body and soul. Only a *complete* intellectual substance is a 'person,' and the soul is an *incomplete substance*. This is also true of a disembodied soul after death. It will always remain an essentially incomplete substance, since its essence demands that it exist together with matter to form the complete substance of man as a compound of body and soul. Hence, *man* himself, but not his soul, is a 'person.'

These distinctions should enable us to obtain a deeper understanding of the ‘nature’ and ‘personality’ of Christ, as expounded in Christian theology. The human nature of Christ is a complete nature, viewed from the standpoint of substantiality and specific perfection; it lacks nothing of the entity found in any other human nature. But it does not subsist; it has not that mode of subsistence in virtue of which it is ‘self-contained and autonomous’ or *sui juris*. The human nature of Christ does not exist in itself and it is not the ultimate possessor of its operations. The Logos or Second Person of the Trinity has assumed this nature and taken possession of it, so that the Logos is the real possessor of all its functions. Hence, Christ’s human nature is a complete substance, but not a ‘hypostasis’ or person.’ There is only *one subsistence or one personality* in the God-Man, and that is the divine personality of the Logos. The human nature of Christ is united ‘hypostatically’ or ‘personally’ with the divine nature of the Logos, so that both together are only one *person*. Christ, therefore, consists of two distinct natures in one person.¹

The concepts elucidated above lead to some important *principles* which occur quite frequently in philosophic discussions, especially among scholastics.

Actions belong to the hypostasis or person. The ‘nature’ of a being is the principle of all its actions. But the nature of an individual, concrete being, as it actually exists in the universe, is always a hypostasis and, if it is intellectual, a

person. This fact is clearly expressed in our judgments and statements about things. We seldom refer actions to the faculties or parts from which they proceed immediately, but to the ultimate possessor of the nature. We say 'I see, I hear, I digest, I think, I drive the car,' although it is the eyes that see, and the ears that hear, and the stomach that digests, and the intellect that thinks, and the hands that hold the steering wheel. Actions are thus attributed to the hypostasis or person. The hypostasis or person is the principle *which* (*principium quod*) performs the action, while the nature is the ultimate principle by *means of which* (*principium quo*) the hypostasis or person performs the action.

Actions participate in the dignity of the person. This means that an action has a higher perfection or value, if performed by a person of a relatively higher nature, and a lower perfection or value, if performed by a person of a relatively lower nature. The intellection of a pure spirit is more perfect than a man's, and God's intellection is infinitely more perfect than a creature's, because the 'persons in each instance is greater in perfection. This is natural. If the actions belong to the person, then the dignity of the person is reflected in everything that proceeds from the person, and the actions participate in the dignity of the person.

For this reason the infinite dignity of the Logos or Second Person of the Trinity confers an *infinite* dignity or value upon the actions of His *human* nature. This does not mean that the physical actions of the finite human nature of Christ ever become

physically or entitatively infinite; but it does mean that the entitatively finite actions of Christ have an infinite *value*, because performed by an infinite Person.

This also explains why it is possible to predicate seemingly contradictory things of the person of Christ. It is the *person* which possesses the *nature* and, through the nature, the *actions*. Hence, the activities and attributes of both the divine and human natures in Christ must be predicated of the selfsame person, the *Logos*, and the Logos, therefore, is theandric, both God and man. The Logos as God, is eternal, immutable, infinite; as man, temporal, mutable, finite. As God, He cannot suffer and is immortal; as man, He suffered and died. He suffered and died in His human nature, not in His divine nature. Of course, these things cannot be proved on philosophic grounds; but neither can they be disproved. These facts rest on revelation, not on experience.²

THE CONSTITUTION OF PERSONALITY

The specific element which constitutes a 'person' has become one of the most mooted questions in modern philosophy. The classic and traditional explanation through the centuries up to recent times has been that a 'person' is an intellectual hypostasis, i.e., a complete, individual, intellectual substance, self-contained and autonomous (*sui*

juris). Philosophers and psychologists of a phenomenalist trend object to this view very strongly.

Phenomenalists admit the existence of phenomena, but deny the objective validity of the concept of 'substance.' Of course, if there are no substances in this world, a person is not a substance and the definition of 'person' as a substance is wrong. Driven by their denial of the reality of substance to seek a different explanation of 'person' and 'personality,' they could find nothing in man to constitute 'personality' but his internal, mental states. And since man is a person, while the brute is not, the mental states which constitute personality must be such as are found only in man, namely, the self-conscious states. Man is conscious of his Ego, while the brute manifests no self-consciousness. Hence, most modern philosophers, aside from the scholastics, claim that 'personality' consists in *self-consciousness*, in the *conscious Ego*. As William James puts it: "The passing thought is itself the thinker."

We reject this view as unsatisfactory. In connection with this problem it must be borne in mind that the real question is: What *meaning* must be attached to the term and concept of 'person' and 'personality'? One thing is certain from the start: every human being is called a 'person.' This is universal usage, and we must find the precise element in man which constitutes his 'personality.' We contend that 'self-consciousness or the 'conscious Ego' is not this distinctive element.

Evidently, if that which *constitutes* 'personality' is absent from a being, then that being is not a 'person.' The opponents assert that personality consists in self-

consciousness. Consequently, if a human being lacks self-consciousness, it is not a person. A human being, however, is not always conscious of self. Children, during the entire prenatal state, and after birth for a considerable period of time, have no reflex knowledge of themselves; they are not conscious of self or Ego. Perpetually insane people and idiots of an extreme type have no real consciousness of self. Human beings under the influence of some strong narcotic are totally unconscious and have, therefore, lost their self-consciousness for the time being. Deep sleep and intense distraction deprive people of all conscious contact with their surroundings and also of the consciousness of their Ego for a while. Similarly, sickness or traumatic shock often render human beings oblivious of themselves for weeks and even months at a time.

Now, if 'personality' were really and formally constituted by 'self-consciousness' or the 'conscious Ego,' we would be constrained to conclude that human beings in such conditions are *not persons*, because the *constitutive element* of 'personality' is absent. This, however, would do violence to the concept of 'personality.' Only a desperate extremist would assert that a child before birth and up to probably two or more years of age is not a 'person.' It is certainly false to claim that normal human beings are 'persons' only *when awake*, and cease to be 'persons' for the period of sleep or intense distraction. Every human being is a 'person' *as long as he lives*. This is clear from the fact that the subject of law is the human 'person,' and the law applies to every human being, whether born or unborn. Only 'persons' can demand a reparation for injury or

damage done to them by their fellow men. Shall we then maintain that people in sleep or under an anaesthetic may be injured with impunity for the mere reason that they are not self-conscious and are, therefore, not 'persons'?

Furthermore, *self-consciousness* is an *operation*, a *function*. According to our opponents, this passing state or function would constitute 'personality.' They must assert this, because they do not admit the existence of anything like a substance. However, we have already shown that *substances exist*. The reason for their opposition, therefore, is nullified. We have also shown (and it will be shown more clearly in psychology) that underlying all internal states and functions there is a substantial basis, a substance, which *possesses* these transient modifications and to which they must be ultimately referred as to their originating principle. These mental states and functions are phenomena, accidents; as such they must inhere in an *Ego*, and this Ego is the ultimate reality within us, identical and permanent amid all changes. The Ego is, therefore, a *subsisting substance*, existing in itself and not in another as in a subject.

This idea of a *subsisting substantial Ego* alone coincides with our concept of a 'person.' The difference between the brute and man as subsisting substances lies in this that man is a person,' while the brute is not. This difference between man and brute is an *essential* one; and, being essential, it is not merely an accidental difference, but a substantial one. The difference between them cannot consist in 'subsistence' as such, because both are subsistent and both are substances. The essential difference between man and

brute consists precisely and formally in this, then, that man is an intellectual subsistent substance, while the brute is a non-intellectual subsistent substance. That is the *specific difference* between them and this difference is not accidental, but essential. But what does this mean, if not that man is a 'person,' because he is an individual, complete, *intellectual* substance, self-contained and autonomous? That, however, is the meaning we attach to the term person' from the beginning of the discussion.

This interpretation alone will avoid the absurdities of the theory of self-consciousness as constituting 'personality.' Man, then is a 'person' by the very fact that he is a man; and he remains such as long as lives, from the first moment of his life until the moment of his death, whether he be born or not, whether he be conscious or unconscious of self. Hence, the concept of 'personality' is identical with that of an *intellectual subsistence*, and the concept of 'person' is identical with that of an *intellectual hypostasis*.

Some philosophers attempt to evade these conclusions by asserting that a human being may remain *habitually* self-conscious and thus remain a 'person' at all times, even if he lose actual self-consciousness through sleep, disease, narcotics, etc. This view, however, will not remove the difficulty. Something is said to be 'habitual' when it is based on a habit, and a habit is usually the result of *frequently repeated separate acts*. However, can an unborn child be said to have 'habitual' self-consciousness? This would presuppose that it had performed repeated acts of self-consciousness from the very first moment of its existence and had thereby *acquired* habitual self-consciousness. This

is a necessary conclusion, because even an unborn child is a true 'person.' But who will not understand that such an assumption is purely arbitrary? No one can reasonably assert that an unborn child performs such acts. Besides, a habit that is acquired through repeated acts can also be *lost* through the omission of such acts; then a human being would cease to be a 'person.' That, however, is contrary to the universal conviction that *every* human being is a person at all times. Hence, habitual self-consciousness cannot constitute a 'person.' Consequently, the thesis stands: *A person is an intellectual hypostasis*, i.e., it is an individual, complete, *intellectual* substance, self-contained and autonomous.

To sum up: in a concrete, individual being, as it actually exists, the distinction between 'essence,' 'substance,' 'nature,' 'hypostasis,' and (in the case of man, spirit, and God) 'person' is only *conceptual, not real*. In reality they are one identical entity. Since, however, there is a foundation in the beings themselves for making a distinction between them in concept, they differ from each other by a *virtual* distinction with a foundation in the reality itself.

SUMMARY OF CHAPTER XVIII

The concepts of 'substance,' 'essence,' 'nature,' 'hypostasis,' and 'person' are closely akin in meaning.

1. *Substance and Essence.* In a general sense, 'essence' is that through which a being is just what it is. Since substances and accidents are beings, each accident as well as substance has its own essence. In a *strict sense*, we take the concrete, individual being, consisting of a substance and numerous accidents; and in this sense, the *substance alone* is the essence of the thing, because the accidents of such a being are not absolutely required and are not absolutely sufficient to make this being to be what it is. 'Essence' is, therefore, identical in reality with 'substance,' with a virtual distinction between the two.

2. *Substance and Nature.* By 'nature' we mean the ultimate principle of all operations in a concrete, individual being. Since the individual being is a natural unit of entity and activity, it can have but one ultimate principle of both its entity and its activity. This is the 'essence,' which is identical with the substance of the thing. Hence, in reality 'nature,' 'essence,' and 'substance' are identical, with a virtual distinction between them.

3. *Substance and Hypostasis.* Neither the accidents, nor secondary substances, nor substantial parts, exist completely in themselves; they exist in the concrete, individual substance, and it is the latter which exists completely in itself in such a manner that it is self-contained and autonomous, i.e., *sui juris*. This mode of existence is

called 'subsistence.' A *suppositum* or *hypostasis*, therefore, is a complete, individual substance that has subsistence, i.e., one which is self-contained and autonomous. And since it is the 'substance' or 'essences or 'nature' which has being and existence, the 'hypostasis' is in reality identical with them, with a virtual distinction between them.

4. *Substance and Person.* The term 'person' is never applied to any being lower in nature than man. Men, spirits, and God are always considered to be 'persons' and to have 'personality.' That which constitutes a 'person' must, therefore, be some specific element found in men, spirits, and God. The only discoverable element found in men, spirits, and God, and absent in inorganic bodies, plants, and brutes, is *intellectuality*. Hence, a 'person' is an *intellectual hypostasis*, i.e., a complete, individual, subsistent, intellectual substance. Every person is thus a hypostasis, but not every hypostasis is a person. From this it follows that 'person,' 'hypostasis,' 'substance,' 'essence,' and 'nature' are identical in their reality, with a virtual distinction between them.

Two principles are important: actions belong to the hypostasis or person; actions participate in the dignity of the person.

5. *The Constitution of Personality.* Modern philosophers, especially psychologists of a phenomenalist trend of thought, contend that *self-consciousness* or the *conscious Ego*, as a passing mental state, constitutes 'personality.' This is erroneous. If this were the formal, constitutive element of personality, then, this element being absent in a being, this being could not be called a 'person.'

Man is a 'person' at all times and in all conditions; but man is not always conscious of self or Ego. This is the case with infants, especially those as yet unborn; with perpetually insane people and idiots of an extreme type; with human beings under the influence of a strong narcotic, of sleep, of intense distraction, of sickness, and of traumatic shock. Hence, self-consciousness is not the constitutive element of 'personality,' because these people are real 'persons.'

Furthermore, self-consciousness is a *function* which is possessed by the *Ego*. The function is a passing mental state; the Ego remains. Hence, the Ego is an intellectual hypostasis. Intellectuality' is the specific difference between man, spirit, God, and the lower forms of brute, plant, and inorganic body. A 'person,' therefore, is an *intellectual hypostasis*.

READINGS

Coffey, P., Ch. IX; Rickaby, J., Bk. II, Ch. II; Hugon, Ed., Tr. III, Qu. I, art. 4; Urráburu, J. J., Disp. V. cp. II; Phillips, R. P., Ch. VII; McCormick, J. F., Ch. VI, pp. 109-112; Aristotle, *Metaph.*, V.

1 Formerly a footnote

2 Formerly a footnote

Chapter 19

QUALITY

ONTOLOGY DOES NOT TREAT OF ALL THE SINGLE CATEGORIES of accident. Ontology is *General* Metaphysics and as such concerns itself with those phases of being which are, as a rule, found in both material and immaterial beings. Accidents found in material beings only or in immaterial beings only do not belong to ontology proper. Immaterial reality, such as the human soul, belongs to psychology; corporeal reality, such as quantity, place, time, posture, and habitus, belongs to cosmology. 'Quantity,' for example, presupposes material parts side by side in a body; 'place' and 'space' rest upon the quantity and extension of bodies; 'time' is the element of successive duration in bodily movements. These accidents, therefore, belong to cosmology, the philosophy of bodily or material beings. 'Posture' and 'habitus' are also accidental determinations of bodies, and their treatment is thereby excluded from ontology; from a philosophic standpoint, however, they are so unimportant that they hardly deserve special treatment.

It is different with the remaining accidents of *quality, relation, action and reaction* (passion). They are really general in character, because they affect immaterial as well

as material beings. These will be examined in the following chapters.

THE CONCEPT OF QUALITY

Strictly speaking, quality *cannot be defined*. The only proximate genus which could be used in such a definition would be 'accident.' But, as was intimated before, the concept of 'accident' can hardly be predicated of its inferior members in a strictly univocal manner; it is, rather an *analogous concept*. Taken in a *wide* sense, 'quality' means any kind of modification. The term is used in a very loose way to signify almost anything, even though it be a part of the essence, which can be predicated of a subject in an adjectival form. Thus, we say the 'Man is rational.' Here 'rationality' is considered as a quality of man, although it is really essential and one with man's concrete substance. Similarly, we say that 'a brute is sentient, a plant is living.' Here, too, 'sentiency' and 'life' are predicated of their subjects in an adjectival form as qualities, but they are not qualities in the sense of 'quality' as a categorical accident. In this wide sense all *specific differences*, distinguishing one species of substance from another, are considered to be qualities. In fact, since *any kind of accident* is, in a way, a modification and qualification of substance, all accidents, even quantity, are frequently spoken of as being 'qualities' of things. This, of course, is not the meaning of quality when we speak of it as a separate and distinct *category*.

Taken in a *strict* sense, quality is a category distinct from the category of substance, quantity, relation, and the

others. *Aristotle* describes it as follows: “By ‘quality’ I mean that in virtue of which people [things] are said to be such and such.”¹ A quality always presupposes a thing as being constituted in its proper species, as completed in the line of its substantiality and specific perfection. A quality determines a completed substance in some accidental manner, so that the substance is now ‘such and such’ by the addition of some modifying entity. Creatural substances have certain *potentialities* which must be actualized and completed if these substances are to attain the fullness of their being; and it is the qualities which supply, at least partly, the *actualization* and *completion* of such natural tendencies.

Aristotle’s description is too vague to be of much value. Subsequent philosophers have attempted a more definite wording in their descriptive definition of quality. A definition which serves the purpose is this: *A quality is an absolute accident completing and determining a substance in its being and in its operations.*

Aristotle² enumerates *four distinct types of quality*: habit and disposition (ἔξις καί διάθεσις); natural capacity and incapacity (δύναμις καί ἀδυναμία); affective qualities and affections (παθητικάί ποιότητες καί πάθη); form and figure (σχῆμα καί μορφή). He admits that there might be some qualities not included in this division, but maintains that most qualities, properly so called, will find a place in these groups.³ It will be noticed that each group consists of two members. The four groups can readily be reduced to two main classes: entitative and operative qualities. This is

indicated in the definition of quality, when we say that it modifies a substance in its 'being' and in its 'operations.'

HABIT AND DISPOSITION

A habit is a comparatively permanent quality disposing a thing well or ill in its being. When it is stated that a habit is 'comparatively permanent,' the meaning is that it must be stable relative to the nature of the thing which has this habit. That, of course, differs with different beings. The life, for instance, of some insects lasts but a week or even a day. Something may be relatively permanent for it in its short life, which would be relatively transient in the much longer period of life for some other being. The beauty of such an insect would be an entitative habit, perfecting and completing it in its being. If a human being's beauty lasted for a week or a day only, it would be transient. Habits, however, need not always be a perfection of the substance: they may dispose a thing well or ill in a permanent manner. Many habits dispose a thing 'well': for example, beauty and health in a human body, knowledge in the intellect, virtue in the will. Other habits dispose a thing 'ill': for example, chronic catarrh or rheumatism in a person, ugliness or deformity in a body, forgetfulness in the intellect, vice in the will.

If this quality is not permanent, but *relatively transient to the nature* of the thing which possesses it, it will either dispose the thing temporarily well, and then it is called a *disposition*, or it will dispose it temporarily *ill*, and then it is called an *indisposition*. Thus, the easing of pain through

morphine, the feeling of well-being after a meal, the rally of a seriously wounded or dying person, are naturally temporary in character and dispose the patient 'well'; this is a 'disposition.' A toothache, a headache, a sprained ankle, a carbuncle, acute appendicitis, are qualities, temporary in character, which dispose one 'ill'; they are 'indispositions.' If these dispositions or indispositions become inveterate in the course of time, so that they are difficult to remove and are comparatively permanent in the subject, they become 'habits.'

So far we have taken 'habits' and 'dispositions' in a wider sense, as permanent or temporary *entitative* states. *Operative habits* are 'habits' in a stricter meaning of the term. Operative habits are stable qualities disposing a being ill or well in the *operations* of its faculties. Such a habit gives a definite direction to the acts of a faculty, a determination in virtue of which the faculty *tends* to act in one manner rather than in another. Every repetition of the act increases this tendency and makes the subsequent operation of the same kind easier. What was done in the beginning as the result of conscious effort, now becomes almost automatic, 'and the faculties carry out their respective acts with little external stimulation or none at all. We perceive the working of operative habits in the complicated acts of walking, speaking, typewriting, playing a musical instrument, memorizing, etc. One need but recall to mind the painful efforts of the tyro on the piano and compare them with the ease, grace, and proficiency of the same person after years of diligent application to the art, in

order to realize the difference between the single act and the habit.

Not all faculties are capable of being determined by habits.

The very nature of habit, as a quality *determining* a faculty to a definite mode of operation shows that habit presupposes a faculty which is *indifferent* to a *variety of actions*. It is only when a faculty is as such indeterminate to various kinds of actions that it is capable of further determination from a habit. A faculty which is already determined by its very nature to act in such or such a manner can receive no further determination from a habit, because no inclination and tendency is as strong as one given through the necessity of a being's nature. Thus, the natural forces of inorganic elements and bodies work forever in the same manner. Gravity, for instance, attracts the stone with the same force after the thousandth time as at the very first time; it gains nothing by repeating the action. Chemical affinity, electricity, light, steam, magnetism, heat, etc., acquire no increased facility or tendency through repetition. So, too, plants and animals are determined in their operations by their very nature; under the same conditions they will, if left to themselves, act in the same way.

Hence, only such things can properly be the subjects of operative habits as are *free in their activities*, because they are intrinsically indeterminate. The *free will* is primarily capable of habits. We know from our own experience that by repeated actions we form certain habits of virtue and vice which, once they have gained a foothold, are difficult to

change. The *intellect* is also capable of habit, in so far as the will can apply it in different ways to its object; we see this in the habit of knowledge. The *sensitive powers* of man, considered in themselves, are incapable of habit, because they have a necessary direction toward their respective objects. Since, however, they are under the control of the will, they are, indirectly, capable of being perfected by habit. Through intensive exercising along certain lines, man can 'train' his eye, his ear, his imagination, and so forth.

Brutes cannot acquire habits in the strict sense of the term. Their organs are directed by natural necessity toward determined acts. Their movements are regulated by sense-perception and sense-impulse, both of which have no choice in the performance of their natural functions. Under the influence of man's direction, especially through the administration of pleasure and pain, they can be 'trained' to perform actions which *of their own accord* they would never perform. But this seems to be nothing more than forcing their memory to associate certain pleasures and pains with the performance or omission of certain actions, and this pleasure or pain drives the animal *with necessity* toward the performance or omission. Hence, strictly speaking, only rational powers are capable of habits; under their influence other powers can, indirectly, also acquire habits.

Some habits are *given by nature* itself. It would be more correct to say that nature gives the beginning of habits, rather than habits themselves. Thus, philosophers speak of the *habitus principiorum*, the 'habit of principles,' as present in the mind from the start; they mean thereby that

man's mind has a natural facility and inclination to understand and form fundamental principles of thought. Such are the Principles of Identity, Contradiction, Excluded Middle, and Sufficient Reason.

Other habits are *acquired* through the *frequent repetition* of the same acts. What has been said in general about habits, refers to this class. Examples would be the habit of language, knowledge, walking, writing, etc.; of virtue, like kindness, patience, truthfulness, chastity, temperance, etc.; of vices, like cruelty, mendacity, immodesty, laziness, drunkenness, etc. Once acquired, they are relatively stable.

Theologians also speak of *supernatural* habits. They exceed the limits of nature and can be acquired only as the gift of God. Such would be the divine virtues of faith, hope, and charity; also infused knowledge and the gift of tongues. Supernatural habits are, of course, outside the scope of philosophy.

CAPACITY AND INCAPACITY

By *natural capacity* we understand the *proximate accidental principle of operation, toward which (operation) it is specifically directed*. It is a 'principle' of operation, because it produces the operation. It is a 'proximate' principle, in order to distinguish it from the remote adequate principle of operation, which is the nature or substance. Both nature and natural capacity are principles of operation in a thing, but in a different way. The nature or substance is the ultimate principle of operation, in as much

as the operation flows directly from the capacity or faculty and the capacity or faculty is the immediate principle 'through which (*quo*)' the nature or substance acts. The natural capacity is a 'principle' of action, and that distinguishes it from a 'habit.' The capacity or faculty is the immediate source of activity, while the habit merely modifies the faculty in such a manner that the faculty performs its operations with greater ease and speed. Without the faculty there can be no operation and no habit; but without the habit, the faculty would still be capable of performing its operation, though not with ease and speed. A natural capacity is said to be an 'accidental' principle of operation, so as to distinguish it from a substantial part in a being; thus, the hand is an instrument of action, and as such a principle of operation, although it is not a faculty or capacity. By 'operation' we mean the act which the faculty performs. This may be transient, as when a ballplayer throws a ball; or immanent, as when the intellect thinks and the will desires. The capacity or faculty must be 'specifically directed' toward a certain action, in order that it may be said to be the faculty of this action. Thus, the will is specifically directed toward appetitive acts and not toward intellectual acts, although the will frequently commands the intellect to act; the will, therefore, is not the faculty for intellectual acts, but for appetitive acts. Faculties or natural capacities thus make a nature prepared and fit to act, even though it does not actually exercise them; man, for instance, has an intellect and will capable of action, irrespective of the fact whether he actually thinks and wills or not.

Inorganic beings have many natural capacities. Such are gravitational attraction, electromotive power, chemical affinity, cohesion and adhesion, flexibility, elasticity, etc. In *vegetative* beings we observe the powers of nutrition, growth, and reproduction. *Sentient* beings have these vegetative powers and also the special faculties of sense-perception, sense-appetition, and locomotion. *Rational* beings have the spiritual faculties of intellect and will; and man, since he is a rational animal, also possesses the vegetative and sentient powers characteristic of plants and animals. What has been termed 'subjective' or 'real' potentiality in the previous discussion on 'potency' and 'act,' belongs to this class.

More or less in opposition to these natural capacities are the incapacities. By an 'incapacity' we do not mean the total absence of a faculty, because that would no longer be a faculty of action. By *incapacity* we understand *an existing faculty in a weakened or unfit condition*. The worn spring of an automobile, having lost a great amount of its resilience, would be an incapacity. A weak dry cell in a flashlight would be another instance of incapacity. A drooping flower, a drought-affected tree, a mildewed patch of grain, manifest a diminished power of vegetative function; but they still are living beings. Lameness of limb, astigmatism of the eyes, and other functional deficiencies, do not deprive the animal completely of its faculties and their use, but they render it more or less unfit for action. Psychopathic conditions, like insanity, idiocy, and sexual perversion, are at times the result of physiological abnormalities; they are incapacities

which hinder the intellect and will in their proper functioning.

AFFECTIVE QUALITIES AND AFFECTIONS

Affective qualities and affections are qualities which *produce, or result from, some accidental sensible alteration*. If this alteration is relatively permanent, it is an *affective quality*; if it is more or less ephemeral in character, it is an *affection*. The term 'affection,' as should be obvious from the context, does not mean love or devotedness; it is used in the sense of 'affecting' or 'being affected by' something. It was stated in the definition above that affective qualities and affections 'produce or 'result from' alterations. Both types may be the *cause or effect* of such alterations in a sense-organism. Hence, any sensible alteration involved in sense-perception or sense-appetition belongs to this class. This includes the sensible qualities of bodies, like color, flavor, odor, sound, temperature, the feel of smoothness and resistance, etc.; the sensible passions and emotions, like anger, list, pleasure, pain, etc.

Taking the terms in the above-mentioned meanings, a *permanent* red color of the cheeks, due to a systemic condition of the body, would be an 'affective quality'; such, too, would be the natural color of the skin in the various races of mankind, the blue color of the violet, the sweetness of sugar, the sourness of the lemon, the fragrance of the rose, the obnoxious odor of asafoetida, etc. If such qualities are temporal and *transient*, they are 'affections.' The blush of shame, the pallor of fear; heat, color, moistness, dryness,

hardness, softness, etc., when of short duration or easily removed; the states of sensation, as they exist in the organs of sight, hearing, taste, etc.; brief spells of anger, fear, grief, hunger, thirst, and so on: these are various kinds of 'affections.'

It was stated that these terms apply to accidents which *cause* such changes as well as to accidents which are the *effects* of such changes. This will be noted in the illustrations enumerated. Thus, the 'red' of the rose and the 'sweetness' of the sugar cause the sensation of 'vision of red' and of the 'taste of sweetness' in the perceiver; they are the *causes* of corporeal changes in the perceiver and are affective qualities for that reason. On the other hand, the 'perception' of red and of sweetness is the *effect* of the red color in the rose and of the sweetness in the sugar, in as much as the qualities of the rose and of the sugar produce sensations in the organs of the perceiver; this 'perception' is, therefore, an 'affection.' And this holds true of the other affective qualities and affections.

The *soul* also has its affective qualities and affections. According to Aristotle: "That temper with which a man is born and which has its origin in certain deep-seated affections is called a quality [affective quality]. I mean such conditions as insanity, irascibility, and so on; for people are said to be mad or irascible in virtue of these. Similarly, those abnormal psychic states which are not inborn, but arise from the concomitance of certain other elements, and are difficult to remove, or altogether permanent, are called qualities, for in virtue of them men are said to be such and such. Those, however, which arise from causes easily

rendered ineffective are called affections, not [affective] qualities. Suppose that a man is irascible when vexed: he is not even spoken of as a bad-tempered man, when in such circumstances he loses his temper somewhat, but rather he is said to be affected. Such conditions are therefore termed, not [affective] qualities, but affections."⁴

What Aristotle here remarks about one or the other quality of the soul, is especially true of the *temperaments* of people. Four types of temperament are usually mentioned — a division that is more convenient than accurate. They are: the choleric, the phlegmatic, the sanguine, and the melancholic. *Choleric* persons are energetic and vigorous in action, strong-willed, ambitious, tenacious of purpose, not easily discouraged, capable of overcoming great obstacles, quick-tempered, and opinionated. *Phlegmatic* persons are unhurried in their movements, lethargic in disposition, slow of decision, unruffled in temper, indolent, difficult to arouse, unimaginative, easily discouraged in the face of difficulties. *Sanguine* people are lively, enthusiastic, imaginative, witty, sociable, quick in movement and speech, eager for novelty, prone to flightiness, easily led by appeal, adventurous, and inclined to follow romantic ideals. *Melancholic* persons are introspective and brooding, sad of disposition, inclined to see the dark side of life, given to discouragement, easily hurt in their feelings, unforgiving and unforgetting, suspicious of motives, obdurate in judgment, eccentric in conduct, aloof in social life. The very complexity of temperaments is an indication that they rest upon a variety of affective qualities which are partly bodily and partly mental. While the general types are fairly clear and plainly

recognizable, there is in the vast majority of cases a blending of temperamental characteristics; this again is due to the fact that they are the composite result of a number of affective qualities existing in an individual person.

In all instances of affective qualities and affections, a certain amount of *sensible alteration* or change is noticeable. This is but natural, since chemical, physical, and mechanical energies play a prominent role in all operations of sense-perception and sense-appetition, either directly or indirectly, either as causes or as effects. Sentient life is strongly influenced by these energies and is also instrumental in releasing these energies. But wherever energy is at work, alterations or changes are bound to be involved. Hence it happens that affective qualities and affections either *produce* such alterations or *result* from them.

FORM AND FIGURE

Form or figure is the *quality resulting in a body from the arrangement of its quantitative parts*. There is no real difference between the concepts of 'form' and 'figure,' except that the term 'figure' is used of the shape of a *geometrical* quantity, while the term 'form' is used of the shape of a natural body in its *physical* quantity as it exists in nature. In geometry, for instance, we speak of the 'figure' of a circle, of a triangle, of a square, of a cube, of a rhombus. But when speaking of actually existing bodies, we say that the 'form' of an orange is spherical, that of a pyramid is triangular, that of a shaft is cylindrical, etc. 'Form' as a

quality is altogether different from 'form' as the determining substantial principle which unites with matter in a composite substance; 'form' as a quality is here taken in the sense of 'shape' and is but an accidental modification of a bodily substance. It is well to remember, however, that in ordinary language the terms 'form' and 'figure' are sometimes used synonymously, as when people say that 'so-and-so' has a beautiful figure.'

Some *physical forms* are given by *nature* itself. The atomic structure of chemical elements possess a definite form. Many inorganic substances arrange themselves into crystals of sharply defined configurations. All plants, from bacteria to the giant sequoias, assume a form characteristic of their genus and species. The roots, stems, branches, flowers, and fruits follow a distinct pattern, notwithstanding the almost infinite number of variations found among the individuals of a species. This is also true of animals. Though unlike each other in many minor points, the individuals of a class can always be recognized by the distinctive forms of their bodies; they all conform to type. There are, of course, sports in nature which deviate from this type, but even they have a permanent form in which the general pattern can be recognized.

Other physical forms are *artificial*, the result of man's ingenuity and art or of nature's forceful activity. Man can mold and arrange the objects found as crude materials into a multitude of forms. Stones, woods, and metals are shaped to suit his manifold needs and to give expression to his aesthetic tastes. He erects buildings, constructs machines, carves statues, paints pictures, fashions clothes, landscapes

gardens, builds highways, prints books. Nature by means of wind and weather and earthquakes, raises the mountains towering to the skies, levels the plains, digs the valleys, places the rivers and oceans in their beds, directs the seasons, and in general gives shape to the world. The individual objects in none of these instances would assume these forms of their own accord and in virtue of their intrinsic nature; they do so because of the interplay of natural forces impressed upon them from without.

Whatever the individual form, whether the result of the intrinsic nature of the being itself or imposed upon it by an outside agency, the object must have within itself the *quality* which enables it to *obtain and retain* a definite form. Without such a quality things would flow from one amorphous condition of change into another, indistinct and indistinguishable as to form. The very fact that all things are built up ultimately of protons and electrons arranged into an atomic structure and a system, shows that the quality of form is inherent even in the smallest particles of material substance.

CHARACTERISTICS OF QUALITY

Qualities have *characteristics* which, though not properties in the strict sense of the term as something which emanates necessarily from the essence, are more or less *general*.

Qualities have contraries. Contraries are realities which are extremes under the same genus and cannot co-exist in the same individual. 'Being' and 'non-being,' 'life' and 'death,' and similar pairs of concepts, are not contrary, but

contradictory, and there is no common genus for such pairs, because the one member is the utter negation of the other and contains no positive reality which could be placed under the positive reality of a genus; hence, such pairs are not contrary. Qualities can be contrary, because both extremes are positive realities under a common genus. 'White' and 'black,' for instance, are the two extremes under the genus of 'color'; color is thus a quality which admits of contraries. 'Justice' and 'injustice,' though seemingly contradictory, are really contraries, considering them as *habits* affecting the will; 'moral habit' is the genus for both. So, too, 'health' and 'disease,' 'science' and 'ignorance,' considered as *states of being*, are contrary qualities. *Not all* qualities, however, have contraries. There are, for instance, no contraries to operative powers or faculties; one either possesses an intellect and will, or one does not. Neither are there contraries to form or figure; there is nothing contrary to the square or circular or triangular shape in an individual, because a 'triangle' is simply a 'triangle' and can be nothing else.

Qualities are susceptible of degrees. Many qualities can be present in varying degrees of intensity or reality. Some people have a greater capacity for knowledge than others, just as some people acquire more knowledge than others. Virtues and vices can be intensified by habits. Some habits are more deeply rooted in an individual than others, and the particular habits are increased or diminished in an individual in the course of time. Dispositions and indispositions may be present in greater or lesser degrees; thus, the feeling of well-being may be more marked at one

time than another, and neuralgia has many degrees of painfulness. Some operative powers increase and decrease in efficiency, as we observe in eyesight, hearing, locomotion, and so on. On the other hand, form and figure admit of no variations. Nothing can be more a square or less a square; a 'square' has an absolutely specified shape, and any deviation from it would make the object cease to be a 'square.'

Qualities are the foundation for similarity and dissimilarity. When things are one in substance, they are identical; when they are one in quantity, they are equal; but when they are one in quality, they are similar. In order that things can be said to be 'similar,' it is necessary that the *same kind* of quality be present in them. Two roses are similar, when both are white or red or yellow. Two patients are similar, when both have the same kind of illness. Human beings in general are similar, because their bodily form is alike. Saints are similar, because they possess virtue in a heroic degree. Since only those things are said to be (accidentally) similar which are characterized by the same kind of qualities, quality is the foundation or basis of the relation of similarity and dissimilarity; and since this is peculiar to quality, it is a *property* of quality.

MATERIALISM AND QUALITIES

Qualities have always been the bugbear of *materialistic* scientists and philosophers. In their view, the universe of bodies consists ultimately of atoms (or protons, electrons, etc.) which are indivisible and unchangeable. Elements and

bodies originate through a mere arrangement and configuration of these ultimate particles; substantial change is an illusion and abstraction. Whatever happens is the result of *mechanical motion* and gives rise to nothing more than a shift of *local relations* of a *quantitative* character among masses, molecules, atoms, and electrons and protons. These ultimate material particles are homogeneous in nature; that is to say, they are absolutely alike in essence, so that they differ only in size and shape. Hence, everything in the universe can be explained by means of quantitative structure and spatial motion, and our knowledge of things is complete when we can express them in a mathematical formula of quantitative measurement. There is no place for 'qualities' in such a materialistic and mechanistic conception of the universe; *matter in motion* is the sum-total of all objects and events. Thus, what common people and philosophers term 'quality' is reducible to 'quantity.'

The opposition of materialists to 'hidden qualities' is based on the same grounds as their opposition to 'hidden substance': our knowledge is solely a knowledge of sense-perception, and the sense *cannot perceive qualities*; hence, qualities are unknowable and as such can have no claim to existence.

When materialistic scientists advance the claim that matter and motion or energy are sufficient to explain the events of nature, they overlook the fact entirely that the *mental life of man* is also an event in the existing universe. Man is just as much a part of nature as is the atom, the proton, and the electron; and man's mind is just as much a

reality as is his body. Hence, the mental processes of man's mind must be accounted for and explained in a manner satisfactory to the demands of reason. These mental processes, however, can never be adequately explained on the mere basis of matter and the mechanical, spatial relations of motion. The energies and motions of matter, as materialists view them, are inorganic, while the mind and its processes are decidedly more than that.

Take, for example, *sense-perception*, the experience of which plays such an all-important part in the theory of materialism. All that we know of sense-perception we know through consciousness; and all we know of the world outside us we know through sense-perception: hence, all that we know about the world and ourselves rests on the ultimate testimony of our consciousness. Now, consciousness tells us that sense-perception is more than mere matter and motion. Certainly, motion accompanies all processes of sense-perception (although we are not directly conscious of this), and this motion is quantitative and can be measured. But there is much more than this to perception. *We perceive things*, not processes, with our senses. This perception itself, *precisely as 'perception,'* is something totally different from the inorganic movements of dead particles of matter: it is a *cognitive* process, a process of knowing, and that cannot be explained by the mechanical dance of the molecules, atoms, electrons, and protons which make up the material structure of the sense-organs. These 'perceptions' are as real as the particles of matter and the sub-atomic movements of these particles. These 'perceptions,' however, are something over and above the

mechanical movements of such particles: they are real *affections* in man's mental life, distinct from matter and mechanical motion, and as such are qualities. Furthermore, since these 'perceptions' cannot be explained by matter and mechanical motion, nor by the material energies present in inorganic nature, they must proceed from some *other principle* present in the mind itself. Hence, sense-perception demands a principle or power or faculty of its own, distinct from the common mechanical energies of inorganic nature, for each kind of sense has a different kind of 'perception.' But these powers or faculties we name *qualities*. Consequently, qualities exist.

Similarly, our consciousness testifies to the fact that we *think* and *will*. It would take an enormous stretch of the imagination to reduce 'thinking' and 'willing' to some form of mechanical, inorganic motion. No one can seriously assert that the formation of ideas, judgments, and inferences are motions due to cohesion, adhesion, electricity, gravitational attraction, or to any other form of energy known in the world of physics or chemistry. Nor can anyone honestly claim that love and hatred, desire and aversion, joy and sorrow, are merely forms of attraction and repulsion in a physical and chemical sense. But if not, then they, too, must emanate from principles distinct from the ordinary energies of inorganic matter present in nature. We call the principle of thinking the 'intellect' and the principle of willing the 'will.' *Intellect* and *will*, therefore, are powers or faculties; and such powers or faculties we style *qualities*. Consequently, qualities exist.

The same line of argument applies to every kind of *vital activity* found in *plant* or *animal* or *man*, in so far as they are distinctive of these classes or species. There are, of course, activities and motions present in them which are mechanical, physical, and chemical; and they can be measured according to quantitative standards. But in every organism there is a *residue of activity* which cannot be explained on the basis of matter and motion. Reason, therefore, demands that these vital activities proceed from vital powers or *faculties*. And since all faculties are qualities, qualities exist.

As a matter of fact, the materialistic scientists themselves admit unwittingly that qualities exist. They speak constantly of *energy* in nature. Most of them insist that phenomena like cohesion and adhesion, attraction and repulsion, light and heat, etc., are the results of various forms of energy, though many incline to the theory that all phenomena are the results of one fundamental energy, namely, electromagnetic energy. But *energy in some form* is accepted, together with *matter*. Even such a crass materialist as Büchner admitted the existence of *Kraft und Stoff* (Force and Matter). But what is 'force' or 'energy,' if not the 'power or capacity to do work' in some form or other? Energy is not the work itself that is done, but the *power or capacity* to do work. 'Power,' however, is what we call a *quality*. To refuse to accept the existence of 'quality,' while they accept the existence of 'energy,' is an inconsistency which ill becomes them; because 'energy' is not a datum of sense-perception at all, but something which reason demands as an adequate explanation of existing

phenomena as we perceive them. Here again, as in the case of 'substance,' materialistic scientists admit the *thing*, though they will not admit the *name*. Moleschott, for example, accepted 'chemical affinity' as a fact of nature. F. A. Lange accused him with fine irony of inconsistency, in the following words: "Here we find Moleschott deep in scholasticism; his 'relationship' [between oxygen and potassium] is the prettiest *qualitas occulta* [hidden quality] that can be wished for. It sits in the oxygen like a man with hands. If potassium comes anywhere near, it is laid hold of; if none comes, at least the hands are there, and the wish to get hold of potassium."⁵ And so the arguments of materialists simmer down to a quarrel of words.

In a discussion of this kind it is sufficient to prove that *one* quality exists; it settles the argument. Once the existence of a quality of any kind is proved and accepted, there should be no trouble in accepting the various kinds of qualities. While any serviceable division is satisfactory, Aristotle's division has the advantage of compactness and completeness. We have therefore followed him in his enumeration of qualities: habit and disposition; natural capacity and incapacity; affective qualities and affections; form and figure. Something might have been said of the 'relative' character of some of the qualities, but relation' is a separate category which will be treated in the next chapter.

SUMMARY OF CHAPTER XIX

Quality is the first of the categorical accidents with which ontology is concerned; the category of 'quantity' will be treated in cosmology.

1. *The Concept of Quality.* 'Quality' admits of no strict philosophical definition, because 'accident' is not a univocal term and thus cannot be used as a proximate genus. 'Quality' can be described as an absolute accident, completing and determining a substance in its *being* and in its *operation*. Aristotle enumerates four types: habit and disposition; natural capacity and incapacity; affective quality and affection; form and figure.

2. *Habit and Disposition.* A *habit* is a comparatively permanent quality disposing a thing well or ill in its being. A *disposition* is a relatively transient quality which disposes a thing well or ill. An *operative* habit disposes a thing well or ill in its operation. Strictly speaking, only a free faculty is capable of habit; such is the will of man. Indirectly, under the influence of the will, other faculties can be said to acquire habits. Some habits are natural, others acquired; there are also supernatural habits.

3. *Natural Capacity and Incapacity.* A natural *capacity* is the proximate accidental principle of operation, toward which (operation) it is specifically directed. All beings — inorganic, vegetative, sentient, and rational — possess natural capacities. An incapacity is an existing *faculty* in a weakened or unfit condition.

4. *Affective Qualities and Affections.* An affective quality is a relatively permanent quality which produces, or results from, some accidental sensible alteration. If such a quality is more or less ephemeral in character, it is an *affection*. The 'sensible qualities' of color, sound, etc., and also their 'perception,' belong to this class. The soul also has affective qualities and affections. Chief among the affective qualities of the soul are the *temperaments*. A temperament may be choleric, phlegmatic, sanguine, or melancholic.

5. *Form and Figure.* Form or figure is a quality resulting in a body from the arrangement of its quantitative parts. Geometrical shapes are called 'figures'; physical shapes are called 'forms.' Some physical forms are natural, others artificial.

6. *Characteristics of Quality.* Qualities have contraries. Qualities are susceptible of degrees. Qualities are the foundation for the relation of similarity and dissimilarity.

7. *Materialism and Qualities.* Generally speaking, materialists try to explain all things in the universe as matter in motion.

They are opposed to 'hidden qualities,' because qualities cannot be perceived by the senses. However, sense-perception is not the only source of knowledge; *reason* is a valid source, otherwise scientific *induction* is invalid.

Matter, force, energy, atoms, protons, and electrons, accepted by materialists, cannot be perceived by the *senses*; their existence is guaranteed by *reason*.

The *perception* of things, as cognition, demands a mental principle or faculty. *Thinking* and willing are not mechanical; they demand the faculties of intellect and will.

The same is true of all vital functions. *Energy*, as a *capacity* for work, is a quality. Hence, qualities exist.

READINGS

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1 *Categoriae*, Ch. 8 b 25. Tr. by E. M. Edghill (Clarendon Press, Oxford, 1928).

2 *Idem.*, Ch. 8

3 *Idem.*, Ch. 10 a 25

4 *Categoriae*. Ch. b 35; 10 a 1—1

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Chapter 20

RELATION

‘RELATION’ AND THE ‘RELATIVE’ ARE CONCEPTS WHICH PLAY A very important part in modern philosophy. The *relative* stands in opposition to the *absolute*. One can safely state that in the past century and a half philosophers have written more about these two concepts than about any other two concepts within the whole range of philosophy. Modern philosophy has been, and still is, chiefly concerned with the problem of human knowledge, and in this problem the ‘relative’ and ‘absolute’ are the key ideas. These concepts are the foundation for entire systems of thought. This alone shows the importance of the category of ‘relation.’

THE CONCEPT OF RELATION

What constitutes a ‘relation’? Three factors or elements are necessary and suffice to constitute a ‘relation’: the subject, the term, and the foundation. The *subject* of the relation is the thing *that* is related to another. The *term* of the relation is the thing to which the subject is related. The foundation of the relation is the basis, the ground, the *reason why* the

subject is related to the term. The 'subject' and the 'term' are also styled the *extremes*, because the 'foundation' is the connecting link or bond which unites the subject and term together and places them 'in relation' to each other.

From this it should be plain that one thing alone, taken for itself, can never form a relation; relation must exist *between two or more things* taken in reference to each other. The essence of 'relation,' considered formally as such, consists in the '*esse ad*,' the '*being-toward*' of one thing to another; it is the bearing, the reference, the attitude, the ordination of one to another due to some foundation which is a common bond between them. The *foundation* is the necessary *condition* for a relation, but it is not the 'relation' itself. The foundation is present in both the subject and the term, and it is because of this foundation that the subject and the term are connected, giving each a 'respect toward' the other, so that they are thereby 'related' or 'in relation.' Two white horses, for example, are similar to each other in their white color; their whiteness is not the relation of their similarity; but it is the reason or foundation of their relation of similarity; as such, then, they stand to each other in a 'relation of similarity' because of the white color present in both. The 'relation,' therefore, *results from* the presence of a common foundation in a subject and term and is considered to be, at least conceptually, distinct from the foundation, the subject, and the term.

No strict definition of 'relation' can be given. The only concept which could be used as its proximate genus in such a definition would be 'accident.' But 'accident,' as was

pointed out before, is not used univocally of its inferior members; it can be applied to the various categories only in an analogous sense. Using a descriptive definition, we define *relation* as the *bearing* (reference, respect, attitude, ordination) *of one thing to something else*.

KINDS OF RELATION

All relations can be grouped into two main classes: *logical* and *real*.

Logical Relation. A logical relation is defined as a relation *made solely by the mind and placed by the mind between entities*. Such entities may exist outside the mind, or may be concepts, judgments, and inferences existing in the mind itself. The foundation for such a relation is an *ens rationis*, a logical entity. There is no real foundation in the extra-mental things themselves for making such a relation; the relation, therefore, is strictly a product of the mind's thinking. Thus, we systematize our ideas and in this manner bring them into relation with one another, when we study a certain branch of knowledge: such relations are logical. Between every subject and predicate in a sentence there exists a certain relation of comprehension and extension: this is also a logical relation. So, too, there is a definite relation of sequence between the premises and conclusion of an inference; and also between a number of inferences in an extended argumentation: such relations, however, are logical, because they exist solely in the mind and its operations.

In a similar manner, we often place relations between objects *outside the mind*, although these relations have no reason or foundation in the properties of the things themselves. The relation between the little black marks of print on this page and the ideas which they represent and convey to the reader, is purely logical, because these black hooks and dots have no significance except in so far as the mind selects and designates them to have a meaning. A scepter represents royal dignity; a palm, victory; a red light, danger; a flag, a country: but the relation between these things is purely of the mind's own making and has no foundation in the things themselves.

Real Relation. A real relation is defined as a relation which exists *between things, independent of the mind and its thinking*. The subject and the term are real entities in nature; the foundation of the relation is present in them *objectively* and is not merely conceived by the mind as being there. There is thus a connection or bond between real things, due to something present in them, independent of all thought; and this connection or bond would exist, even if there were no mind adverting to it. Such a relation exists, for instance, between parent and offspring, between plant and flower, between two pups of the same litter, between two trees of equal height, between two houses of the same architectural style, etc.

A real relation may be either essential (transcendental) or accidental (categorical, predicamental). An *essential* (or *transcendental*) relation is one in which the very *essence* of one thing has a relation or bearing toward something. This relation will, therefore, always be present as soon and as

long as this essence is present; the essence cannot exist without this relation. Thus the relation between every being and an intellect and will, making this being 'true' and 'good,' is essential and transcendental, because it is an essential and transcendental attribute of all being to be true and good. Every creature owes its entire essence and existence to the Creator, and the relation of the creature to the Creator is thus an essential one. The relation between body and soul in man is an essential relation, because both are ordained toward each other to form a composite substance, and this ordination lies in their very essence. A similar condition obtains between every incomplete substantial part and the substantial whole of which it is the part.

An *accidental* (or *categorical*, or *predicamental*) relation is one based upon an *accident* as its foundation. The accident which serves as the foundation for the relation is something superadded to the essence and its absence would not destroy the essence itself. Two children have blond and curly hair; in this respect they stand to each other in the relation of similarity. Two men are six feet tall; they are related to each other through the equality of the quantitative measurements. Obviously, 'blond and curly hair' and the equal 'height of six feet' are accidental modifications of these persons and do not belong to their essence.

From another standpoint relations are divided into *mutual* and *non-mutual*.

A relation is *non-mutual*, if its foundation is *real or logical in one of the extremes only*. A case in point would be

the relation of knowledge between the knowing subject and the known object. The foundation or basis of the relation is the transition from a state of non-knowledge to a state of knowledge with regard to some definite object; this transition involves a real change. It is obvious, however, that only one extreme undergoes this transition and change, namely, the knowing subject which acquires the knowledge. The relation of knowledge is real only on the part of the knower; on the part of the thing it is only logical.

On the other hand, a relation is *mutual*, if its foundation is *real or logical in both extremes*. If two horses are white, the foundation of the relation of their similarity, namely, 'white color,' is present in both horses. In children of the same parents the relation of origin is present in each, and this relation is mutual. When two poles have a length of ten feet, the foundation of their equality in length, namely, their quantity, is found in each pole, because each one is ten feet long, independent of the other; the relation, therefore, is mutual.

A mutual relation is said to be one of the same *denomination* or *symmetrical*, when the foundation in both extremes is of the *same nature* and *degree*. The whiteness of the horses, the common origin of children in the same family, the equal length of the poles, as mentioned in the preceding paragraph, are of the same denomination, because the foundation is of the same nature and degree in each.

A mutual relation is said to be of *mixed denomination of asymmetrical*, when the foundation present in both extremes is of a *different nature or degree*. Father and child

are related; but the father is the cause, while the child is the effect. This means a difference of foundation in both and consequently also a difference in relation of the one to the other, because filiation implies a state of dependence of the child with respect to its father, while paternity implies a state of independence of the father with respect to his child. Many relations are of this kind; for example, that between husband and wife, master and servant, physician and patient, lawyer and client, judge and criminal, teacher and pupil, superior and subject, king and people, and so on.

The examples given above for mutual relations pertain to all relations which are mutually present in both extremes, whether of the same or of a mixed denomination. Mutual relations, however, may also be purely *logical*. Such mutual logical relations would rest upon a foundation which is conceptual or logical in *both extremes*. Thus, all relations existing between concepts, judgments, and inferences rest upon foundations which have no existence except in the mental order, because the concepts, judgments, and inferences themselves are logical entities and as such have no existence outside the mind. Such would be the relation between subject and predicate in a sentence, all relations of grammatical construction, etc. Formal logic, or the science of correct thinking, is practically a treatise on mutual logical relations.

THE FOUNDATION OF RELATION

The foundation of relation, as was stated before, is the basis, the ground, the *reason why* one thing is related to

another. Almost anything can be taken as the point of comparison, so as to establish a relation between things. Every category contains such foundations.

Substance contains the foundation for *specific identity and diversity*. Two flasks of water, two elm trees, two sparrows, two men, etc. (the two members of each pair being compared together), are identical in species; and each pair, compared with another pair in this series, is different in species. We thus have the relation of specific identity existing among all the individuals of a certain species, and the relation of specific diversity among the individuals of different species.

Quantity contains the foundation for the relation of *equality and inequality*. Things that have the same weight, size, volume, shape, or dimensions are equal to each other on account of their quantity, while things which differ from each other in these respects are unequal. Two globes of the same diameter have the relation of equality; a quart and a gallon of wine have the relation of inequality.

Quality contains the foundation of *similarity and dissimilarity*. For example, we speak of two painters as being similar or dissimilar in their technique; of two philosophers as being similar or dissimilar in their opinions; of two dogs as being similar or dissimilar in their behavior.

Action and passion (reaction) contain the foundation of the relation of *cause and effect*. We observe this relation extensively in mechanical, physical, and chemical agencies. Salt is the effect of the combination of sodium and chlorine, and as such it is in relation to these two chemicals. Iron is attracted to a magnet; the two are thus related. Electricity

produces light and heat; these are, therefore, related to electricity as effects to their cause.

Time contains the foundation for *priority, simultaneity, and posteriority* in successive duration. The murder of Julius Caesar is in the relation of priority to the death of Napoleon; the murder of Julius Caesar, however, is in the relation of posteriority to the death of Aristotle.

Place contains the foundation of the relation of *distance, nearness, and relative position*. The moon is nearer to the earth than to the sun; between the moon and the earth, therefore, there is the relation of comparative nearness. The positions of north, east, south, and west, or right and left, or before and behind, or up and down, or inside and outside, etc., give rise to relations among objects.

Posture and *habitus* contain the foundation of the relation of *similarity* and *dissimilarity* between things, but in a different manner than the qualities. To be prone, or to be erect, makes objects either similar or dissimilar; thus, there is a relation of dissimilarity between one man lying down and another man standing. So, too, to be clothed or not clothed, shod or not shod, etc., makes two persons either similar or dissimilar.

From this it will be seen that every category contains items which may be the foundation for various sorts of relations between things.

SOME AXIOMS CONCERNING RELATION

Correlatives are simultaneous in nature. By this we mean that related things, precisely and *formally* as in relation to

each other, must exist at the same time and the one cannot exist before the other. Thus, 'mother' and 'child' are correlatives. Obviously, the mother as a 'woman' or 'human being' exists before her child. But as a 'mother' she must have a 'child,' and she cannot be a 'mother' before she has a 'child'; at the very moment when her child begins to exist she is a 'mother,' and not a moment sooner nor a moment later.

Correlative's are simultaneous in knowledge. This means that the knowledge of one extreme as 'relative' always involves the knowledge of the other extreme as 'correlative.' And in truth, it is impossible to know what 'parent' is without also knowing what 'offspring' is. If we know that the Washington Monument is smaller than the Empire State Building, we must have a knowledge of the size of each.

Correlative's connote each other. This means that the intelligibility of the one extreme is dependent on the intelligibility of the other; they can be understood only in reference to each other. This follows from the foregoing principle. The concept of 'offspring' involves the concept of 'parent,' and *vice versa*. That two figures are similar to each other in their triangularity implies that the understanding of the 'triangular shape' of the one involves the understanding of the 'triangular shape' of the other; otherwise it would be impossible to know that they are similar. Hence, no relative term, strictly as 'relative,' can be defined without bringing the correlative term into the definition, because they cannot be understood except in reference to each other.

EXISTENCE OF REAL RELATIONS

The philosophy of relations gives rise to a very serious problem. Are relations merely the product of our minds and their relating activity, so that things are 'conceived' as related to each other simply because the mind has a natural tendency to arrange and classify all things in conceptual groups? Or, are relations also present in nature, among the things existing in the universe, so that these things are related to each other, even though no mind be thinking of them? In short, are relations merely conceptual and *logical*, or are they actual and *real*?

Many philosophers deny that relations are real and maintain that all relations are *purely mental and logical* in character. Modern phenomenologists and idealists are especially persistent in their view that the entire conception of order in the universe is *projected* into it by the mind. *Kant*, for example, maintains that our knowledge is the result of applying certain innate mental forms to the chaotic manifold of sense-intuitions, thereby bringing order and definite relations into them. The monistic idealists, like *Fichte*, *Hegel*, etc., contend that our *knowledge is constitutive of reality* as we experience it. If this were true, all relations would, of course, be purely mental and logical, because all knowledge would then be completely mind-made: in this view, the mind would not acquire its knowledge by conforming itself to the things, but things acquire their reality by being conformed to the mind. It is not the purpose of ontology to prove the existence of a physical world which is independent of the mind; this is a

fact which epistemology must vindicate.¹ Here we accept the reality of the physical world and maintain that *some relations are real* and independent of the mind.

In order that a relation may be real and not merely logical, the following *conditions* must be fulfilled: the subject of the relation must be real; the term must be real; the foundation in the subject must be real; the foundation must be really distinct from the term. In other words, there must be a real, individual subject, a real, individual term, and a real foundation existing in both extremes.

First of all, the *natural sciences* teem with demonstrations of real relations in nature. The scientific classification of plants and animals is based upon *structural similarity*. The only reason why science can arrange plants and animals in a hierarchical order of kingdoms, phyla, classes, orders, families, genera, species, and individuals, is because each individual is similar to others in certain well-marked properties and peculiarities. These properties and peculiarities are real in each individual, independent of the mind which recognizes them. Certainly, no one would seriously claim that science first made these structures similar. Hence, if there is structural resemblance among plants and animals in nature, real relations exist in nature.

Again, there is *dependence* in nature. Plants are dependent on various things in nature for their existence and substance: air, soil, light, warmth, moisture. Animals need plants for food, and man needs both animals and plants. In the case of bi-sexual forms of plants and animals, the sexes are dependent upon each other for the propagation of their kind. This dependence is without

question a real fact of nature, and is not a product of our thinking. But 'dependence' of one upon another is a reference, an ordination, of one thing to another. And since this is the relation of a real dependence of one real being upon another real being, real relations exist in nature.

Nations with their governing and governed classes, international commerce, diplomatic service, wars, peace contracts, industrial and agricultural difficulties, cultural, social and religious contacts, etc. — these and similar things are realities in human society and in the world, independent of our thinking. They constitute real relationships among real people.

Furthermore, physics and astronomy assure us that all beings in the universe, from the electrons and protons in the atoms to the interstellar nebulae and star-galaxies, are continuously in motion and are drawn toward each other in virtue of gravitational attraction. All this implies a 'reference of one to the other' with regard to *distance, position, and relative motion*. The only way to deny the fact of their real relation would be to deny the fact of their real existence; only a confirmed subjectivist, however, would do that.

Then, too, *active production* is a universal fact of nature. Leaving the formation of chemical compounds aside, there can be no question that living beings produce living things. This is true of plants and animals, as well as of men. If so, then the relation of *offspring to parent* is a real relation. It would assuredly be ridiculous to assert that plants and animals propagated their species only after man's mind adverted to them. But if plants and animals did propagate

before the coming of man, the relation of offspring to parents was a fact in nature before man's mind was present to 'relate' them. But a relation between real beings, based upon a real foundation like generative production, is a real relation, independent of man's mind and its thinking.

Hence, if we accept the existence of a real world outside the mind, we must also accept the existence of real relations among the things of this world. No thing can exist together with other things, without some real relations being established between them.

THE ENTITY OF REAL RELATION

Every relation contains three factors: a subject, a term, and a foundation. The 'relation,' considered strictly as such, is not the 'subject' itself nor the 'term' itself, because the relation is the *bond* which connects and links the extremes together, so that there is a reference or ordination of each to the other. Nor is the relation, considered strictly as such, the 'foundation.' The foundation is the basis, the ground, the reason for the relation. The foundation is always some reality, essential or accidental, which is either a 'being-in-itself' or a 'being-in-another'; the relation, however, is formally a '*being-toward*' something. Hence, there is no question that there is a distinction between the concept of the 'relation' and the concept of the 'foundation.'

Is the *distinction* between the 'relation' and the 'foundation' real or only *virtual*? If we maintain a real distinction between them, we must consider the 'relation' to be an *accidental entity or mode* superadded to the entity of

the foundation in the extremes. This would mean, for example, that, besides the quality of 'whiteness' which makes two horses similar, there would be a distinct entity or mode of 'similarity' added (as a relation) to the 'whiteness' in each horse. If we maintain only a *virtual* distinction between them, the 'relation' would be no *new entity or mode* added to the extremes besides the foundation itself. This would mean, in the example given, that the relation of 'similarity' between two white horses would be in reality identical with the quality of 'whiteness' present in each horse. We maintain that only a *virtual distinction* exists between the relation and the foundation. In order to prove this, we appeal to the following principles and facts.

If the 'relation' were really distinct from the foundation, it would follow that the 'relation' would be a real entity or mode which would be *acquired* when a relation is established, and *lost* when a relation is discontinued. However, to acquire or lose a real entity or mode involves a *real change*, and that could be accomplished only by some positive *action producing* the change. Hence, if it can be shown that relations are acquired or lost without a real change occurring in one or both of the extremes, it will be shown thereby that the relation does not consist in a real entity or mode. But this can be shown.

To take an example. In South Africa there exists a pole fifty feet in height. A man in Alaska erects a pole which is also fifty feet in height. The poles are now related to each other through the 'relation of equality.' If this relation be a real entity or mode, the pole in South Africa acquires a new entity or mode which it did not possess before; it has

undergone a real change thereby. What possible agency can have introduced this change and given it a new entity or mode? It seems incredible that the mere erection of a pole in Alaska should be able to effect a real change in a pole in South Africa. Since no conceivable real change took place in the latter, we must conclude that a 'relation' does not add any real entity or mode to the extremes which would be distinct from the entity of their foundation.

Again, *substance and accident are correlatives*; they are 'related.' The inhesion of the accident in the substance is the foundation connecting them. If this relation were a real entity or mode, distinct from the entity of the extremes and the foundation, this entity or mode of the 'relation' would also be an *accident*, an accidental reality; and as such it, too, would 'inhere' in the substance. Thereby a second 'relation' would be established. This second relation, being an accident also, establishes a third 'relation' between itself and the supporting substance. This third must bring a fourth 'relation' into existence, for the same reason. The fourth must produce a fifth, and so on, into infinity. Thus, an *infinite number* of entities or modes would be introduced into a substance, simply because we maintain that the relation is a real entity or mode, distinct from the entity of the extremes and their foundation. An infinite number being impossible, the 'relation' cannot be a real entity or mode.

Finally, an *immense aggregation* of real entities or modes would exist in each individual being, if we maintain that a 'relation' is an entity or mode distinct from the extremes and the foundation. Not only between every

individual being as a whole and every other individual being in the universe, but also between every single atom of every being and every other atom in the universe, there exist relations of specific identity or diversity, of similarity or dissimilarity, of equality or inequality, of distance, time, position, action, etc. Thus, an incalculable multiplicity of real entities or modes would be introduced into each being, shifting and changing from moment to moment. By merely crooking my finger, I would actually produce a *physical change* (change of relation, due to distance, position, etc.), throughout the universe. This, however, seems incredible. It is an unnecessary *multiplication of beings*, and beings should not be multiplied without sufficient reason. Such a view involves a *power of activity* in each and every being far beyond the exigencies of their nature, because this active power of change would reach to every being within the utmost bounds of the world. Hence, we must conclude that relations are not real entities or modes.

If, however, a relation is *not really distinct* from the extremes and the foundation which constitute the factors of a relation, then the reality of a 'relation' must be somehow *identified with* the extremes and the foundation. The question, therefore, arises: With which factor is the relation identified, with the subject, the term, or the foundation? Or, is it identified with all three factors? The 'relation' is *not identifiable* with the *subject* and *term*. The subject and term (extremes) are not the 'relation,' because they are the things which *become related* through the connecting bond of the relation. And how do they 'become related'? What is the connecting bond which makes them 'related' to each

other? It is the 'foundation' which places them 'in relation' to each other. It follows that *the entity of the relation is one with the entity of the foundation*. In reality, then, the 'relation' and the 'foundation' are identical so far as their entity is concerned, and there is no real distinction between them.

Nevertheless, there is a *virtual distinction* between 'relation' and 'foundation.' The foundation is conceived as that reality in things 'because of which' a relation exists between the things; hence, in concept there is a distinction between the foundation and the relation, because the relation 'follows out of' the foundation. An example will make this clearer. Two globes are 'similar' to each other because both are 'white.' The first globe is 'white,' and the second globe is 'white.' This 'whiteness' exists in each, independent of the other; and it is a real accidental entity present in each. There are, therefore, two 'whitenesses' in existence, and these *two* 'whitenesses' (one in each globe) are the foundation for the one *relation of similarity*. Since the relation is one, while the foundation is twofold, and since the foundation (whiteness) exists in the globe, while the relation (similarity, due to the whiteness) exists *between* the white globes, it is obvious that a virtual distinction exists between the 'foundation' and the 'relation.' This distinction between the two concepts being grounded in the objects themselves, due to the twofold foundation, we come to the final conclusion that the distinction between the reality of the 'foundation' and the reality of the 'relation' is a *virtual distinction* with a foundation in the thing (*distinctio virtualis cum fundamento in re*): they are identical in

reality, but distinct in concept, and the ground for the distinction is not purely mental, but is present in the things themselves.

THE ABSOLUTE AND THE RELATIVE

It has become almost a commonplace in modern philosophy to say that all being and all knowledge is only 'relative.' The reason for this spurious axiom lies in the fact that anything, in order to be known, must enter into a relation with the mind and as such must be 'relative to mind.' It is, of course, true that nothing can be known unless it enter into a relation with the mind, because 'knowledge' in its very concept and essence implies such a relation. But this only means that a thing, *when known*, has a relation to the mind and that the knowledge of the thing is dependent on this relation; it does not mean that the thing, *as existing*, is dependent on the mind and its knowledge-relation, so that the *existence* of the thing would be dependent on our knowing it. A thing must exist before it can become known; as such, it must be 'absolute' before it can become 'relative' to our mind.

All creatural beings are, in a true sense, 'relative.' They are *dependent on God* as their First Cause for their being and existence; and 'dependence' is a form of relation. This relation of the creatures to the Creator is essential to them, and they can never free themselves from it. Taken in this meaning, only God is 'absolute,' because He alone is without dependence on any other being.

Creatural beings are also related in many ways *among themselves*. All, compared to each other, are similar or dissimilar, equal or unequal, acting or acted upon, specifically identical or diverse.

While relations, therefore, exist among all beings, it would be an erroneous view to hold that there is nothing 'absolute' in things. *Things are both 'absolute' and 'relative.'* That all things can be said to be 'relative,' we have just seen. That they are also 'absolute' in some form, is also true.

A thing is said to be *relative*, when it is taken *in reference to something else*; it is *absolute*, when it is *taken in itself and on its own account*. A relation always implies the three factors of subject, term, and foundation; and the relation, formally considered as 'relation,' is conceived as something 'existing between' the subject and the term due to their common foundation. The 'subject' and 'term' must be distinct in entity. No being is said to be 'related' to its own self; it is always in reference to *something else*. Consequently, both the subject and the term must be 'something in itself and on its own account' before either can have a reference to the other. If they had no being or existence of their own, they could never have a reference to anything. But to have a being and existence of its own means to be 'something in itself and on its own account,' and that means to be *absolute*. Things, therefore, cannot be 'relative' unless they are first 'absolute.' From this it is clear that creatural beings in the universe are both absolute and relative.

But is this not a *contradiction in terms*? Certainly, if it were stated that something were 'absolute' and also 'relative' from the same standpoint and in the same respect, a contradiction would be involved in the statement. A thing, however, can very well be 'relative' from one standpoint and 'absolute' from another; there is no contradiction then. And that is precisely the case in the question under consideration. Considered in themselves and for themselves all things have a being and existence of their own, independent of the being and existence of other things; viewed from this standpoint they are *absolute*. Compared, however, with other things, they are either similar or dissimilar, equal or unequal, etc.; viewed from this standpoint, they are in relation to these others with which they are compared, and as such they are *relative*. As a matter of fact, they can be 'relative' *to others* only because they are 'absolute' *in themselves*. Hence, there is no contradiction in stating that things are both 'absolute' and 'relative,' because the standpoint is different for each designation.

It should now be easy to solve the problem: Can the mind of man *know the 'absolute' or only the 'relative'*? Many modern philosophers claim it can know nothing but the 'relative.' *Sir William Hamilton*, for example, accepts "the great axiom that all human knowledge, consequently that all human philosophy, is only of the relative and phenomenal. In this proposition, the term *relative* is opposed to the term *absolute*; and, therefore, in saying that we know only the relative, I virtually assert that we know nothing absolute — nothing existing absolutely; that is, in

itself and for itself, and without relation to us and our faculties.”² Herbert Spencer speaks in a similar vein: “Thinking being relationing, no thought can ever express more than relations.”³ Such views are false. To know that a relation exists, we must know that certain things are related. If we do not know these things as they exist in themselves and for themselves, we cannot know the ‘foundation’ in them which makes the one to be the ‘subject’ and the other the ‘term’ of the relation. But this we can and do know.

When we perceive two houses built according to the same plan, we perceive three things: the first house, as it is in itself and for itself; the second house, as it is in itself and for itself; and the identity of plan in each, on account of which they are said to be related as ‘similar.’ If we did not first perceive each house and its plan separately, as *an entity distinct in itself and for itself*, we could never recognize the ‘similarity’ which exists between them. But to perceive each house in this manner is to perceive each one as it exists *absolutely*. Only then do we perceive their similarity and with it the ‘relation of similarity’ which exists between them, so that they can be said to be ‘related to each other.’ Hence, the knowledge of things as ‘relative’ presupposes the knowledge of them as ‘absolute’: we must always know the terms of a relation before we know the relation itself. Consequently, *the knowledge of the absolute is prior to the knowledge of the relative*.

We may summarize our doctrine of relation in a few sentences: Not all relations are logical in character; some relations are real in nature; the entity of the ‘relation’ is

really identical with the entity of the 'foundation' in the extremes, with a virtual distinction between them; a knowledge of the 'absolute' is necessary before a knowledge of the 'relative' is possible.

SUMMARY OF CHAPTER XX

Much of modern philosophy is based on the concept and category of relation.

1. *The Concept of Relation.* Three factors are involved in relation: subject, term, and foundation. Relation is the bearing (reference, respect, attitude, ordination) of one thing to something else.

2. *Kinds of Relation.* All relations are either logical or real. A *logical* relation is one made solely by the mind and placed by the mind between entities. A *real* relation is one which exists between things, independent of the mind and its thinking.

A *real* relation is either essential (transcendental) or accidental (categorical, or predicamental). It is *essential*, when the very essence of one thing has a relation toward something. It is *accidental*, when the relation is based upon an accident as its foundation.

Relations are also mutual or non-mutual. It is *non-mutual*, if its foundation is real or logical in one of the extremes only. It is *mutual*, if its foundation is real or logical in both extremes. A mutual relation is of the same denomination, when the foundation in both extremes is of the same nature and degree; otherwise, it is of mixed denomination.

3. *The Foundation of Relation.* The foundation is the *reason why* one thing is related to another. Almost anything can be taken as the point of comparison. Every category contains foundations for relations.

4. *Axioms Concerning Relation.* Correlatives are simultaneous in nature. Correlatives are simultaneous in knowledge. Correlatives connote each other.

5. *Existence of Real Relations.* Not all relations are purely logical; some are *real in nature*. The systematization of science (e.g., botany and zoology) is based on structural similarity among things as they exist. There is dependence of one thing on another in nature. Nations and human beings in general have real relationships. The production of living beings through generation is a fact of nature. Our consciousness testifies to the fact that the things themselves impose the knowledge of their relations upon us.

6. *The Entity of Real Relation.* A 'relation' is not an *entity* or *mode* superadded to the entity of the foundation in the extremes. No such entity or mode is required in order to explain the presence of a relation; the existence of the *extremes* and their *foundation* automatically makes the extremes related. If the relation were a new entity or mode, things would be changed with a real alteration without any action. An infinite number of relations would exist in each individual. Things would actively influence every being throughout the universe. This is incredible. Hence, there is only a *virtual* distinction between the 'relation' and the 'foundation.'

7. *Absolute and Relative.* All things are related in some way; in this sense it is true to say that all things are 'relative.' In order, however, that things can be 'relative' to *others*, they must be 'absolute' in *themselves*; that is, they must be something in themselves and for themselves,

before they can have a reference to other things. We cannot know that things are 'similar,' 'equal,' etc., to each other, unless we know them first as they are in themselves. Hence, the knowledge of the absolute is prior to the knowledge of the relative.

READINGS

Coffey, P., Ch. XII; Rickaby, J., Bk. II, Ch. IV; Hugon, Ed., Tr. III, Qu. IV, art. 3, 4, 5; Aristotle, *Categ.*, c. V; Urráburu, J. J., Disp. VI, cp. II; McCormick, J. F., Ch. IX, pp. 132-138; Aristotle, *Metaph.*, V; Osgniach, A. J., Ch. IX, X.

1 See the author's *Reality and the Mind*, Ch. ix and x

2 *Lectures on Metaphysics*, Lect. VIII

3 *First Principles*, Part I, Ch. IV

Chapter 21

ACTION, REACTION: CAUSE, EFFECT

IN PASSING FROM THE CATEGORIES OF QUALITY AND RELATION to those of *action* and *reaction* (*passion*), we approach one of the profoundest problems of metaphysics, the problem of *change* and *causality*. This problem, perhaps more than any other, turned the minds of the early Greek thinkers toward a discussion of the origin and constitution of the physical world. That was the beginning of Greek philosophy.

It would be an erroneous view of the world to think of it as an unchanging, static reality *in facto esse*, i.e., in a condition of completed development. And it would be just as erroneous to consider it as an altogether non-permanent, dynamic reality continually *in fieri*, i.e., in a process of ceaseless change and becoming. The fact is, changes occur in things relatively permanent by means of action and reaction.

CONCEPT OF CAUSE AND EFFECT

Whenever a change takes place, it proceeds from an *operative potency*, from an active power or faculty. The exercise, or operation, of an operative potency (active

potentiality, power, or faculty), is called *action*; and the being which possesses this operative potency, is called the *agent*. By means of the action of its operative potency the agent produces a change in itself or in another as the recipient of the action. The *reception* of the action on the part of the recipient is called *reaction* (*passion*); the recipient is called the *reagent* (*patient*). Every change, therefore, presupposes an active potentiality in the agent and a passive potentiality in the patient. The active potentiality of the agent acts and produces a change, while the passive potentiality of the patient is acted on and undergoes the change. By means of its action the agent actualizes the passive potentiality of the patient, and therein consists the 'change.' The change, therefore, as it *proceeds* from the agent, is the *action*; this same change, as it is *received* by the patient, is the *reaction* (*passion*).

In all *transient* actions, the agent and patient are individual beings, really distinct from each other. The wind which agitates the water of a lake is really distinct from the agitated water; the burning wood which cooks the food is really distinct from the food itself; the jigsaw which carves the wood is really distinct from the carved wood. But in *immanent* actions the agent and patient are entitatively the same individual, and there is on that account only a virtual distinction between the agent and patient. Nutrition, for instance, is an immanent action in an organic being, perfecting this organic being itself. Thinking and willing are immanent actions which actualize the faculties of intellect and will in the rational being itself, so that this rational being is both agent and patient. The action, since it is the

exercise of an operative potency (power, or faculty), is *really* distinct from this operative *potency* and from the *agent*. The power, or faculty, remains in the agent, while the action comes and goes. Active thinking, for example, proceeds from the faculty of the intellect in repeated actions, but the intellect itself, whether active or inactive, remains in the soul as a permanent operative potency.

What has been said here of action and reaction refers to *creatural* beings. In an *analogical* sense action is also attributed to *God*. God, however, being infinitely perfect and totally substantial, has no operative faculties and actions in the meaning just given, otherwise there would be accidental potentiality and accidental actuality in His being. In our limited understanding of the divine perfections, we have no intuitive knowledge of God's being. The best we can do is to attribute the perfection of action, as we observe it in creatures, to God, after we have removed the imperfection of potentiality from it, and then deny all limitation and composition of this perfection. In God essence and action are absolutely identical and infinitely perfect, while in creatures agent and action are really distinct and very limited in perfection. When, therefore, we attribute 'action' to God, we must always bear in mind that the term is used only in an analogical sense.

AS FOUND IN CREATORIAL BEINGS, ACTION ALWAYS IMPLIES A change, and change implies *causality*. The 'agent' is the 'cause'; the 'action' of the agent producing the change is the 'causality'; the 'change' produced in the patient as

reaction is the 'effect.' But this is the meaning of 'cause' in the restricted sense of an efficient cause. The term 'cause' has a much wider significance than this.

In the traditional view a *cause* is defined as *that which in any way whatever exerts a positive influence in the production of a thing*. Three factors enter into the concept of 'production': that which produces, or the *cause*; that which is produced, or the *effect*; and the positive influence of the cause in the production of the effect, or the *causality*. Everything depends upon this positive influence in the production, in order that a thing may be called a 'cause.'

For this influence to be really 'causal,' it must *affect the being of a thing in its production*. There is no causality unless there is a 'production,' and 'production' means the bringing of a substantial or accidental thing from a state of potentiality (actual non-existence) to a state of actuality (actual existence). Such a production evidently affects the 'being' or entity of a thing in some productive manner.

This *productive influence* on the being of a thing is the most important factor in causality. *Mere external sequence* or connection on the part of two things is not sufficient to bring them into the relation of cause and effect. The fact, for example, that one train follows another along the tracks, establishes no causal relation between them, because the connection between them is purely extrinsic.

For the same reason a purely *logical influence* of one thing on another is insufficient to constitute causality. The Principle of Contradiction, for instance, exerts a tremendous influence upon all our thinking. Its influence, however, is 'logical,' not 'causal'; this principle does *not*

produce our thinking, nor does it confer anything toward the production of the *entity* of our thought. It is the intellect which actually produces our thought and as such is its 'cause.' The influence of the cause may be either corporeal (seed, for example, producing a plant) or spiritual (the intellect, for example, producing thought); but in order that such an influence partake of the nature of causality it must be *productive of being* in some manner. This will become clearer, when we compare the concepts of 'principle' and 'cause.'

PRINCIPLE AND CAUSE

In general, a *principle* is defined as *that from which something proceeds in any manner whatever*. In order that something be a 'principle,' it is required: that the principle be *prior* to that which proceeds from it; and that this priority be grounded in the things themselves because of some *special connection* existing between them.

There are two main kinds of priority: the priority of *reason*, and the priority of *reality*. These are also called *logical* and *real* priority. 'Logical' priority is attributed to a thing which, although it precedes another neither in time nor in nature, has within itself the ground on account of which our mind conceives it as preceding the other. Thus, according to our human way of thinking, the 'essence' of God is prior to His 'attributes' of intelligence, omnipotence, etc., because the essence is the ultimate ground of being in anything. Hence, we consider God's essence to be the 'principle' of His attributes.

‘Real’ priority, or the priority of reality, can be threefold: one of *time*, or of *nature*, or of *origin*. A thing is said to have priority of *time*, when it has existence before that which proceeds from it. A mother, as a human being, exists before her child. A thing has priority of *nature* with regard to another when this other presupposes the natural entity of the first for its own entity, even if the existence of both be simultaneous. Thus, a substance is prior in nature to its accidents, even though it have no priority of time with respect to its accidents; the ground for this priority of nature lies in the fact that the ‘substance’ is the necessary support for the entity of the accidents inhering in it. A thing has priority of origin, when it precedes another in such a manner, that there is a procession of the one from the other without any strict and real dependence.

Thus, in the Blessed Trinity, as theologians explain, the Logos proceeds from the Father, and the Holy Spirit proceeds from the Father and the Son (Logos). Due to this procession, the Father is prior in origin to the Son, and both the Father and the Son are prior in origin to the Holy Spirit. Since all three divine Persons possess the same nature, there is no priority of nature among them; and since this procession is eternal, there can be no priority of time.¹

It should now be clear that we must distinguish between a ‘principle’ and a ‘cause.’ *Every cause is a principle, but not every principle is a cause.* A cause is always a ‘principle,’ because it is a thing from which another (the effect) proceeds. A ‘cause,’ however, is that which exerts a

positive influence in the *production* of a thing; and that does not apply to every 'principle,' because there are some principles (for example, logical principles) which do not produce anything. The concept of 'principle' is thus seen to be wider than that of 'cause.' Hence, we may also define *cause as a principle of production*, and this definition is only verbally different from the one given above.

For something to be a real cause or principle of production, *three conditions* must be fulfilled. First of all, the cause must be a real and positive *entity*; a negation or privation is never given the name of a 'cause.' A negation or privation is the absence of entity and as such is actually nothing; but what is actually nothing cannot exert a positive influence in the production of anything. Then, the cause must really contribute some *influence* in the production of the effect. This also follows from the fact that a cause is conceived as a principle of production. The effect is the result of a production which originates in the cause. If the cause exerted no positive influence, this production could never originate, and the effect would never come into being. Hence, a mere precedence in time or place is not sufficient to constitute a cause. Finally, the effect must be *really distinct* from the producing cause. The cause 'produces' the effect; it must, therefore, produce something distinct from itself. The cause must evidently exist, in order to produce something; if the effect were not distinct from the producing cause, the cause would of necessity *produce itself* although it has existence already. That, however, is impossible: if it 'exists,' so as to be able to produce an effect, it can no longer produce itself in order that it 'obtain

existence' as the effect of its productive act. Hence, the effect and the producing principle must be diverse.

THE MAIN KINDS OF CAUSES

Two main theories have attempted to give an adequate explanation of the facts of change in the universe: *mechanism* and *naturalism*. The theory of materialistic mechanism, as was pointed out on a former occasion (Chapter 19), maintains that the ultimate constituent particles of matter are homogeneous in character, actuated by purely mechanical forces which produce only local movement. According to this mechanistic explanation of change and production, the only causes existing in nature are efficient causes. The theory of *naturalism*, as advocated by Aristotle and the scholastics, maintains that the beings possess a 'nature,' in virtue of which they are specifically distinct substances with specific properties and activities. Each nature existing in this physical universe is a compound, consisting of a 'material' and a 'formal' element as its constituent causes. By means of their powers and actions they change other beings, either in an accidental or substantial manner, thereby acting as 'efficient' causes in changing these beings. Such changes, however, do not occur in an entirely haphazard manner. On the contrary, the hierarchical arrangement of natural beings according to a definite plan and the constant functioning of natural forces according to physical laws, seems to show clearly that all things in the universe follow certain tendencies and ends; hence, 'final' causes also operate in the changes which take

place in the world. According to the theory of naturalism, therefore, four distinct types of causes account for the 'how' and 'why' of all beings: *material*, *formal*, *efficient*, and *final*.

Aristotle, the first to attempt a thorough analysis of cause in all its phases, gives the following explanation of the number and character of the four causes just mentioned. "We aim at understanding, and since we never reckon that we understand a thing till we can give an account of its 'how and why,' it is clear that we must look into the 'how and why' of things coming into existence and passing out of it, or more generally into the essential constituents of physical change, in order to trace back any object of our study to the principles so ascertained.

"Well, then (1) the existence of *material* for the generating process to start from (whether specifically or generically considered) is one of the essential factors we are looking for. Such is the bronze for the statue, or the silver for the phial. [Material causes.] Then, naturally, (2) the thing in question cannot be there unless the material has actually received the *form* or characteristics of the type, conformity to which brings it within the definition of the thing we say it is, whether specifically or generically. Thus the interval between two notes is not an octave unless the notes are in the ratio of 2 to 1; nor do they stand at a musical interval at all unless they conform to one or other of the recognized ratios. [Formal causes.] Then again, (3) there must be something to initiate the process of the change or its cessation when the

process is completed, such as the act of a voluntary agent (of the smith, for instance, [making a bronze statue, as mentioned in Bk. II, Ch. II]), or the father who begets a child; or more generally the prime, conscious or unconscious, *agent* that produces the effect and starts the material on its way to the product, changing it from what it was to what it is to be. [Efficient causes.] And lastly, (4) there is the *end* or purpose, for the sake of which the process is initiated, as when a man takes exercise for the sake of his health. 'Why does he take exercise?' we ask. And the answer 'Because he thinks it good for his health' satisfies us. [Final causes.] Then there are all the intermediary agents, which are set in motion by the prime agent and make for the goal, as means to the goal. Such are the reduction of superfluous flesh and purgation, or drugs and surgical instruments, as means to health. For both actions and tools may be means, or '*media*,' through which the efficient cause reaches the end aimed at. This is a rough classification of the causal determinants of things."²

If we seek to determine why there are just *four causes*, no more and no less, we can find the *necessity* for this number in the following reasons. A cause is something on which the production of a being depends. This caused being can be considered in a twofold way. If we consider it absolutely, the cause of the being, making it to be actually what it is, is its *form* (*formal* cause). If we consider it as a potential being becoming an actual being, two factors are

necessary to reduce it from potency to act. There must be the material factor, or matter, which is reduced from potency to act (*material* cause); and there must be the agent which, by means of its action, reduces it from potency to act (*efficient* cause). Since, however, an agent can act only according to the tendency of its own determined nature, and a tendency implies a definite direction or end, this end also determines the production of the caused being (*final* cause).³

To put the subject in a different way: There are four questions which can be asked of a thing, in order to explain the 'how and why' of its being. If we ask '*By what* is it made?' the answer is 'By the efficient cause.' If we ask '*Out of what* is it made?' the answer is 'Out of its material, its material cause.' If we ask '*Through what* is it made?' the answer is 'Through its form, its formal cause.' And if we ask '*On account of what* is it made?' the answer is 'On account of the end or purpose which induced the agent to act.' By answering these questions with respect to a thing we obtain the various determining factors which explain the production of the thing and make it to be what it is. Since these answers explain the whole thing in its being and in its production, we have all the causes which account for its 'how and why' and these causes are just four in number.

In order that these four determinant factors really deserve to be called 'causes' it is necessary that they actually be *principles of production* for the being of the thing said to be the 'effect.' That they actually are such, will now have to be shown. 'Material' and 'formal' causes belong properly to cosmology and psychology; hence, they

will be treated in brief fashion, mainly for the purpose of obtaining an understanding of these terms.

THE MATERIAL CAUSE

It is through the process of change that we arrive at the concept of material cause. A thing is said to 'change' when it passes from being one sort of thing into being a different sort of thing. There are two kinds of change: *accidental and substantial*. Both are common occurrences. When water changes from a solid to a liquid or to steam, it still retains its nature as 'water'; this is an accidental change. When a block of marble is carved into the figure of George Washington, it undergoes a change, since it is now something different from what it was before; but this change of shape does not affect the nature of marble as 'marble,' and so the change is accidental. Many changes, however, alter the very nature and substance of things. A plant, for instance, will absorb various kinds of elements from the soil and change them into living tissue, so that these elements unite into organic compounds and perform functions more or less contrary to their natural tendencies; such a change is substantial. Again, animals will take inorganic elements and the organic compounds of plants, assimilate them through a digestive process, change them into animal tissue, and utilize them in the cognitional process of sense-perception in a manner far superior to their own natural propensities; such a change in the elements, when compared to their original nature, is truly substantial, because they are now integral parts of a higher

substance, having changed from non- living to living beings. Reversely, too, when living tissues break down in the organism, or when plants and animals die and decay, a substantial change of an opposite character takes place, because living compounds thereby become non-living.

Whether a change be accidental or substantial, there is always a *substratum* or *base* present which persists throughout the process of change, which passes *from potency to act*. This substratum is something indifferent, potential, receptive, passive, determinable, actualizable; it is that which is changed, determined, actualized. This substratum is that out of which something becomes or is made; and this is called the matter or the material cause.

In an *accidental* change this matter or material cause is the *complete substance* acquiring some accidental 'act' or 'form.' A block of marble, for example, has the potentiality of receiving the shape of a statue, a column, an urn, a fountain, a bench, a table, etc. It is the 'matter' or 'material' out of which any of these things can be fashioned.

In a *substantial* change there must also be a material factor or matter. Whenever there is a change of one substance into another, as when non-living substance is changed into living substance, a *substratum* passes through the whole process. This substratum is the *primal matter*. It is present in the inorganic elements; it is also present, when the elements are changed into the living substance of the plant; and it remains present, when the plant substance is digested by the animal and becomes animal substance. Hence, primal matter has the capacity or potentiality of being changed from one kind of substance into another,

depending on the kind of agent which acts upon it. Hence, primal matter is a true cause, because it is that *out of which* something is made.

THE FORMAL CAUSE

The formal cause is the correlative of the material cause: matter and form always go together, because they are related to each other as *act* and *potency*. Matter is indifferent; the form is definite. Matter is passive; the form is active. Matter is receptive; the form is that which is received. Matter is potentiality; the form is act. Matter is determinable; the form determines it. Matter is actualizable; the form actualizes it. Matter is that 'out of which' something is made; the form is that 'through which' a thing is made to be what it is.

Since changes may be accidental or substantial, the form acquired in the change will be either an *accidental* or a *substantial* form. An accidental form is some reality determining the complete substance, such as quality or quantity, or a modification of quality or quantity. When a drop of water freezes, the crystalline structure is an accidental form or act communicated to the water. When a lump of clay is modeled into different shapes, these shapes are accidental forms or acts determining the indifferent clay. When the mind thinks, these thoughts are accidental forms or acts perfecting the perfectible mind. When a child grows to full stature, this growth is an accidental form or act affecting its quantity. In all these cases, the substance as such remains intact throughout the change.

But in substantial changes, the *nature* or *substance* is transformed into a new nature or substance through the access of a new substantial form. The substantial form unites with primal matter to constitute *a specific nature*. It is that essential and constitutive principle which makes a man to be specifically a 'man,' a lion to be specifically a 'lion,' a dog to be specifically a 'dog,' a rose to be specifically a 'rose,' and so forth. Primal matter is common to all these beings; and if matter were the only essential principle present in them, there would be no specific difference between them. What makes them specifically different among themselves, is the specifically different substantial form present in them, determining the indifferent primal matter to be just this kind of being and no other. When the substantial form changes, the species changes. The substantial form is united intrinsically to primal matter and takes away from the latter all its indifference and indeterminateness.

An example will perhaps make this relation between matter and form clearer. Take, for instance, a piece of beef. The matter in it is indifferent to becoming any particular kind of new being. It may be eaten by a lion, or a tiger, or a jackal, or a dog, or a cat, or a man. Whatever animal eats this meat, breaks down the beef tissue into minute particles, and by a process of assimilation turns it into flesh of its own kind. The inherent indifference of the primal matter is thereby removed, and this matter receives specifically new characteristics, due to the action of the new being into which it passes. There must, then, be a specifically different formative principle or 'form' in each of

these types of animal. Such a substantial form must exist in the lion, making it to be just a 'lion' and nothing else; and that also applies to the tiger, the jackal, the dog, the cat, and man. That the beef ceases to be 'beef' and becomes lion flesh, or tiger flesh, etc., must be due to a substantial form, peculiar to the species, found in each individual of the type or class; and this formative principle then actualizes and determines the indifferent primal matter by depriving the meat of its beef form and substituting its own as the actualizing agency.

This substantial form is truly a *cause*, because it assists intrinsically in the production of a being by means of a positive influence. Together with primal matter it is a *constitutive principle* of the composite substance, determining it essentially in the line of substantiality and specific perfection: it actualizes the potentiality of primal matter and makes it to be a definite substance of a definite species. All corporeal beings are thus essentially composed of substantial matter and substantial form. This theory of the composition of bodies is the *hylomorphic* theory (ύλη matter, and μορφή, form) of Aristotle and the scholastics.

THE EFFICIENT CAUSE

The efficient cause is that by which something is produced. A being of one kind is changed into a being of another kind by means of action. The agent or efficient cause acts upon another being and effects a change in it, thereby producing a new act or form. When scientists speak of 'causes' in

physical phenomena, they refer to these efficient causes and their action.

In our discussion so far, we have spoken of 'production' in the sense of change of one kind of being into another kind of being, as it occurs mainly in corporeal beings; in such changes a pre-existing matter or material cause is presupposed. It would be erroneous, however, to restrict the action of efficient causes to such a production. Creation is also 'production,' and it demands an efficient cause to bring a nonexistent being into existence; in this case, however, no pre-existing matter is present out of which, as out of a passive potentiality, the new thing originates.

Of all the causes which assist in the production of an effect by means of a positive influence, the efficient cause is most readily recognized as being a true cause. Its influence is unmistakable. When a mason builds a brick wall, his action certainly influences its making, and he is the efficient cause of the wall. When the expansive power of steam drives a locomotive along the rails, its action produces the motion and it is the efficient cause of this motion. When hydrogen and oxygen are brought together under proper conditions, their action upon each other results in the formation of water; they are the efficient cause of the new compound. And so with other agencies in nature. Since a real production takes place, the agent responsible for it is an efficient cause.

THE FINAL CAUSE

The final cause is that *for the sake of which* an efficient cause acts. It is the end, the purpose, the intention, which dominates and determines the action of the efficient cause in its production of something. This purpose *induces* the agent to act and determines the *kind* and the *manner* of action, so that the end or purpose may be achieved. The concept of a final cause or 'purpose in views involves the concept of a plan of action and the use of the proper means to attain the end.

That man does things for a definite purpose or end, is a matter of daily occurrence. When a carpenter intends to make a table, he selects the wood, cuts it into proper lengths, each piece having a definite shape and thickness, nails them together according to a plan determined by the particular kind of table he desires, and in this manner achieves the purpose he had in mind before he began to work. That the end or purpose positively influences the action of the efficient cause, is clear; the end or purpose is thus seen to be a *true cause*. It is called the *final* cause or end-cause.

Of the four causes here mentioned, two are intrinsic and two are extrinsic. The *two intrinsic causes* are the material and the formal cause. Matter and form are constitutive principles of things, entering into the very composition of their being. This is especially the case with corporeal beings or physical bodies where substantial matter and substantial form are the essential part-substances which combine to constitute the corporeal compound. Since the nature and constitution of physical bodies is the special object of investigation in cosmology, matter and form will be

discussed at length in that department of philosophy; nothing further will be said of them in ontology.

The two *extrinsic causes* are the efficient cause and the final cause. They do not enter into the composition of the being of things, but act upon them 'from without.' These two types of causes are found in material as well as in immaterial beings; their nature is, therefore, more of a metaphysical character. Hence, we must now treat of efficient and final causality a little more in detail.

SUMMARY OF CHAPTER XXI

Changes occur in things relatively permanent by means of *action* and *reaction* (*passion*). Action and reaction are the basis of causality.

1. *Concept of Cause and Effect.* Change proceeds from an operative potency. The exercise of this potency is 'action.' The reception of this action in the subject is 'reaction' or 'passion.' By means of this action the agent actualizes the passive potentiality of the patient, and therein consists the 'change.'

A *cause* is defined as *that which in any way whatever exerts a positive influence in the production of a thing.* Causality must affect the being of a thing in its production.

2. *Principle and Cause.* A principle is that *from which something proceeds* in any manner whatever. The two main kinds of priority involved in a principle are the priority of reason (logical priority) and the priority of reality (real priority). Every cause is a principle, but not every principle is a cause. The cause is a principle, because something (the effect) proceeds from it. But not every principle is a cause, because some principles (e.g., logical principles) do not produce anything. Hence, a cause can also be defined as a 'principle of production.'

For something to be a cause or principle of production, *three conditions* must be fulfilled: the cause must be a real and positive entity; it must influence the production in a real manner; the effect must be really distinct from the producing cause.

3. *The Main Kinds of Causes.* There are four main kinds of causes: *material*, *formal*, *efficient*, and *final*. They explain the 'how and why' of a being. The material cause is that 'out of which' something is made. The formal cause is that 'through which' something is made. The efficient cause is that 'by which' something is made. The final cause is that 'on account of which' something is made.

4. *The Material Cause.* Changes are either accidental or substantial. There is always a *substratum* or *base* present which persists throughout the change. This is the matter or material cause *out of which* the thing is made.

5. *The Formal Cause.* Matter is that 'out of which' something is made, while the 'form' or 'formal cause' is that *through which* a thing is made to be what it is. In accidental changes this form is some accidental reality determining the complete substance. In substantial changes this form unites with primal matter to constitute a *specific nature*. When the substantial form changes, the species changes. Matter and form are the constitutive principles of a composite substance, determining it essentially in the line of substantiality and specific perfection. This theory is called the hylomorphic theory.

6. *The Efficient Cause.* It is that *by which* something is produced. A being of one kind is changed into a being of another kind by means of the action of the agent or efficient cause. Creation is also a kind of efficient causality. When scientists speak of natural causes, they mean efficient causes.

7. *The Final Cause.* It is that *for the sake of which* an efficient cause acts. It is the end, the purpose, the intention,

which dominates and determines the action of the efficient cause in its production of something.

The material and formal causes are *intrinsic* to the things produced, while the efficient and final causes are *extrinsic*.

READINGS

Coffey, P., Ch. XIII; Rickaby, J., Bk. II, Ch. III; Hugon, Ed., Tr. IV, Qu. I, art. 1-4; Qu. II, art. 1 et 2; Aristotle, *Metaph.*, IV, V; *Phys.*, II; Urráburu, J. J., Disp. VI, cp. III; Mercier, D. Card., pp. 527-533; McCormick, J. F., Ch. IX.

1 Formerly a footnote

2 *Physics*, Bk. II, Ch. III, tr. by P. H. Wicksteed and F. M. Cornford, 1929, will. Heinemann, London (Harvard U. Press).

3 St. Thomas Aquinas, In *Physic.*, II, lect. 10

Chapter 22

EFFICIENT CAUSALITY

SCIENTISTS AND PHILOSOPHERS OFTEN SPEAK A DIFFERENT language, when they discuss questions referring to 'causes and 'causality.' The scientist, as a scientist, is not supposed to be a philosopher and metaphysician. He is not interested in the ultimate explanation of things, but in those which are relatively proximate in character. In his proper field of research the term 'cause' has a different meaning for him than it has for the metaphysician who seeks to penetrate into the deeper reasons of things. What the scientist calls 'physical causes' are but the necessitating and indispensable *conditions* or *antecedents* of physical events, not the 'producing agencies' which exert a positive influence in bringing things from non-existence to existence through a process of productive change or through creation. Thus, John Stuart Mill says: "The causes with which I concern myself are not *efficient*, but *physical* causes. They are causes in that sense alone, in which one physical fact is said to be the cause of another. Of the efficient causes of phenomena, or whether any such causes exist at all, I am not called upon to give an opinion."¹

As long as the scientist restricts himself to this negative attitude, the philosopher need not quarrel with him. But sometimes the scientist surreptitiously turns metaphysician and denies the validity of the concept of efficient causality as proposed by the philosopher. According to him the 'physical causes,' in the sense just indicated, are the *only* true causes; 'efficient causes' simply do not exist in nature. It thus becomes imperative to vindicate the validity of the concept of 'efficient causes' and 'efficient causality' in a philosophic sense.

CAUSE, CONDITION, OCCASION

In order to arrive at a better understanding of the problem, it will be necessary to recall what has been said about the nature of an efficient cause, as outlined in the foregoing chapter, and compare it with 'condition' and 'occasion.' These concepts are closely allied.

A condition is something required in order that an efficient cause can act, but it does not contribute any positive influence toward the production of the effect itself. That the filament of an electric bulb may become incandescent, it is necessary to push the button of the switch, so that the electric circuit will be closed; but the pushing of the button does not make the filament glow. Clear weather is a condition for effective artillery action; but the weather has in itself nothing to do with shooting off a cannon.

If a condition is so necessary that the efficient cause cannot produce its effect under any circumstances without

it, it is called a *conditio sine qua non*, i.e., 'a condition without which the cause does not act.' Thus, the knowledge of a good is the *conditio sine qua non* for an appetitive faculty to strive for the good. Light is the *conditio sine qua non* for the act of seeing. It is obvious, however, that the intellect itself does not 'strive' for the good, but the appetitive faculty; nor does the light 'see,' but the eyes.

Sometimes the 'condition' consists merely in the *removal of an obstacle* for the cause; the presence of the obstacle hinders the cause from acting. Thus, if a person's feet are tied, it is a necessary condition for walking that the impediment be removed. If a person is locked in a room, the door must first be unlocked before he can leave the room. The rope and the locked door are obstacles which must be removed; but that the person actually walks, that is due to the person's own efficient causality.

An *occasion* is a *circumstance or combination of circumstances which affords an opportunity for an efficient cause to act*. A crowd is an occasion for a pickpocket to ply his trade. A tavern may be the occasion for a drunkard to indulge his pet vice. Election time is the occasion for political oratory. The meeting with a friend may be the occasion of a confidential chat. The difference between an 'occasion' and a 'condition' should be fairly obvious. A condition is such that its fulfillment or presence is *required* in order that an efficient cause can act; an occasion is not a requirement for action, but its presence is something which merely gives the *opportunity* for action. Thus, the presence of a tavern gives a drunkard the opportunity to obtain the liquor needed to get intoxicated, and the tavern is for this

reason an 'occasion' for intoxication; but the possession of a quantity of liquor, sufficient to become intoxicated, is required, and this possession is, therefore, a 'condition' for intoxication.

Neither a condition nor an occasion amounts to the causality of an efficient cause. They exert an indirect influence on an agent to act, but it is the *action of the agent* which positively influences the production of something; and *efficient causality* consists precisely in this productive action of the agent. To take the example just mentioned; it is neither the presence of the tavern (occasion) nor the possession of the liquor (condition) which makes the drunkard intoxicated, but the actual drinking (action) of the man himself (agent).

KINDS OF EFFICIENT CAUSES

Efficient causes may be viewed from a variety of standpoints. This gives rise to a number of classifications.

First Cause and Second Cause. By 'First Cause' we understand one whose causality is *absolutely independent* of any other cause or being, and on which all other causality depends. This is God. God is the uncaused Cause of all things. Since He is the source of all being, He must be independent of all beings in everything He is. And since all beings owe their essence and existence to Him, their causality is ultimately dependent on Him. By 'second cause' we understand one whose causality is *dependent* on some other cause or being. Since all creatural beings are dependent in their essence and existence on God, the First

Cause, their causality is also dependent on Him. Hence, creatural beings are 'second causes.'

Physical and Moral Cause. A 'physical' cause is one which produces an effect by its own *direct action*. For example: the carpenter who makes a table, the boxer who defeats his opponent by knocking him unconscious, the boy who throws a snowball through a window, the violinist who draws his bow across the strings, the philosopher who thinks, the orator who gives a speech. A 'moral' cause is one which *inclines a free agent to act*; this may be done by an appeal, by a threat, by a promise, etc. The politician is a moral cause, when he induces an official to give him a position by paying him a sum of money. A criminal who extracts money from his victim by means of blackmail, is a moral cause. The detective who wrings a confession from a suspect by threats of the 'third degree,' is a moral cause.

Principal and Instrumental Cause. A 'principal' cause is an efficient cause which produces an effect *in virtue of its own power*. An 'instrumental' cause is an efficient cause which produces an effect *in virtue of the power of another cause*. Principal and instrumental causes are correlatives; the one implies the other. A carpenter uses a saw to cut a board; the saw is the instrumental cause, the carpenter is the principal cause. A hunter kills a deer by shooting it with his rifle; the rifle is the instrumental cause performing its action under the direction and control of the hunter. It should be noted that both causes exert their own peculiar causality. The saw cuts and the rifle shoots; but they would not act at all and not in this particular manner, were it not for the direction and control of the principal cause.

Cause per se and Cause per accidens. A cause is said to be a cause *per se*, if it has the *natural tendency* to produce a particular effect or, if it be a free agent, if it *intends freely* to produce it. It is a cause *per accidens*, if it produces an effect toward which it has *no natural tendency* and which the free will (if that be the cause in question) does *not intend*. When I take a hammer and deliberately drive a nail into a board, I am the cause *per se* that the nail enters the wood; but if I thereby hit my finger, I am the cause *per accidens* for that, because I did not intend that particular effect as the result of my attempts at carpentering.

Proximate and Remote Causes. A 'proximate' cause is one which produces its effect *directly*, in virtue of its own action, without using the action of some intermediate cause. When I walk, eat, push a cart, swing a stick, catch a ball, etc., I am the proximate cause of these effects, because they are the results of my own direct action. In melting snow, in boiling water, in making a piece of iron glow, in expanding the mercury in a thermometer, etc., heat is the proximate cause, because these phenomena are the direct result of the heat's action. A 'remote' cause is one which produces an effect through the direct action of some *intermediary cause* or causes. When my finger pulls the trigger of a rifle and explodes the charge of the cartridge, a bullet is ejected which travels through the air and kills a deer at a considerable distance; the bullet is the proximate cause of the death of the deer, while the exploding charge, the action of my hand and arm, and the deciding influence of my will, are the remote causes of the killing. Naturally, the ultimate cause in this particular chain of causes is my will.

Total and Partial Cause. A cause is said to be the 'total' cause, when the *entire* effect is produced by its action; if only a *part* of the entire effect can be attributed to a particular cause, it is a 'partial' cause. The masons, carpenters, plumbers, plasterers, etc., who assist in the construction of a building, are all part-causes of the construction. But when I lift a plank, push a table, walk a mile, dig a hole, throw a ball, etc., I am the total cause of these effects.

Univocal and Equivocal Cause. A 'univocal' cause is One which produces an effect *similar to itself in nature*. Thus, the oak produces an oak, the maple a maple, the dog a dog, the robin a robin, man a man. Living beings, therefore, which reproduce their own kind, are univocal causes in this respect, because these effects are similar to themselves in nature. An 'equivocal' cause is one which produces an effect *dissimilar to itself in nature*. When a dog, for example, gnaws a bone, the splintering of the bone is an effect dissimilar to the nature of the dog; the dog is the equivocal cause of this effect. When a robin builds a nest, the robin is an equivocal cause of the nest. A painter is the equivocal cause of his paintings, a writer, of his writings, a builder of his buildings, because the effects are different in nature from himself as their cause.

Necessary and Free Cause. A 'necessary' cause is a cause which is *determined by its nature* to produce a certain effect, provided the requisite conditions are present. If I throw a stone into the air, gravity must pull it back to the earth, because gravity is a necessary cause and is determined to a definite line of action without choice. A

'free' cause is a cause which is *not compelled to act*, even though all the requisite conditions for action are present. Thus, man is free in very many of his actions, like walking, eating, smoking, playing, etc. He can perform them or omit them, as he chooses.

After this brief enumeration and explanation of the various classes of efficient causes, as handed down to us by the traditions of philosophy, we must turn our attention to the far more important question of the existence of such efficient causes. In considering this question, we must accept the term 'efficient' cause in the meaning previously given: as something which, through its positive action, produces something.

THE EXISTENCE OF EFFICIENT CAUSES

Briefly, the status of the question is this: Is there really a *causal connection* between things? Does the being and existence of things really depend intrinsically upon other things?

Does one reality actually *produce* another reality? In a word, are there efficient causes in the universe?

Phenomenalism in its various guises denies the existence of efficient causes. It contends that we cannot possibly know anything of the reality of 'causes.' 'Cause' is an obscure metaphysical notion without any objective foundation in the things or in the events of nature. Our knowledge is restricted to sense-perception; and the senses can contact only the phenomena or appearances of things, but not their inner nature or energy. Hence, according to

phenomenalistic philosophers, the only facts accessible to our knowledge are objects in a *local* and *temporal* sequence: things are perceived as following each other; that is the total extent of our valid knowledge. We perceive *antecedents* and *consequents*, nothing more. Man arbitrarily changes this local and temporal sequence in serial happenings into an imagined 'causal connection,' in virtue of which the later phenomenon is considered to be 'produced' by the earlier.

David Hume attacks efficient causality in the following words: "When we look towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connection; any quality, which binds the effect to the cause, and renders the one an infallible consequent of the other. We only find, that the one does actually, in fact, follow the other. The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the outward senses. The mind feels no sentiment or *inward* impression from this succession of objects: consequently, there is not, in any single, particular instance of cause and effect, any thing which can suggest the idea of power or necessary connection."² He then takes the case of the will commanding bodily members to act, and argues:

"The motion of our body follows upon the command of our will. Of this we are every moment conscious. But the means, by which this is effected; the energy, by which the will performs so extraordinary an operation; of this we are so far from being immediately conscious, that it must for ever escape our most diligent enquiry."³ *John Stuart Mill*

agrees with this view of Hume: “The Law of Causation, which is the main pillar of inductive science, is but the familiar truth, that invariability of succession is found by observation to obtain between every fact in nature and some other fact which has preceded it; independently of all considerations respecting the ultimate mode of production of phenomena, and of every other question regarding the nature of ‘Things in themselves.’⁴

For *Kant* and his disciples, a knowledge of efficient causes in the world is also impossible, but for a very different reason. According to the traditional view, these efficient causes would be the things-in-themselves, as they exist outside the mind in the universe. The mind, however, according to Kant, cannot know such things-in-themselves. ‘Causality’ is a *category* of the mind, and the ‘category’ is an innate, *a priori* mental form which acts as a regulative principle in arranging our judgments. But the category of causality is not derived from our experience of things and events as they actually exist in nature, and as such tells us nothing about the efficient causality of such things. The causal connection which we place between things and events is purely mind-made and has value only for the mind and its operations.

The *occasionalists*, like Malebranche and some others, accept the efficient causality of God, but *deny* it altogether of *creatures*. God is the only efficient cause in existence. If creatures seem to produce effects, this is only a mistaken notion on our part: it is God alone who acts, using the creatures as His instruments.

In opposition to these views, we contend that the concept of efficient cause is an objectively valid concept, based on the data furnished by *experience* and demanded by reason as the only true explanation of the facts. What we must prove, of course, is, that a mere 'invariable sequence of antecedents and consequents' is not sufficient to account for our concepts of 'cause and effect,' but that there exists the *actual production* of one thing or event by another thing or event.

PROOF FOR EFFICIENT CAUSALITY

In proving the existence of efficient causality among things, it will be necessary first to show that the *assumptions* which underlie the position of the opponents are unwarranted; then it will be necessary to adduce the *positive evidence* which supports the view that efficient causality actually is present in nature.

The opposition against the existence of efficient cause is based primarily on an adverse *theory of knowledge*, and not on the facts themselves. As such, the denial is made primarily on epistemological grounds. *Kant*, since he maintained that we can have no knowledge of things-in-themselves, naturally had to deny any knowledge of efficient causality as existing among these things-in-themselves. It is the purpose of epistemology to vindicate the sources of our knowledge, among them being sense-perception, consciousness, and reason. In this connection we will restrict ourselves to one consideration. If Kant's fundamental assumption were correct, we could know

nothing of the existence and activity of *other minds* beside our own, because these 'other minds' are evidently things-in-themselves. But we have a *knowledge of other minds*. This is proved conclusively by the fact of language, whether spoken or written or printed. We do not use language to converse with ourselves; conversation is essentially a dialogue between our mind and 'other minds.' Hence, we can and do acquire knowledge of things-in-themselves, as they exist in themselves, through the medium of language. Kant's fundamental assumption is, therefore, incorrect. Consequently Kant is wrong, when he asserts that we could know nothing of efficient causality if it existed among things. If we can show that efficient causality exists in *ourselves*, we prove that efficient causes exist in nature, because we ourselves are a part of nature.

Hume, Mill, and others, denied efficient causality because of their *phenomenalism*. According to their assumption, all we can perceive are the phenomena, and phenomena are revealed to us in our senses merely as events in invariable sequence. Whenever, then, we perceive phenomena as invariably succeeding each other in place and time, we are prompted by habit and the association of ideas to imagine a *causal connection* to exist between them, so that the earlier event is the 'cause' and the later event the 'effect.' This is, in their view, the origin within our mind of the concept of efficient causality.

This is a deplorable error. The fact is, we clearly distinguish between mere 'invariable sequence' and 'real causality.' We notice, for example, an invariable sequence between day and night every twenty-four hours, and we are

convinced that this sequence has been maintained throughout the ages; at any rate, we have never experienced a single exception in this sequence. We also notice, when the day is hot and humid, and a sudden, decisive drop in temperature occurs, that a rainstorm develops; this sequence, however, is by far not as invariable as the sequence between day and night. No one, however, dreams of considering day and night as being in any causal connection, as if the day 'produced' or 'caused' the night. On the other hand, we certainly are convinced of the existence of a causal connection between the states of the weather, although the occurrence has by no means the invariability of the sequence we observe between day and night. Hence, the fundamental assumption of the phenomenologists, that our observation of 'invariable sequence' is the basis of our concept of 'efficient causality' is opposed to fact. In accordance with their principle, the phenomenologists must maintain a parity in all cases of invariable sequence. We, however, do not judge the cases to be the same. There must, then, be some other reason why we judge a causal connection to exist between phenomena, between things and events.

Besides this, we clearly distinguish between *conditions* and causes, even if there be an invariable succession between them. We know by experience that we are unable to see objects except in the presence of light. In the dark all objects are invisible; light must first be admitted before we can see. There is an invariable sequence between the presence of light and the seeing of objects. According to the phenomenologists' principle, therefore, we should judge that

light is the 'cause' of vision, because its presence invariably precedes vision. But we do not so judge. We consider light to be the *condition*, not the cause, of vision, although vision must always 'follow after' the admission of light in sound eyes. And so it is with all 'conditions.'

It is entirely untrue to assert that we obtain our concept of cause and effect from the observation of the frequency of an occurrence through habit and the association of ideas. We judge of the presence of causality even in *single cases*. When the first steam engine, or the first telephone, or the first automobile, went into operation, no one waited for the hundredth or thousandth appearance or operation in order to apply the principle of causality; this was done immediately. Similarly, when an accident or disaster occurs, we do not wait until it occurs frequently before we think of cause and effect; we look for the causal connection as soon as it occurs. On the other hand, though we see a million automobiles follow each other down the highway, we never think of the one being the cause of the other, due to association of ideas or habit.

Hence, mere sequence, no matter how frequent and invariable, is not the principle which forces us to accept the concept of efficient cause and causal connection as valid in nature. The *facts* themselves compel our *reason* to judge that the relation of cause and effect exists between things.

OUR EXPERIENCE PROVES CAUSALITY. A CRITICAL ANALYSIS OF OUR internal states and of external nature convinces us of its reality.

Internal consciousness is an indubitable witness to the fact that our mental activities not only take place in us, but that they are also produced by us. Such are the activities of thinking, imagining, desiring, willing. They are clearly observed to be 'produced' by ourselves, and this production is observed to be due to *our own action*, so that their existence is intrinsically dependent on this productive action. Thus, we are conscious that we deliberately set about to solve a certain mental problem by combining ideas into judgments, judgments into inferences, and a whole chain of inferences into an extended argumentation. With the help of our imagination we work out poems, essays, melodies, pictorial scenes, machines, etc., before they ever appear outside the mind. We desire certain things and consciously will them; and we are fully aware that we are the responsible agents of these desires and acts of the will, because we produce them by direct action. No one can deny these facts; they are present for anyone to observe. But if the conscious knowledge of ourselves as the active agents in the production of these internal activities is unreliable and false, all our knowledge, of whatever character, must be adjudged an illusion, because knowledge rests ultimately on the testimony of consciousness. In that case, however, universal skepticism is the logical outcome, and that means the bankruptcy of all science and philosophy. Hence, our consciousness is a trustworthy witness to the fact of efficient causality within us.

External experience proves the same. We speak. Language is an external expression of our internal ideas. It

is impossible for us to doubt that we actually produce the sounds of language which express our own thoughts. We *intend* to express these thoughts in conversation, and we actually *do*; and we are conscious of the fact that we are the agents in this process. If I am a painter, I set up my canvas, mix the paints, apply the colors, and with much effort project my mental images upon the canvas in form and color; I know that all this is not a mere 'sequence of events,' but a production of something in virtue of my own actions. So, too, if I take pen and ink and Write something on paper, I not only perceive one word following the other, but I am also convinced beyond the possibility of any rational doubt that I am the 'author' of the words appearing on the paper. Neither Hume, nor Mill, nor any other phenomenalist, disclaimed the authorship of the books which appeared in their name, nor would they refuse to accept royalties from their publishers on the plea that they were not the efficient causes of these books.

Again, we are convinced that many bodily actions are of a *voluntary* nature. I move my hand, my arm, my head, and I know that these members move because I make them move. If I am set for a sprint, and the gun goes off, I jump into action. But I am conscious that there is not a mere sequence between the shot and my running; and I am also conscious that the shot does not make my limbs move so rapidly: it is I myself who decide to run and who deliberately produce this action of running. This is all the more obvious to me, when I compare this sort of action with the action of the heart or of the liver, etc., over which I have no control. I clearly distinguish between 'sequence' and

‘causality.’ Hume, as we have seen, claims that we cannot know of this causal connection between our will and our bodily movements, because we cannot ‘feel’ the energy involved in this operation. This merely proves that we do not observe the *whole* process. Of the fact of causation itself we are most assuredly aware, and we are also aware of the *exertion* and *fatigue* involved in producing these effects; but if we ‘produced’ nothing, or if there were no energy expended in the production (for instance, in walking, working, running, making a speech, etc.), why should we feel exertion or fatigue? And thus our external experience also testifies to the fact that we ourselves are efficient causes which produce definite effects.

In order to disprove the opponents’ contention, no more is required than to prove a *single case of causality*. We could, therefore, rest our case with the above argument taken from the internal and external experience of our own selves. However, we contend that the existence of other efficient causes in nature is also capable of proof.

REASON DEMANDS EFFICIENT CAUSALITY IN NATURE. IF REASON demands that we admit the existence of efficient cause acting in the universe, the philosopher cannot refuse to accept the verdict of reason, because science and philosophy are based on the operations of reason. Now, if I am convinced beyond doubt that I am the cause of the picture I paint, what am I to conclude, when I see someone else paint a picture? I must conclude that *he* is doing what *I did*, when I went through the same series of actions. Of

course, all that my senses can observe is a 'sequence' of actions; *my reason*, however, demands that he, too, must be the 'producer' of his picture, just as I am of mine. This is common sense and sound logic. And the same principle applies to all actions performed by others, when I observe them doing the same things that I do or have done: if I am an efficient cause, they must be efficient causes for the same reason. There is a complete parity between my actions and their actions, and so I know, through a conclusion of reason, that real causality exists in nature in these and similar cases.

It is only a short step from instances of such activities to *productive activities in the world* at large. A farmer places seed into the soil. After a period of time it sprouts, grows, and eventually matures into an abundant harvest. Here something new has originated. And so with animals and men. We were not here a hundred years ago; but we are here now. We perceive new living beings coming into existence daily. They are new realities. But if they did not exist always and do exist now, they must have *received existence*. Consequently, they must either have given themselves existence, or some other being did. In either case their existence is a 'produced' existence, a 'caused' reality, because they were brought from nonexistence to existence. That, however, which exerts a positive influence through its action in the production of another, is an efficient cause. Here again, scientists admit the thing, though some of them will not admit the name. In general, of course, scientists do not deny the existence of efficient causality.

Efficient causes, therefore, exist in nature. We must, then, reject phenomenalism as false and accept efficient causality as the only adequate interpretation of the facts as observed.

THE PRINCIPLE OF CAUSALITY

The Principle of Causality is formulated in a variety of ways: Nothing happens without a cause; whatever begins to exist must have an efficient cause for its being and existence. One might put it into the following form: *Whatever passes from a state of non-existence into a state of existence, must have an efficient cause for its existence.* This latter formulation includes every kind of real production, whether absolute or relative. A real production is *absolute*, if the total being passes from non-existence to existence without being produced out of the potentiality of pre-existing matter; this is 'creation.' It is *relative*, if the being is produced out of the potentiality of preexisting matter, or if it passes from one kind of being into another kind of being; this is substantial or accidental 'change.' In either case the principle demands an efficient cause to account for the real production.

The validity of the Principle of Causality has been rejected by only a few philosophers. Among these is *Hume*. He says:

"The true state of the question is, whether every object, which begins to exist, must owe its existence to a cause; and this I assert neither to be intuitively nor demonstratively certain."⁵ The position of Hume and of the

phenomenalists is logical, when we consider that they deny the existence of efficient causes in general and admit nothing but an invariable sequence of events in time and space.

The majority of scientists admit that there must be a cause for every effect. In this sense, the Principle of Causality is the basis of all sciences. Unfortunately, however, for the interests of harmonious thought and understanding between philosophers and scientists, the latter at times understand by the 'Principle of Causality' something different from the traditional interpretation as given above. A perusal of the writings of modern physicists might lead the unwary reader to the view that these scientists reject, or at least doubt, the principle that every effect must have a cause. They speak of the necessity of 'reformulating' or 'reinterpreting' the 'Principle of Causality.' Some even assert that its validity has been disproved by modern physics. A careful examination of their views, however, will show that they are speaking of the purely *scientific*, not philosophic, Principle of Causality.

What is the *scientific Principle of Causality*? Briefly, it can be stated thus: When a future event can be predicted with complete certainty from the occurrence of a previous event, they are connected in such a manner that the future event is caused by the previous event. The *predictability* of the future event is the test or criterion of causality. This does not mean, of course, that the future event is considered to be causeless, if it cannot be forecast with accuracy by the scientist; it merely means that the scientist in that case cannot be certain which particular event is the

particular cause of such and such a particular effect. The scientist, therefore, attempts, with his Principle of Causality, or predictability, to *deduce* from a present event the existence of a future event, so that he can conclude *from cause to effect*: if the cause is given, what effect must follow and can be predicted? It will be seen from this that the 'scientific' Principle of Causality is quite different in meaning and scope from the 'philosophic' Principle of Causality. The 'philosophic' principle argues the other way around, namely, *from effect to cause*; if a being passes from nonexistence to existence, it must be a 'produced' being (effect) and as such demands an adequate efficient cause to bring it to existence. While the scientist is interested in deducing a specific effect from a specific cause, the philosopher is interested in discovering whether any and every effect must have a cause.

It would be wrong, therefore, to think that the scientists are in opposition to the philosophers regarding the validity of the Principle of Causality in its *philosophic* meaning. The scientists merely quarrel among themselves about the validity of their own 'scientific' principle, namely, whether effects can be accurately predicted from a scientific knowledge of the physical causes. Their question does not affect the question of the philosophic Principle of Causality in its traditional meaning.⁶

After these preliminary remarks, we must now turn to the problem and ask ourselves: Must every being passing from non-existence to existence, whether relatively or absolutely, be brought to existence through the active influence of an adequate efficient cause? The answer is

affirmative. An analysis of the ideas contained in the Principle of Causality will make the principle evident. In other words, the Principle of Causality is an *analytical principle*, independent of observation and the inductive inferences of science.

By the very fact that a being passes from non-existence to existence, it is assumed and stated that at first it was *nonexistent*. In that condition it was as such only *possible*, i.e., capable of existing. In this state of possibility the 'act' or perfection of 'existence' was not present in any form within the possible being; otherwise it would have been existent at the very time it was non-existent, which is impossible because contradictory. If and when this non-existent but possible being passed into a state of existence, it must have received the act of existence from somewhere and someone. Now, there are only three possible ways in which this being could have received its act of existence: either it received it from '*nothing*,' or from *itself*, or from *some other* being.

It is impossible that it could have received existence *from nothing*.' Since 'nothing' possesses no entity or existence within itself, it cannot give anything and cannot account for anything. If this possible being depended on 'nothing' for its existence, it could never receive the act of existence and would remain forever merely possible, i.e., non-existent. Hence, it could not pass from non-existence to existence. But the supposition is that it did become existent. Consequently, it did not receive its act of existence from 'nothing.'

Could this possible being have received existence *from itself*? It could not. A possible being, from the standpoint of physical actuality and physical entity is nothing; this lies in the fact that it is only a *possible* being. As a possible being it is as yet in a condition of non-existence, and it becomes actual by receiving the act of existence. If it were to give itself existence, it would be necessary that it *produce itself*. A being, however, that does not as yet exist and is actually nothing, cannot produce anything, least of all itself. This is evident. To 'produce' would mean to 'act, before it 'exists'. would mean to 'exist,' because no being can 'act' before it 'exists.' Hence, under the above supposition it would exist, because it acts and produces; and it would not exist, because its existence is assumed to be the effect of its own act. That is, however, impossible, because it involves a contradiction: it would exist and not exist at the same time. Consequently, a being that passes from non-existence to existence cannot receive this existence from itself.

The sufficient reason, why a possible being passes from nonexistence to existence, is not found in 'nothing,' nor is it found in this possible being itself. But it is supposed to pass from non-existence to existence. Hence, by a process of elimination, it is clear that *some other being* must give to it the act of existence. To 'give the act of existence,' however, means to *produce* it by a positive influence. If it did not exert any 'positive influence,' it would not *do* anything and could not give anything; but in that case nothing would happen to the possible being, and the latter would remain in its condition of mere possibility, which is non-existence. This other being must, then, be an *existing* thing itself and

give existence to the possible being by means of a *positive influence*. But to produce a being, i.e., to bring it from non-existence to existence, by the positive influence of its own action, is the definition of an *efficient cause*.

We have thus established the truth of the Principle of Causality: Whatever passes from non-existence to existence, must have an efficient cause for its existence.

AXIOMS REGARDING EFFICIENT CAUSES

Cause and effect are proportionate. The effect cannot be greater than the cause producing it. Otherwise a part of the effect would be without a cause, and that is contrary to the Principle of Causality. Again, the cause cannot have an actually exerted causality which is greater than is required to produce the effect. Otherwise the cause would (partly) not be a 'cause,' since that part of its action would not produce any effect.

No effect can be more perfect than its adequate cause. This is obvious. Otherwise there would be an effect, or part of an effect, without a cause to produce it and give it existence. This would be in violation of the Principle of Causality.

The cause must contain within itself the perfection of the effect. No being can give what it does not possess. Hence, the cause must contain the perfections of its effects either formally, virtually, or eminently.

Nothing can come from nothing; ex nihilo nihil fit. The meaning is: whatever happens must have an efficient cause to account for its happening. Nothing has nothing to give;

therefore, it cannot produce anything. This follows from the Principle of Causality, as just explained.

Every agent acts in a manner similar to itself. Action flows from the nature of the agent. Since the action depends on the nature of the agent, the nature cannot give rise to an action which would be at variance with itself: the agent, therefore, can act only in a manner similar to its nature, i.e., to itself. For this reason the effect must also, in some way, resemble its cause, otherwise the cause would not have contained the perfection of the effect.

Action follows being; agere sequitur esse. All actions are the exercise of the operative powers of a thing. These operative powers proceed from the nature or being of the thing. Hence, the action of a thing must be proportionate to the being and follow the manner of this being.

SUMMARY OF CHAPTER XXII

When scientists speak of physical causes, they do not always mean efficient causes in the philosophic sense. As philosophers, we are interested in the latter.

1. *Cause, Condition, Occasion.* The nature of efficient cause has been explained in the foregoing chapter. A *condition* is something required in order that an efficient cause can act, but it does not contribute any positive influence toward the production of the effect itself. An *occasion* is a circumstance or combination of circumstances which affords an opportunity for an efficient cause to act. They differ from an efficient cause in this that the latter through its own action produces the effect.

2. *Kinds of Efficient Causes.* There are a number of classifications, depending on the different standpoints taken as the basis of division.

- *First Cause and Second Cause.* The former is one whose causality is absolutely independent of any other cause, and on which all other causality depends; this is God. Second causes are those whose causality is dependent on some other cause or being; such are all creatural causes.
- *Physical and Moral Cause.* A 'physical' cause is one which produces an effect by its own direct action. A 'moral' cause is one which inclines a free agent to act.

- *Principal and Instrumental Cause.* A 'principal' cause is an efficient cause which produces an effect in virtue of its own power. An 'instrumental' cause is an efficient cause which produces an effect in virtue of the power of another cause.
- *Cause per se and Cause per accidens.* A cause is a cause *per se*, if it has the natural tendency to produce a particular effect or, if it be a free agent, if it intends to produce it. It is a cause *per accidens*, if it has no natural tendency to produce a particular effect or if it does not freely intend it.
- *Proximate and Remote Cause.* It is 'proximate,' if it produces its effect directly, in virtue of its own action, without using the action of an intermediary cause. It is 'remote,' if it produces its effect through the action of an intermediary cause or causes.
- *Total and Partial Cause.* It is the 'total' cause, when the entire effect is produced by its action; it is the 'partial' cause, when only a part of the entire effect can be attributed to it.
- *Univocal and Equivocal Cause.* A 'univocal' cause is one which produces an effect similar to itself in nature. An 'equivocal' cause is one which produces an effect dissimilar to itself in nature.
- *Necessary and Free Cause.* It is 'necessary,' when it is determined by its nature to produce a certain effect, provided the requisite conditions are present. It is 'free,' when it is not compelled to act,

even though the requisite conditions for action are present.

3. *The Existence of Efficient Causes.* There are efficient causes in nature. The phenomenologists claim that all we can know is an invariable sequence of events in time and space. *Kant* considered efficient causality to be merely a mental category. The occasionalists maintain that God alone is an efficient cause.

Kant's assumption, that we cannot know any things-in-themselves, is wrong, because we certainly know about 'other minds' besides our own. The phenomenologists' assumption is wrong, because we distinguish clearly between sequence and causality.

We prove the existence of efficient causes from our *experience, internal and external*. We are conscious of producing our own acts of thinking, imagining, desiring, willing. We are also conscious of actively producing things through external actions of our body. Reason demands that we conclude to a similar causality, when we see others do as we do; and it also demands causality for the origination of new realities.

4. *The Principle of Causality.* It is formulated: Whatever passes from non-existence to existence, must have an efficient cause for its existence. It is an analytical principle. Such a being must obtain its existence either from 'nothing,' or from itself, or from another being. Not from '*nothing*'; because 'nothing' has no existence to give. Not from *itself*; because to produce itself it would have to act, and to act presupposes existence. Hence, it must receive

existence from *another*. But for another to produce a being, so that it passes from non-existence to existence, means that it is an efficient cause.

5. *Axioms Regarding Efficient Causes*. Cause and effect must be proportionate; no effect can be more perfect than its adequate cause; a cause must contain within itself the perfection of the effect; nothing can come from nothing; every agent acts in a manner similar to itself; action follows being.

READINGS

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1 *System of Logic*, III, V, 2.

2 *An Enquiry Concerning Human Understanding*: Section VII, Part I, 50

3 *Loc. cit.*, 52

4 *System of Logic*, III, 5, 2

5 *Treatise on Human Nature*, Bk. I, Part III, 3

6 See Max Planck, *The Philosophy of Physics*, tr. by W. H. Johnston (W. W. Norton and Co., New York, 1936), Ch. II

Chapter 23

FINAL CAUSALITY

THE EXISTENCE AND NATURE OF *FINAL* CAUSES IS ONE OF THE most controverted points in the history of philosophic thought. The prevalence of materialistic and positivistic views in modern times has accentuated the controversy. Materialists and positivists attack the validity of the concept of 'final causes.' Much of this opposition is due to bias, because the doctrine of 'final causes' seems to point too obviously toward a Supreme Intelligence as a directing influence in the physical world. The question, therefore, is important and warrants a closer inspection.

THE KINDS OF FINAL CAUSES

The general concept of a 'final cause' has already been treated in a former chapter (Chapter 21). Here we must go more into detail as to the various kinds of final causes.

Intrinsic and Extrinsic Final Causes. The causality of a final cause is said to be *intrinsic*, if the action producing a definite effect is the result of a being's *natural tendencies*. A conspicuous example of intrinsic finality is the natural tendency present in the germ-plasm of the organic being to

develop into a specific kind of organism. The germ-cell has a very definite direction in its developmental action. The fertilized ovum of man, for instance, grows into a body which is distinctly human in structure and characteristics, gradually developing the requisite organs and parts even before they can be of any immediate use; such are the head, heart, brain, lungs, nerves, ears, eyes, mouth, stomach, hands, feet, intestines, sex organs, etc. The finality of development is not impressed upon the germ-plasm from without, but is 'intrinsic' to it, because the tendency to develop in this manner is present within the cell itself and the entire action proceeds from the cell itself as from the producing agent. That is why the human ovum never tends to produce the body of a horse or a mouse or any other animal, but only the body of a human being. The same applies, of course, to any other organic being, whether plant or animal.

The causality of a final cause is said to be *extrinsic*, when it is *impressed* upon a being by some *outside directive force*. The finality given to a bowling ball, as it speeds toward the pins, is extrinsic, because it does not lie in the nature of such a ball to move in this particular manner and direction; this action of the ball is imposed on it by the player. So, too, the direction given to a bullet by a sharpshooter aiming at an enemy soldier, wounding or killing the latter, is obviously extrinsic to the bullet, because the bullet as such has no natural tendency to go anywhere in particular.

Final causes are classified also according to the *different ends or purposes* which an agent may have in view, when

exerting its productive activity. The 'end' or 'purpose' is 'that for the sake of which' an agent or efficient cause acts, and therein consists the causality of the final cause. Hence, a classification of the various kinds of ends or purposes will also be a classification of the various final causes.

The End Which and the End for Which (Whom). The former is the *good itself* which is striven for as the end to be realized through the action. When a man, for instance, goes about building a house, it is the house itself which is the end he has in view as the result of his efforts in building. When a physician treats a patient, so as to restore his health, this health of the patient is the 'end which' he intends as the effect of the treatment. The *end for which* (or whom) is the *thing* or *person* that is to benefit by the acquisition or realization of the 'end which' is acquired or realized. When a man builds a house, he may build it as a home for his own family or he may build it to sell at a profit; both purposes are the 'ends for which' the house is built. The physician may have as his 'end for which' he cures a patient the payment of a fee or the increase of his medical reputation.

Proximate End and Remote End. Whenever there is a question of proximate and remote ends, two or more ends are always implied, with a relation between them of nearness or remoteness concerning the final result intended. An end will be the *proximate end*, if it is referred to some ulterior end, but has no other end referred to itself. Thus, when a physician gives his patient some medicine, the immediate or proximate end of this medicine is the health of the patient; and when a man builds a house, the immediate or proximate end is the completed house itself. An end will

be a *remote end*, if one or more other ends are referred to it. And this remote end will be either an 'intermediate' or an 'ultimate' end. *Intermediate* this remote end will be, if one or more ends are referred to it, and it is itself referred to some ulterior end. This will be the case, for example, when the physician wishes to restore the health of the patient (which is his proximate end) for the sake of the fee which he will thereby acquire (intermediate end), so that he can safeguard the future of his family (ulterior end); or when a man builds a house (which is his proximate end), in order to have a comfortable home for his family (intermediate end), so that his family may enjoy earthly happiness (ulterior end). *Ultimate* this remote end will be, if it has one or more ends referred to itself, while it is not itself referred to any other end. This ultimate end may again be either 'relatively' or 'absolutely' ultimate. It is *relatively ultimate*, when it is the last purpose in some particular line; for example, the relatively ultimate end of the physician's work may be a life of affluent retirement in consequence of his amassed wealth, and for the builder of a house it may be the desire of a happy family life. It is *absolutely ultimate*, when it is the last purpose in every line, so that no ulterior end or purpose can be conceived; this, for the physician and builder and for all creatures, is the greater glory of God.

Primary End and Secondary End. An end is said to be the primary or principal end, when it is the main one among two or more which actuate an agent and is sufficient of itself to make the agent act. Thus, the fulfillment of his social duty may be the principal end a physician has in view in his medical practice; the primary end for a man building

a house may be the comfort of his family. An end is said to be *secondary* or accessory, when it is intended together with a primary end, without, however, exerting the same potent influence on the action of the agent. For example, the physician may also strive for fame and money besides the fulfillment of his social duty; and the builder may also intend the personal enjoyment of the lake view which his house affords.

End of the Act and End of the Agent (finis operantis, finis operantis). By the end of the act we understand the purpose which is present in the act itself and which the act tends to realize because it is this particular kind of act. Thus, the 'end of the act' of healing on the part of the physician is the restoration of the 'health' of the patient; and on the part of the builder it is the 'house' being built. By the end of the *agent* we mean the purpose which the agent itself (himself) has in performing this particular act. For instance, the 'end of the agent' for the physician in healing his patient may be the fulfillment of his duty, or money, or fame, etc.; the 'end of the agent' for the builder may be his own comfort, or the comfort of his family, etc.

Natural End and Supernatural End. We speak of a *natural end*, if it lies within the tendencies and powers of the nature of an agent to strive for this end and to realize it. The physician working for the cure of his patient and the builder constructing his house have a natural end in view. An end is supernatural, if it lies beyond the tendencies and powers of the nature of an agent to strive for this end and to realize it. For instance, that the physician and builder

strive for divine grace in their labors, in order to obtain eternal happiness, is a supernatural end of their efforts.

THE EXISTENCE OF FINAL CAUSES

Are there really final causes in nature? Is there finality in the universe? Do things and beings act *in order* to realize some definite *end* and *purpose*? Or, are there merely efficient causes with their effects in nature? Whoever affirms the existence of finality and final causes in the world, advances a *teleological* or purposive explanation of phenomena (τέλος, end, purpose). One who denies finality (teleology) and final causes in nature and asserts that all effects are due to active agents and their powers without any end or purpose directing their activity, is the advocate of a *mechanical* explanation of all things.

Materialists, of course, are mechanists; their theory does not admit of any intelligent foresight working toward the realization of a definite end or purpose, and consequently they must deny the existence of final causes throughout all nature. To them the world consists but of matter and blind energy. *Positivists*, *agnostics*, and *empiricists* deny the possibility of knowing anything beyond the data of sense-perception; hence, since all causality is to them unknowable, final causes are also unknowable and unacceptable. According to these philosophers, final causes are fictions of the mind which man in his ingenuousness carries out into nature; in reality the activities of beings show no directive principle and no intentional effects. Kant and his followers also deny real finality; they consider, as

was explained in the preceding chapter, 'causality' to be merely an *a priori* mental form, without objective value in nature.

In opposition to these we maintain the existence of *finality* or *teleology* in nature. This means that things are not only efficient causes, but are efficient causes with a definite direction in their action: *they tend to realize definite results*. Ontology is concerned with establishing the *general fact* that there are final causes, no matter in what form, and that the concept of finality and final causes has *objective value* and is not a mere fiction of the mind. As long as it can be proved that final causes exist at all, i.e., that some things are influenced in their productive action by ends and purposes, the existence of final causes must be considered as established.

The *proof* is not difficult. We find final causes at work in intellectually conscious, in sentiently conscious, and in unconscious, beings. We mean to prove that there are beings in each of these three groups which act with definite ends or purposes in view, so that their productive activity is positively influenced by the effects which they intend to realize in the future.

FIRST, THEN, WE FIND FINAL CAUSES AT WORK IN *INTELLECTUALLY conscious beings*. Such a being is man. It takes but a little reflection to see the truth of the statement that man acts under the direction of ends and purposes. When a farmer plows his field and plants seeds in the springtime, he does his work with a definite end in view: he wishes to harvest an

abundant crop in the future, and this intention determines the time, place, manner, and duration of his labor, etc.

In fact, it is the exception that man acts without a definite end in view. The entire structure and operation of industry, business, commerce, art, invention, labor, governments, etc., is the result of a host of actions, all of which are directed and dominated by definite ends and purposes. All the activities of peace and war are based upon final causes. It is only the somnambulist, or the insane, or the idiot, who acts without a conscious rational end in view. Intellectually conscious beings, therefore, act in consequence of final causes or purposes, and this happens from morning until night throughout the length of their life. That this is really the case, is evidenced by the direct testimony of our own consciousness; and the validity of this testimony cannot be denied or impugned without destroying the foundations of all knowledge, science, and philosophy.

That these ends and purposes actually *influence* our productive actions in a positive manner, is obvious. The examples mentioned above show this conclusively. Nothing more is required as a proof for the existence of finality and final causes in *some form*. It proves that the concept of ends and purposes as 'final causes' is valid and legitimate and not merely a fiction of the mind. For the sake of completeness, however, we will extend the argument to the remaining two groups of beings.

We also find final causes at work among *sentiently conscious beings*. Brute animals are such beings. Their actions manifest finality. When a cat watches at the hole in

the floor with unswerving eyes, crouches with tensed muscles, chases the mouse that unwisely comes forth, pounces upon it with exposed claws, and then devours it, is this not done for the purpose of catching her prey? When a bird flies about, seeks bits of string, feathers, straw, and twigs, brings them together to a certain tree, and then shapes them with a co-ordinated sequence of apt motions into a nest, is this not done for the purpose of fashioning a nest? Animals may not (and for that matter, do not) understand the 'rationality' of their actions, but they certainly *perceive* things, *desire* them, and *strive* for them. This is finality, or purposive action, pure and simple. Hence, sentiently conscious beings also act in consequence of final causes determining their productive actions.

Finally, there are final causes at work among *unconscious beings*. Such are the chemical compounds and physical bodies in the world at large. Here, naturally, the existence of final causes is not so obvious. It is quite evident, of course, that inorganic beings can have no knowledge of any good and in consequence of this knowledge strive for it. The question is not, however, whether they 'knowingly' strive for ends, but whether they do, *as a matter of fact*, tend to realize definite results in the future as the effects of their activities, so that these activities have a definite *direction* given to them in virtue of the effects striven for. This, we contend, is actually the case.

Inorganic beings are governed by *natural* and *necessary* laws, to which they are subject at all times. Chemical affinity, for instance, is a selective attraction existing between different kinds of elements and it controls the

activity of the elements and their compounds throughout all chemical changes. This affinity, however we may conceive it in its nature and operation, is the expression of a natural *law*. But what is a natural law, if not the expression of the *inner tendencies of the nature* of such things? Chemical affinity is not a fortuitous event, occurring sporadically here and there and now and then, but a constant and regular occurrence which takes place without exception, provided the conditions are the same. Hence, elements tend to form specific compounds by means of a *selective tendency*, and this selective tendency runs through a *set series of changes*, until it realizes the compound as the end-result of its activity; this done, its activity ceases.

The finality existing in unconscious beings is observed more clearly in the tendencies of *vegetant* beings, as manifested in the growth and development of their *structural forms*. Attention has already been called to the 'intrinsic finality' existing in the human ovum. This applies with equal force to every *organism*, whether man or brute or plant, in the vegetative functions of its growth, beginning with one original cell and developing into a completely mature individual. Growth is an unconscious operation of living tissue. Notwithstanding the unconsciousness of the process, there is a very distinct tendency and direction in it toward a specific result. Somehow, the germ-cell contains within itself the design of the mature individual of a particular *specific type*, and it *tends* to develop this type under all conditions. The individuals vary in height, size, weight, and characteristics within certain limits; but they develop according to a well-defined plan, so as to carry out

the pattern of the type. This is so obvious a fact, that the theory of evolution demands vast periods of time for the transmutation of one species into another. The development of the germ-cell into an individual of a specific type is constant, regular, natural; it is the result of an *internal driving power* present in the germ-cell and prolonged through the whole life history of the organism.

As the result of this internal principle of development, billions of cells are formed, combine together into various kinds of structural members, tissues, and organs, placed in mutual relationship as to position and function. These members, tissues, and organs have their own individual kind of activity, but they are co-ordinated and interdependent in such a manner that the well-being of the organism *as a whole* is the evident purpose and tendency of all combined. This tendency to produce and maintain the type-individual is an immense fact of nature which can be adequately explained only through *finality* and *final causes*, because the original cell has the positive tendency to produce a definite effect *in the future*.

FINALITY AND FUTURITY

There is a serious objection against the concept of final causes in general and against the concept of finality in unconscious beings in particular. In speaking of 'ends' and 'purposes' as final *causes*, are we not doing violence to the concept of 'cause'? A cause must really assist in the production of a thing through a positive influence. But surely, no being can assist in the production of something

unless it really exists. The end or purpose, however, does not reach existence until the entire productive action is terminated, because it is effected or realized only as the result of the action. Since, then, the end or purpose is really non-existent as an entity at the beginning of the productive action, it seems impossible for it to exert any causality in the production. For instance, the physician intends to restore the health of a patient; this 'health-to-be-restored' is the end or purpose he has in view with his treatment; health itself occurs only at the termination of the treatment and is non-existent at the beginning of the treatment: then how can this 'health-to-be-restored' influence his action (the restorative treatment) and be a *real cause*?

It is true that the end or purpose intended (e.g., the health of the patient) does not exist in the *physical order* in the beginning; as such, therefore, it cannot exert any 'physical action' in the production of the result. But the end or purpose exists in the *intentional order*, namely, as a 'design' or 'plan' held constantly in view. As such it determines the agent (e.g., the physician) to *act* and also determines the manner of action (e.g., the treatment). The presence of this end or purpose sets a long chain of actions in motion, bringing into existence a decided change of events. And this means that the end or purpose is a real final cause in the true sense of the term.

But would the end or purpose, since it determines the action from the beginning, not presuppose some sort of *knowledge of the end or purpose* on the part of the agent, in order to strive for its realization *in the future*? Assuredly it does. With intellectually conscious beings this involves no

difficulty, because they possess a faculty of knowledge. With unconscious beings and inorganic and vegetative activities the situation is entirely different. Inorganic beings and plants have no faculty of knowledge, and the vegetative functions of brutes and men are performed unconsciously; in them the tendency to produce definite effects in the future is the *result of their nature*, which directs their activities without any knowledge of the process on their part. Then how can one speak of an 'end' or 'purpose' which is supposed to be present from the beginning and work 'in order to' realize a future effect according to a certain 'plan' or 'design'? How can their nature direct a course of action of which it has no knowledge? Whence this 'tendency' and 'determination' intrinsic to their nature? The answer is that such finality in action certainly presupposes a *conscious knowledge* of the end or purpose striven for. Since, however, inorganic activity and vegetative function is not the result of conscious knowledge on the part of these beings themselves, but is the outcome of an intrinsic tendency of their nature, the finality of their actions ultimately postulates a *creative Intelligence* which intended these future results for them and gave them a nature which spontaneously tends to realize its intrinsic ends and purpose. Any other hypothesis will not account for the evident facts. This is also the only logical explanation for the *instinctive* actions so strikingly manifested in the animal kingdom.

However, no matter what we may consider to be the proper explanation, there can be no question about the *fact* that beings do act for definite ends. Final causes, therefore,

do exist in some form among beings; and the concept of 'final causes' is thus not an idle fancy, but is *objectively real* in nature.

AXIOMS CONCERNING FINAL CAUSES

The end or purpose is the cause of all causes. The material cause is determined by the formal cause; the formal cause is determined by the efficient cause; and the efficient cause is determined in its action by the end or purpose in view, i.e., by the final cause. Hence, the final cause determines the other causes and is thus the cause of all causes.

Every agent acts for an end. Man acts because his will strives for some apprehended good. Animals, plants, and inorganic beings strive for things in virtue of the tendencies inherent in their nature. Consequently, all beings act, consciously or unconsciously, for an end or purpose.

Who intends the end must intend the means. Whoever effectively intends an end, must strive to realize it. But if one cannot realize it except through the use of certain means, one must evidently also intend these means; otherwise one would not effectively intend the end itself. It follows from this, that whoever uses certain means in order to attain the end, is responsible for the means which he uses in the attainment of this end. Hence, a good end will not justify immoral means.

The end is first in intention, last in execution. The end or purpose is the result to be achieved through the productive action in the future; and when it is achieved, the action ceases. But in order that the action can tend to produce this

result, the action must be determined from the very beginning by this effect held in view as an end or purpose. Hence, the end is first in intention and last in execution.

The end is, in itself, nobler than the means. It is the end which determines the means to be used; the means do not determine the end. The means are used to acquire the end. Hence, the means are not striven for on account of their own goodness, but rather for the possession of the goodness present in the end.

End and means must be proportionate. Obviously. It would not do to attempt to stem a flood with a twig, nor to let loose a deluge in order to drown a fly. Major purposes demand major means, and minor purposes demand minor means. This refers as well to the importance as to the magnitude of the end in view; both demand a corresponding use of means, so as to insure the achievement of the result intended.

SCIENCE AND FINAL CAUSES

What is the attitude of science toward final causes and *finality in nature*? By science we mean the 'scientists.' Their general attitude is one of negative aloofness toward the question. They do not concern themselves about the presence of final causes in nature and make no attempt to decide whether things actually strive with their actions to realize ends and purposes set for their actions as a definite goal which they are supposed to reach. As scientists, they seek to understand the phenomena which occur in nature and then seek for the efficient causes which produce them

through their actions. When they have discovered this causal connection between subsequent and antecedent events, they feel that they have arrived at a *scientific knowledge* of all that science is entitled to investigate and know. Whatever lies beyond this sort of knowledge lies beyond the legitimate field of science. The philosopher may seek to penetrate more deeply into the mysteries of nature, if he can; but the scientist, as a scientist, is content to understand the operations of nature and express its operations in the formula of a physical law.

As scientists conceive science, it is primarily a *method* of investigation, based on *observation* and *experiment*. Whatever is discoverable by this method is a proper object of science. This object alone is of interest to the scientist. Hence, the changes in nature, and the corresponding activities producing them, are the field which science investigates. This means that 'efficient causality,' in a physical sense of the term, are the factors in nature which science can legitimately investigate, so as to correlate its findings in a complete body of demonstrated, scientific truths. Such are the limits of science set by the scientists themselves. Hence, scientists do not interest themselves in the intrinsic, constitutive principles of bodies, such as matter and form (material and formal causes), nor in the intrinsic tendencies of bodily actions (final causes). They are content to accept the nature of bodies as given and to study the actions as observable facts.

No one can quarrel with the scientists, if they deliberately restrict the field of scientific research in this manner, provided they do not overstep the bounds of their

own restrictions. They may *ignore* the question of finality in nature as something outside the scope of their scientific investigation. But they may not, according to the rules laid down by themselves, *deny* the existence of finality in natural beings, without ceasing to be scientists and professing to be philosophers. The question of finality and final causes is a metaphysical question and belongs to philosophy, not to science as limited by the scientists. Consequently, if the investigations of the philosopher demand the existence of final causes as an adequate explanation of natural occurrences, it is not within the province of the scientist as such to dispute or deny their existence and the validity of their concept. Unfortunately, scientists sometimes contend that, because final causes are *not observable*, their existence must be denied. This is a false principle of logical reasoning which, if applied, must do harm to the best interests of both science and philosophy.

Unlike the scientists, the philosopher cannot ignore the problem of final causes and finality. It is his endeavor to discover the truth in things *as far as reason can reach*. He cannot rest content with a knowledge of observable data, but must apply the principles of reason to the data furnished by observation and experiment and seek a *rational interpretation* of the facts in their entirety. It is for this reason that the philosopher attempts to discover all the causes operative in nature. Among these causes are final causes. So far we have established the fact that final causes actually exist, at least in some form and to some extent.

The question is often asked: 'Do ducks fly and swim because they have wings and webbed feet, or do they have

wings and webbed feet in order to fly and swim?’ The scientist would answer: ‘They fly, because they have wings, and they swim, because they have webbed feet’: that is all that concerns the scientist as a scientist. The philosopher, if he agrees with our viewpoint, would answer: ‘First of all, the ducks have wings and webbed feet in order to fly and swim, and then they fly and swim because they have wings and webbed feet.’ The scientist answers by affirming the existence of *efficient* causes, while the philosopher answers by affirming the existence of both *efficient and final* causes.

Those philosophers who deny the existence of final causes in nature (except, perhaps, in the case of man, due to his intellectual capacity of preconceiving an end or purpose for his action), must of necessity contend that *blind forces* rule the world and that all things occur through ‘chance,’ or ‘luck,’ or ‘accident.’ Hence, some attention must be given to the possible existence of such factors in nature.

CHANCE, LUCK, ACCIDENT

Terms like ‘chance,’ ‘luck,’ ‘accident,’ and similar expressions are found in all languages. They show the firm conviction of people that many things happen in this world which are beyond the control of any regulative principle in nature. Such occurrences are, therefore, conceived as happening without being the result of purposive action: no end or purpose and consequently *no final cause determines their course*. What truth is there in this view?

The following are instances of the occurrences which are usually considered to be the result of 'chance' or 'luck' or 'accident.' A man spades his garden, in order to plant some vegetables, and uncovers a hidden treasure of which he had no knowledge. This is a case of 'good luck,' and he is said to find this treasure by 'chance' or 'accident'; it is also spoken of as 'good fortune.' Years after a war, a farmer plows a field which had been the scene of a battle, hits a hidden shell, and is hurt by the explosion. He had 'bad luck' or 'misfortune,' and his injury was the result of an 'accident.' Two cars, speeding along separate highways which cross each other at right angles, meet at the intersection, and a collision occurs. The meeting of the cars was 'by chance,' and the collision was an 'accident.' What is chance, or luck, or *accident*?

The Principle of Causality guarantees that no effect can happen without an *adequate efficient cause* to account for it. 'Chance' results, therefore, must never be understood in the sense that effects occur without a cause: such events would be impossible. But what is meant by chance results is that certain effects are *not intended* by the active agents under these particular circumstances. An effect may be 'intended' by directly *willing* it, if the agent is free in its activity; or it may be 'intended' because a thing has the *natural tendency* to produce a definite effect. Thus, if I deliberately throw a ball, I 'intend' the movement of the ball through the air. Gravity has the natural tendency to bring the ball back to earth; it also 'intends' this downward motion. Neither of these two movements is due to 'chance,' 'luck,' or 'accident.' When, however, a certain effect is not

intended freely or naturally, as just explained, it is said to be due to 'chance,' 'luck,' or 'accident.' For instance, when I throw a ball, and the ball, without my intending it, hits a man on the head, this is an 'accident.' Because, although I freely 'intended' to throw the ball, I did not intend the man's head as the target for my marksmanship; and so, too, although gravity attracted the ball in virtue of a natural tendency and thus 'intended' its downward course, it had no natural tendency to attract the ball in such a manner that it would alight upon the man's head. That the ball struck his head was due to an unfortunate *conjunction of causes* which was intended neither by me nor by nature.

In accidental occurrences *two distinct factors* must be considered. Each efficient cause intends a certain result, either freely or because of a natural tendency, and the causality of the efficient cause is directed and determined by an end or purpose which the efficient cause seeks to realize as the direct effect of its action; the action of each cause is, therefore, intended separately and *independently* of the other, so that there is no concerted action intended by the different causes with relation to each other. The *coincidence* of these separate and independent lines of action, therefore, is not intended by these efficient causes and lies outside the scope of their individual ends and purposes; therein lies the element of 'chance,' 'luck,' and accident,' because no regulative principle controls the meeting of these separate and independent actions: their meeting or conjunction just 'happens.' Accidents thus occur *incidentally* to some intended action.

Aristotle therefore *defines chance*, or luck, or accident (for they mean essentially the same thing) as “the incidental production of some significant result by a cause that took its place in the causal chain incidentally, and without the result in question being contemplated.” And he goes on to say: “Clearly then luck itself, regarded as a cause, is the name we give to causation which incidentally inheres in deliberately purposeful action taken with respect to some other end but leading to the event we call fortunate” [or unfortunate]¹ Aristotle’s observation here is very acute and is borne out by the analysis of an accidental occurrence. Two automobile drivers take their cars out into the country. One drives from east to west, and the other from north to south. Their action is purposeful; each intends to ride, and drives his car in accordance with his purpose. That the two cars, driven at their respective speeds, will meet at the intersection of the two highways at a particular moment and thus cause a collision, is something unforeseen and unintended by both drivers. Hence, the *conjunction* of these two sets of efficient causality is only *incidental* to the purposeful action of each driver and is beyond their knowledge and control.

Since there is no finite controlling factor which brings about this conjunction of efficient causalities, such accidental effects cannot be foreseen and foretold with any degree of certainty, except by God. *Irregularity* and *lack of constancy* are the characteristic marks of events that happen by chance. It follows that events and phenomena, which occur regularly and constantly in nature according to a physical law, cannot be the result of chance; whatever is

constant, normal, and according to type, is contrary to the very concept of chance.

Is the universe, then, governed by *chance or purpose*? The law, order, and harmony manifest everywhere in nature is the best evidence that the universe is governed by *purposeful design*. Aristotle expresses his view on this question as follows:

“In general, the theory [of chance, as the dominant factor in the universe] does away with the whole order of Nature, and indeed with Nature’s self. For natural things are exactly those which do move continuously, in virtue of a principle inherent in themselves, toward a determined goal; and the final development which results from any one such principle is not identical for any two species, nor yet is it any random result; but in each there is always a tendency toward an identical result, if nothing interferes with the process. A desirable result and the means to it may also be produced by chance, as for instance we say it was ‘by luck’ that the stranger came and ransomed the prisoner before he left, where the ransoming is done as if the man had come for that purpose, though in fact he did not. In this case the desirable result is incidental; for, as we have explained, chance is an incidental cause. But when the desirable result is effected invariably or normally, it is not an incidental or chance occurrence; and in the course of Nature the result always is achieved either invariably or normally, if nothing hinders. It is absurd to suppose that there is no purpose because in Nature we can never detect the moving power in the act of deliberation. . . . That

Nature is a cause, then, and a goal-directed cause, is above dispute."²

Nature, of course, has no intelligence of its own and as such cannot select the goal of its action as an end or purpose for which to strive. Nevertheless, intelligence is required in order that nature can be "a goal-directed cause," striving toward the realization of its all-encompassing purpose according to precise laws. Hence, the presence of a purpose or goal in nature demands the existence of a Supreme Intelligence outside itself. One of the most eminent of modern physicists, Max Planck, says: "The most perfect harmony and consequently the strictest causality in any case, culminates in the assumption that there is an ideal spirit having a full knowledge of the action of the natural forces as well as of the events in the intellectual life of men; a knowledge extending to every detail and embracing present, past, and future."³

This "ideal spirit" is God.

SUMMARY OF CHAPTER XXIII

The existence and nature of final causes is one of the most controverted points of philosophy.

1. *Kinds of Final Causes.* The concept of final cause was explained in a preceding chapter.

Intrinsic and Extrinsic Final Causes. The causality of a final cause is said to be 'intrinsic,' if the action producing a definite effect is the result of a being's natural tendencies. The causality is 'extrinsic,' when it is impressed upon a being by some outside directive force.

Since it is the 'end' or 'purpose' which is that for the sake of which an efficient cause acts, final causes are also classified according to the various kinds of 'ends' or 'purposes.' The *End Which and the End for Which (Whom).* The former is the good itself which is striven for as the end to be realized through the action; the latter is the thing or person that is to benefit by the acquisition or realization of the end which is acquired or realized. *Proximate and Remote End.* It is a 'proximate' end, if it is referred to some ulterior end, but has no other end referred to itself; it is a 'remote' end, if one or more other ends are referred to it. A remote end will be either intermediate or ultimate. *Primary and Secondary End.* It is the 'primary' end, when it is the main one among two or more and is sufficient of itself to make the agent act; it is 'secondary,' when it is intended together with a primary end. *End of the Act and End of the Agent.* The former is the end which is the purpose of the act itself; that latter is the purpose which the agent has in

performing the act. *Natural and Supernatural End*. It is a 'natural' end, if it lies within the tendencies and powers of an agent to strive for this end and to realize it; it is supernatural,' if it lies beyond the tendencies and powers of an agent to strive for this end and to realize it.

2. *The Existence of Final Cause*. This existence is denied by materialists, positivists, agnostics, and empiricists; we maintain *finality* (teleology) in nature, at least in some form. This means that some efficient causes *tend to realize definite results*.

Intellectually conscious beings (men) have definite ends and purposes for their action; this is a daily experience, as our consciousness testifies. *Sentiently conscious* beings (brutes) perceive things, desire things, and strive for things; instinctive actions are all purposive. *Unconscious* beings (chemicals and plants) also show finality in their actions: chemical affinity is a selective tendency which seeks to realize definite sorts of compounds; the germ-cells of plants tend toward producing individuals according to the patterns of the specific type.

3. *Axioms Concerning Final Causes*. The end or purpose is the cause of all causes. Every agent acts for an end. Who intends the end must intend the means. The end is first in intention, last in execution. The end is, in itself, nobler than the means. End and means must be proportionate.

4. *Science and Final Causes*. The attitude of scientists toward final causes in nature is one of *negative aloofness* toward the question. They are interested merely in observable phenomena and their causation. Hence, they restrict the field of scientific knowledge to efficient causes

and ignore the possible existence of final causes in nature as being beyond the scope of science.

5. *Chance, Luck, Accident.* The Principle of Causality guarantees that no effect can happen without an adequate efficient cause. But many effects happen by chance, in as much as the *conjunction* of efficient causes and their actions is not always *intended*. Chance (luck, accident) is the incidental production of some significant result by a cause that took its place in the causal chain incidentally, and without the result in question being contemplated. *Irregularity and lack of constancy* is the mark of chance; what happens regularly, constantly, and normally, is not the result of chance. Nature works in a manner which is regular, constant, and normal, because it acts according to laws. Nature, therefore, is governed by final causes, not by chance.

READINGS

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¹ *Physics*, Bk. II, Ch. V, 196 b 30; 197 a 5

² *Physic.*, Bk. II, Ch. VIII, 199 b 15-30 (Harvard U. Press).

³ *The Philosophy of Physics*, tr. by w. H. Johnston (W. w. Norton, New York. 1936), p. 78

GLOSSARY OF TERMS

Note: In the case of qualified words, always look for the word or noun qualified. For example: in seeking for Absolute Accident, look for Accident, Absolute, etc.

ABSTRACTION. A process in which the mind fixes its attention upon one or the other characteristic of a thing or upon one element common to many things, excluding others which are joined to it in the real order. See. Precision.

ACCIDENT. A being whose nature it is to exist in another as in a subject.

ACCIDENT, ABSOLUTE. An accident which confers a real perfection upon its subject.

ACCIDENT, EXTRINSIC. An accident which does not affect the being of its subject, but modifies the subject's immediate surroundings.

ACCIDENT, INTRINSIC. An accident which affects the being of its subject in some manner.

ACCIDENT, MODAL. The definite disposition or determination of an indifferent and determinable accidental entity in such a manner that it does not confer any positive and new entity upon the substance.

ACCIDENT, RELATIVE. An accident that has its being in a subject only because of the bearing which one thing has to another.

ACCIDENT, STRICTLY ABSOLUTE. An accident which confers upon its subject some positive and new entity.

ACT. Any entity of whatever kind and nature which perfects and determines a thing in its being.

ACT, MIXED. An act that in some form or other has an admixture of potentiality.

ACT, NON-PURE. See Act, Mixed.

ACT, PRIMARY. An act that is the first in a series of acts.

ACT, PURE. An act that is without the least admixture of potentiality.

ACT, SECONDARY. An act that presupposes another act in a definite series, so that it proceeds from a primary act.

ACTION. The exercise or operation of an operative potency. The production of an effect.

ACTIVITY, IMMANENT. The activity through which a living being perfects itself and makes itself the goal for the acquired actuality or perfection.

ACTIVITY, TRANSIENT (TRANSEUNT, TRANSITIVE). The activity which tends to change another object.

ACTIVITY, VITAL. See Activity, Immanent.

AFFECTION. A relatively transient quality which produces, or results from, some accidental sensible alteration.

ALTERATION. The change of a being from one qualitative state to another.

ANNIHILATION. The reduction of an existing being to non-existence.

ATTRIBUTES, TRANSCENDENTAL. The supreme modes necessarily connected with every being, which are different phases of the same fundamental being, but are not explicitly contained in its concept as such.

AUGMENTATION. The change of a being from one quantitative state to another.

BEAUTY. That attribute of a thing in virtue of which the thing pleases when perceived. A blending of the unity, truth, and goodness in a thing, characterized by completeness, proportion, and clarity of presentation in an intellectual-sensuous form, so as to produce a disinterested emotional pleasure in a rational perceiver.

BEING. That which exists or can exist, the existible; whatever is not nothing.

BEING, ABSOLUTE. A being which can be thought of or can exist without reference to another.

BEING, ACCIDENTAL. See Accident.

BEING, ACTUAL. Anything that really exists at the present moment in the physical or spiritual world.

BEING, CONTINGENT. A being whose non-existence is possible.

BEING, CONTRACTION OF. See Contraction of Being.

BEING, FINITE. A being whose reality is limited in perfection.

BEING, IDEAL. Any object in so far as it is known.

BEING, INFINITE. A being which has no limit in its entity or perfection.

BEING, LOGICAL. Anything that has objective being only in the mind.

BEING, NECESSARY. A being whose non-existence is impossible.

BEING, POSSIBLE. Anything that does not actually exist, but is capable of existence.

BEING, REAL. Anything that has, or can have, existence independent of man's actual knowledge.

BEING, RELATIVE. A being which can be thought of or can exist only in reference to another.

BEING, SUBSTANTIAL. See Substance.

CAPACITY, NATURAL. The proximate accidental principle of operation, toward which (operation) it is specifically directed.

CATEGORY. An ultimate and supreme mode of real being; a predicament.

CAUSALITY, PRINCIPLE OF. The principle which states that whatever passes from a state of non-existence into a state of existence must have an efficient cause for its existence.

CAUSE. That which in any way whatever exerts a positive influence in the production of a thing.

CAUSE, EFFICIENT. That by which something is produced.

CAUSE, EQUIVOCAL. A cause which produces an effect dissimilar to itself in nature.

CAUSE, FINAL. That for the sake of which an efficient cause acts.

CAUSE, FIRST. A cause whose causality is absolutely independent of any other cause or being, and on which all other causality depends.

CAUSE, FORMAL. That through which a thing is made to be what it is. Form.

CAUSE, FREE. A cause which is not compelled to act, even though all the requisite conditions for action are present.

CAUSE, INSTRUMENTAL. An efficient cause which produces an effect in virtue of the power of another cause.

CAUSE, MATERIAL. That out of which something becomes or is made. Matter.

CAUSE, MORAL. A cause which inclines a free agent to act.

CAUSE, NECESSARY. A cause which is determined by its nature to produce a certain effect, provided the requisite conditions are present.

CAUSE, PARTIAL. A cause whose action produces only a part of the total effect.

CAUSE PER ACCIDENS. A cause which produces an effect toward which it has no natural tendency, or which the free will (if that be the cause in question) does not intend.

CAUSE PER SE. A cause that has the natural tendency to produce a particular effect or, if it be a free agent, that intends freely to produce it.

CAUSE, PHYSICAL. A cause which produces an effect by its own direct action.

CAUSE, PRINCIPAL. An efficient cause which produces an effect in virtue of its own power.

CAUSE, PROXIMATE. A cause which produces its effect directly, in virtue of its own action, without using the action of some intermediate cause.

CAUSE, REMOTE. A cause which produces an effect through the direct action of some intermediary cause or causes.

CAUSE, SECOND. A cause whose causality is dependent on some other cause or being.

CAUSE, TOTAL. A cause whose action produces the entire effect.

CAUSE, UNIVOCAL. A cause which produces an effect similar to itself in nature.

CHANCE. The causality of agents resulting in effects not intended by the agents under these particular circumstances.

CHANGE. The transition from one positive state of being to another.

CHANGE, PRINCIPLE OF. The principle which states that whatever changes is changed by another.

COMPOSITION, LOGICAL. A union of elements which are neither objectively different in idea nor physically different as things, but merely different in the sense that the one idea contains implicitly and vaguely what the other expresses explicitly and determinately.

COMPOSITION, METAPHYSICAL. The union of elements that are objectively different in idea, but really identical in their physical being as things.

COMPOSITION, PHYSICAL. The union of elements that are objectively different in idea and physically different as things.

CONDITION. Something required in order that an efficient cause can act.

CONTRACTION OF BEING. The reduction or narrowing of the extension of being to its inferiors by means of the addition of some element to the comprehension of 'being,' thereby including some definite beings and excluding others from this extension.

CONTRADICTION, PRINCIPLE OF. It is impossible for a thing to be and not to be at the same time. A thing cannot be and not be something at the same time.

CORRUPTION. A substantial change which makes a substance cease to be.

CREATION. The production of a thing from nothing.

DETERMINATIONS, PRIMARY. Primary determinations of being are those which are transcendental, i.e., those which constitute the most fundamental distinctions of 'being in general' and go beyond all the ordinary classifications of beings.

DETERMINATIONS, TRANSCENDENTAL. Those primary determinations which constitute the most fundamental distinctions of 'being in general' and go beyond all the ordinary classifications of beings.

DISPOSITION. A relatively transient quality which disposes a being temporarily well.

DISTINCTION. The absence of sameness between concepts or things.

DISTINCTION, ADEQUATE REAL. A real distinction between things so that they are distinct in their total being.

DISTINCTION, FORMAL (SCOTISTIC). A distinction, maintained by Duns Scotus, actual on the part of the thing,

as between formality and formality, though not real, as between thing and thing.

DISTINCTION, INADEQUATE REAL. A real distinction in which things are distinct as part and whole.

DISTINCTION. LOGICAL. The absence of sameness between concepts of the same reality.

DISTINCTION, MAJOR REAL. The absence of identity between thing and thing to such an extent that they are distinct from each other as entities.

DISTINCTION, MENTAL. See Distinction, Logical.

DISTINCTION, MINOR REAL. The absence of identity between a thing and its mode.

DISTINCTION, NEGATIVE REAL. A real distinction in which there is a non-entity either on one or on both sides of the distinction.

DISTINCTION, POSITIVE REAL. A real distinction in which the distinct things are real (positive) entities and differ in their entities.

DISTINCTION, PURELY MENTAL. A distinction between concepts of one and the same reality, without a foundation in the object itself for making the distinction.

DISTINCTION, REAL. The absence of sameness between things different in their reality.

DISTINCTION, SCOTISTIC. See Distinction, Formal.

DISTINCTION, VIRTUAL. The distinction between different concepts of one and the same reality, with a foundation in the object itself for making the distinction.

EFFECT. That which is produced.

END (PURPOSE). That for the sake of which an agent or efficient cause acts. See Cause, Final.

END FOR WHICH (WHOM). The thing or person that is to benefit by the acquisition or realization of the 'end which' is acquired or realized.

END, INTERMEDIATE. An end to which one or more ends are referred, and which is itself referred to some ulterior end.

END, NATURAL. An end which lies within the tendencies and powers of the nature of the agent to strive for.

END OF THE ACT. The purpose which is present in the act itself and which the act tends to realize because it is this particular kind of act.

END OF THE AGENT. The purpose which the agent itself (himself) has in performing this particular act.

END, PRIMARY (PRINCIPAL). The main end or purpose among two or more which actuates an agent and is sufficient of itself to make the agent act.

END, PROXIMATE. The end that is referred to some ulterior end, but has no other end referred to itself.

END, REMOTE. An end to which one or more other ends are referred.

END, SECONDARY (ACCESSORY). An end intended together with a primary end, without, however, exerting the same potent influence on the action of the agent.

END, SUPERNATURAL. An end which lies beyond the tendencies and powers of the nature of an agent to strive for.

END, ULTIMATE. An end which has one or more ends referred to itself, while it is not itself referred to any other

end.

END WHICH. The good itself which is striven for as an end to be realized through the action of a cause.

ENERGY, KINETIC. Energy of motion.

ENERGY, POTENTIAL. Energy of position.

ERROR. Disconformity (disagreement) between intellect and thing.

ESSENCE. The act of actuality which perfects and determines a thing in its species; that which makes a thing to be what it is.

ESSENCE, METAPHYSICAL. The sum of the various grades of being which constitute a thing in the abstract concepts of the mind.

ESSENCE, PHYSICAL. An essence as it exists concretely in nature, independent of the mind's thinking.

EVIL. Something that is unsuitable for a natural tendency or appetency. The privation of a required good.

EVIL, ABSOLUTE. The privation of an absolute good.

EVIL, APPARENT. The privation of an apparent good.

EVIL, MORAL. The privation of the proper relation between an action or its omission and the moral law.

EVIL, OBJECTIVE. The privation of an objective good.

EVIL, ONTOLOGICAL. The privation of an ontological good.

EVIL, PHYSICAL. The privation of a physical good.

EVIL, REAL. The privation of a real good.

EVIL, RELATIVE. The privation of a relative good.

EVIL, SUBJECTIVE. The privation of a subjective good.

EXCLUDED MIDDLE, PRINCIPLE OF. A thing either is or is not. Every thing must either be or not be. Between

‘being’ and ‘not-being’ there is no middle or third thing possible.

EXISTENCE. That state of a being in virtue of which it is present as an actuality and not merely as a possibility, distinct from the mind and, if it be a produced being, distinct from its producing cause.

FALSITY (ERROR). Disconformity (disagreement) between intellect and thing.

FALSITY, LOGICAL. The disagreement of the intellect with the thing.

FALSITY, MORAL. The disagreement of speech with thought.

FALSITY, ONTOLOGICAL. The disagreement of a thing with the intellect.

FIGURE. The geometrical quality resulting in a body from the arrangement of its quantitative parts.

FINAL CAUSE, EXTRINSIC. A cause whose causal action is impressed upon it by some outside directive force.

FINAL CAUSE, INTRINSIC. A cause whose action producing a definite effect is the result of a being’s natural tendencies.

FORM. The physical quality resulting in a body from the arrangement of its quantitative parts. See Cause, Formal.

GENERATION. A substantial change which brings a new substance into being through the corruption of another or others.

GOOD. Any reality which suits the nature of the being which strives for it.

GOOD, ABSOLUTE. Anything which is suitable to a being itself, irrespective of other beings.

GOOD, APPARENT. Something that is judged to be good for a being, but is actually not good for it.

GOOD, DELECTABLE. A relative good which gives pleasure and enjoyment to another.

GOOD, DISINTERESTED. A good considered merely as giving perfection, irrespective of any pleasure derived from its possession.

GOOD, METAPHYSICAL. See Good, Ontological.

GOOD, MORAL. A good which has everything demanded of it by the moral law.

GOOD, OBJECTIVE. Anything that is good in itself.

GOOD, ONTOLOGICAL. A thing as good in its very entity or reality.

GOOD, PHYSICAL. A good which satisfies the demand of the nature of a being.

GOOD, REAL. Something that is judged to be good for a being and actually is good for it.

GOOD, RELATIVE. Anything which is suitable to another.

GOOD, SUBJECTIVE. The actual possession of an objective good.

GOOD, TRANSCENDENTAL. See Good, Ontological.

GOOD, USEFUL. A relative good which is desired as a means to acquire perfection or pleasure.

GOODNESS. The suitability of a thing for a natural tendency or appetency.

HABIT. As a quality, it is a comparatively permanent accident disposing a thing well or ill in its being.

HABIT, OPERATIVE. A stable quality disposing a being ill or well in the operations of its faculties.

HABITUS. The condition resulting from clothing, equipment, physical adjuncts, environment; or a condition or state, as expressed by the reflexive verb.

HYPOSTASIS (SUPPOSITUM). A complete and individual substance which has subsistence, i.e., a substance which is self-contained and autonomous (*sui juris*) in its operations.

IDENTITY. A sameness between concepts or things.

IDENTITY, ACCIDENTAL LOGICAL. The logical identity of things based upon the similarity of their accidents.

IDENTITY, ESSENTIAL LOGICAL. The logical identity of things based upon the similarity of their essence.

IDENTITY, LOGICAL. The unity (oneness) of things based upon the same concept of the mind.

IDENTITY, METAPHYSICAL. The real identity of a being, in virtue of which it can absolutely not change in any manner.

IDENTITY, MORAL. The real identity of a being, in virtue of which the change which takes place in its essential being is successive and gradual.

IDENTITY, PHYSICAL. The real identity of a being, in virtue of which it does not change in its essential reality.

IDENTITY, PRINCIPLE OF. Whatever is, is; and whatever is not, is not. Everything is what it is. Everything is its own being. Being is being, and not-being is not-being.

IDENTITY, REAL. The unity (oneness) of things in themselves.

INCAPACITY. An existing faculty in a weakened or unfit condition.

INDISPOSITION. A relatively transient quality which disposes a being temporarily ill.

INDIVIDUALITY. That state of an existing being in virtue of which it is one and non-multipliable.

INDIVIDUALITY, UNITY OF. The unity of a being which is one in itself and non-multipliable.

INDIVIDUATION, ABSOLUTE, PRINCIPLE OF. That intrinsic principle which gives the unity of individuality to an existing being.

INDIVIDUATION, PRINCIPLE OF. The principle which makes an existing being to be an individual, so that its nature or essence is incommunicable to others and is restricted to this one.

INDIVIDUATION, RELATIVE, PRINCIPLE OF. The principle which determines the possibility of having a number of individuals of the same species.

MANICHEISM. A theory, originating with Manes, which maintained that God is the supreme Principle of Good and matter the supreme Principle of Evil.

MATTER. See Cause, Material.

MECHANISM. The theory which maintains that the ultimate constituent particles of matter are homogeneous in character, actuated by purely mechanical forces which produce only local movement.

METAPHYSICS. The science of the ultimate principles and properties of real beings.

MOTION, LOCAL. The transition of a thing from one place to another.

MOTUS. Any activity involving the transition from potency to act in a corporeal being through successive stages, i.e., a successive change in a body. The act of a being in potency while still in potency.

MOVEMENT. See Motus.

NATURALISM. The theory of Aristotle and the scholastics, that beings possess a 'nature,' in virtue of which they are specifically distinct substances with specific properties and activities.

NATURE. The essence of a being considered as the ultimate principle of its operations.

NOTHING. The absence of being.

NOTHING, ABSOLUTE. The total absence of being in every conceivable form.

NOTHING, NEGATIVE. The mere absence of some kind of being in a thing.

NOTHING, PRIVATIVE. The absence of some kind of being in a thing that is fit to have it and normally ought to have it.

NOTHING, RELATIVE. The absence of a definite kind of being.

OCCASION. A circumstance or combination of circumstances which affords an opportunity for an efficient cause to act.

ONENESS. That attribute of a being in virtue of which it is undivided in itself (and divided from every other being).

ONTOLOGY. The science of being in its most general aspects.

PASSION (REACTION). The reception of an effect from another.

PERSON. An intellectual hypostasis, i.e., an individual, complete, subsistent, intellectual substance.

PESSIMISM. The philosophic theory which maintains that evil predominates over good, because the world at large is essentially bad.

PHILOSOPHY. The science of things in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone.

POSSIBILITY. Objective potency, or the capacity or aptitude of a being for existence.

POSSIBILITY, ABSOLUTE. See Possibility, Intrinsic.

POSSIBILITY, EXTRINSIC. The capacity or aptitude of a being for existence in virtue of the power of an efficient cause capable of producing it.

POSSIBILITY, INTRINSIC. The capacity or aptitude of a being for existence, due to the compatibility or non-contradiction of its constitutive elements.

POSSIBILITY, LOGICAL. See Possibility, Intrinsic.

POSSIBILITY, METAPHYSICAL. See Possibility, Intrinsic.

POSSIBILITY, MORAL. The possibility of free agents to do something without grave difficulty.

POSSIBILITY, PHYSICAL. The possibility due to the powers of a thing acting according to the laws of nature.

POSSIBILITY, RELATIVE. See Possibility, Extrinsic.

POSTURE. A disposition of parts among themselves in the sense of 'attitude'; immanent or intransitive action expressed by an intransitive verb.

POTENCY. The capacity or aptitude for something.

POTENCY, OBJECTIVE. The capacity of a non-existent being for existence.

POTENCY, OPERATIVE SUBJECTIVE. The capacity for doing something.

POTENCY, REAL. See Potency, Subjective.

POTENCY, RECEPTIVE SUBJECTIVE. The capacity for receiving an act.

POTENCY, SUBJECTIVE. The capacity of something existing for an act.

PRECISION. A process in which the mind fixes its attention upon one or the other characteristic of a thing or upon one element common to many things, excluding others which are joined to it in the real order.

PRECISION, FORMAL. A type of abstraction or precision in which the ideas drawn out by the abstractive process are only subjectively different, i.e., these ideas mutually include each other implicitly, though they do not expressly mention each other.

PRECISION, MATERIAL. A type of abstraction or precision in which the ideas drawn out by the abstractive process are objectively different, i.e., these ideas have a different comprehension or thought-content, so that the one does not necessarily include the other.

PRECISION, OBJECTIVE. See Precision, Material.

PRECISION, SUBJECTIVE. See Precision, Formal.

PREDICAMENT. An ultimate and supreme mode of being; a category.

PREMOTION, PHYSICAL. An antecedent physical influence (*praemotio physica*) which, according to Thomists, is required in order that the faculty of a creature can pass from potentiality to actuality.

PRINCIPLE. That from which something proceeds in any manner whatever.

PRINCIPLE OF CAUSALITY. See Causality, Principle of.

PRINCIPLE OF CHANGE. See Change, Principle of.

PRINCIPLE OF CONTRADICTION. See Contradiction, Principle of.

PRINCIPLE OF EXCLUDED MIDDLE. See Excluded Middle, Principle of.

PRINCIPLE OF IDENTITY. See Identity, Principle of.

PRINCIPLE OF SUFFICIENT REASON. See Sufficient Reason, Principle of.

PRINCIPLES, FIRST. See Principles, Supreme.

PRINCIPLES, SUPREME, OF BEING. Those highest principles which are immediately derived from the concept of 'being.'

PROPERTIES, TRANSCENDENTAL. The supreme modes or attributes necessarily connected with every being, which are different phases of the same fundamental being, but are not explicitly contained in its concept as such.

PROPERTY. The act or actuality perfecting and determining an essence in such a manner that the entity it gives to the being flows necessarily from its nature, without being strictly essential. PURPOSE. See End.

QUALITY. An absolute accident completing and determining a substance in its being and in its operations.

QUALITY, AFFECTIVE. A relatively permanent quality which produces, or results from, some accidental sensible alteration.

QUANTITY. An attribute of the material (determinable) element in a being.

QUIDDITY. The 'whatness' or essence of a being.

REACTION (PASSION). The reception of an action on the part of the recipient.

RELATION. It is the bearing (reference, respect, attitude, ordination) of one thing to something else.

RELATION, ACCIDENTAL (CATEGORICAL, PREDICAMENTAL). A relation based on an accident as its foundation.

RELATION, CATEGORICAL. See Relation, Accidental.

RELATION, ESSENTIAL (TRANSCENDENTAL). A relation in which the very essence of one thing has a bearing toward something.

RELATION, EXTREMES OF. The subject and term of a relation.

RELATION, FOUNDATION OF. The reason why one thing is related to another.

RELATION, LOGICAL. A relation made solely by the mind and placed by the mind between entities.

RELATION, MUTUAL. A relation whose foundation is real or logical in both extremes.

RELATION, MUTUAL, ASYMMETRICAL. A relation in which the foundation in both extremes is of a different

nature or degree.

RELATION, MUTUAL, SYMMETRICAL. A relation in which the foundation in both extremes is of the same nature and degree.

RELATION, NON-MUTUAL. A relation whose foundation is real or logical in one of the extremes only.

RELATION, PREDICAMENTAL. See Relation, Accidental.

RELATION, REAL. A relation which exists between things, independent of the mind and its thinking.

RELATION, TRANSCENDENTAL. See Relation, Essential.

SUBSISTENCE. That mode of existence in virtue of which a thing is self-contained and autonomous (*sui juris*) in its operations.

SUBSTANCE. A being whose nature it is to exist in and for itself and not in another as in a subject.

SUBSTANCE, COMPLETE. A substance whose nature demands no further union with a substantial co-principle.

SUBSTANCE, COMPOSITE. A substance consisting of incomplete substantial parts, entitatively distinct among themselves, in such a manner that their union results in a single, unified nature.

SUBSTANCE, INCOMPLETE. A substance whose nature demands that it be conjoined with some other substantial co-principle.

SUBSTANCE, PRIMARY. Any individual, concrete substantial being.

SUBSTANCE, SECONDARY. Any generic or specific substance.

SUBSTANCE, SIMPLE. A substance which does not consist of substantial parts which are entitatively distinct among themselves.

SUFFICIENT REASON, PRINCIPLE OF. The principle which states that everything without exception must have an adequate reason or ground for its being and existence, even if no production be involved.

SUPPOSITUM. See Hypostasis.

TELEOLOGY. The tendency of efficient causes to realize definite results through their action.

TERM, ANALOGOUS. A term applied to unlike things, partly for the same and partly for a different reason.

TERM, EQUIVOCAL. A term which is used of totally diverse things, so that it has entirely different meanings.

TERM, UNIVOCAL. A term which designates a number of things in an identical sense.

TERMINUS A QUO. The starting-point from which something proceeds.

TERMINUS AD QUEM. The goal or ending-point toward which something proceeds.

THOMISM. One of the schools of scholastic philosophy.

TRANSCENDENTAL. Something which goes beyond all ordinary classifications and categories of being. TRUTH. The conformity (agreement) between intellect and thing.

TRUTH, LOGICAL. The agreement of the intellect with the thing.

TRUTH, MENTAL. See Truth, Logical.

TRUTH, METAPHYSICAL. See Truth, Ontological.

TRUTH, MORAL. The agreement of speech with thought.

TRUTH, OBJECTIVE. See Truth, Ontological.

TRUTH, ONTOLOGICAL (METAPHYSICAL, OBJECTIVE).
The agreement of a being with the intellect.

UNITY. That mode or attribute of a being in virtue of which a being is undivided in itself (and divided from every other being).

UNITY, LOGICAL. The indivision of a universal idea (class) considered as a whole of which the inferiors are the parts.

UNITY, MATHEMATICAL. See Unity, Predicamental.

UNITY, NUMERICAL. See Unity, Predicamental.

UNITY OF COMPOSITION. The unity of a being in such a manner that it is a whole not actually divided into the real parts of which it consists.

UNITY OF SIMPLICITY. The unity of a thing in such a manner that it does not consist of any parts into which it could be divided.

UNITY, PREDICAMENTAL (MATHEMATICAL, NUMERICAL). A unit considered as a standard for measuring mathematical or numerical quantity.

UNITY, REAL. The indivision of a thing in its entity.

VALUE. That which is perfect or perfective.

WHEN. Situation in time.

WHERE. Situation in space.

ZOROASTRIANISM. An oriental theory, originating with Zoroaster (or Zarathustra), which maintains that the forces

of good and evil are waging a constant battle for supremacy. Ahura-mazda (Ormuzd) is the supreme Principle of Good, and Anra-mainyu (Ahriman) is the supreme Principle of Evil.

FROM AETHER TO COSMOS

COSMOLOGY

Nihil obstat: PASCHAL AHEARN, O.F.M.Cap., PH.D.

THOMAS A. HEIDENREICH, O.F.M.Cap., PH.D.

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AUTHOR'S PREFACE

COSMOLOGY is a fascinating and important department of philosophy. Its very subject matter, namely, the corporeal universe in its ultimate constitution, is a challenge to the truth-seeking mind of the student.

The phenomenal success of the physical sciences in penetrating into the interior of the atom and its structure has revolutionized our knowledge of the material universe. Much of the mystery surrounding the elements and their properties has been dispelled. Scientists, since the turn of the century, have furnished data which are indispensable to the cosmologist. In no other department is the philosopher so dependent on the findings of science for the solution of his problems.

The student should have an elementary knowledge of physics and chemistry as a preparation for this course. Most teachers of cosmology, however, experience the difficulty that the acquaintance of their students with 'nuclear' physics and chemistry is too fragmentary to be of much value. The author, therefore, has deemed it advisable to devote the first part of the book to a summary of the main facts pertinent to the physical constitution of bodies.

This information should assist the student in passing judgment on the essential constitution of bodies — one of the great cosmological problems which has confronted the thinkers of all ages.

In scholastic circles the essential constitution of bodies is still treated in the light of the theory of hylomorphism. There exists, however, a theory among scholastics of the present day which deviates from this traditional doctrine. It is the theory of hylosystemism. This theory is expounded in a special chapter, so that the student may become familiar with this newest view. As for the style of the book, the author has followed the same method of treatment as in his other textbooks, *The Science of Correct Thinking*, *Reality and the Mind*, and *The Domain of Being*. He has endeavored to illustrate his material with copious examples and explanations, in language which is relatively simple and nontechnical. The summaries of the chapters and the glossary of terms at the end of the book should be of considerable help to the student in memorizing the salient features of the matter discussed in the body of the text.

It is hoped that the student, through the study of cosmology, will manage to achieve a broad synthesis of science and philosophy and thereby arrive at a deeper understanding and appreciation of the world in which he lives.

January 1, 1941

PART I

**THE PHYSICAL CONSTITUTION
OF BODIES**

Chapter 1

COSMOLOGY

MAN IS AN INQUISITIVE BEING. POSSESSING AN INTELLECT AND endowed with an insatiable desire for knowledge, he endeavors unceasingly to unravel the mysteries which surround him. Visible, physical nature, with its manifold forces and phenomena, has always held an irresistible fascination for his mind. The struggle for existence sharpened his wits and made him seek ways and means to turn the forces of nature to his own advantage. Gradually he accumulated a large store of useful, but more or less unrelated, information concerning physical beings, their properties and activities. In the course of time this led to the development of science and philosophy.

PRESCIENTIFIC KNOWLEDGE

Knowledge comes from *experience*. We see, hear, feel, taste, smell; this is sense perception, because by means of these sensations we 'perceive' color, sound, heat, flavor, odor, etc. We are conscious of these perceptions from the days of our childhood, and we experience them as long as we live. We recognize objects by means of the continued

presence of one or more of these sensible qualities. An orange is predominantly yellow in color, more or less spherical in shape, somewhat rough to the touch, sweet to the taste, and of a definite, fragrant odor. Ice is transparent, cold, practically tasteless and odorless, and very hard.

All men (a few philosophers excepted) are convinced that the *objects* which we recognize by these sensible qualities are *objectively real*. When we call them 'objectively real,' we mean that they exist, not in our imagination alone, but as 'things,' just as we ourselves exist. They are beings with an existence of their own which is independent of our thought. They are outside our mind in space and time, and would remain there even if our mind ceased to exist. These objects, like ourselves, are parts of the physical world.

With normal sense organs and with a little attention, all men are capable of distinguishing the ordinary objects encountered in the experience of their daily observations: wood, water, fire, stones, buildings, hills, clouds, trees, animals, men, etc. Many of these objects are perceived to have a definite *activity*: wood burns, water flows, fire warms, clouds move, trees grow, animals and men eat and drink. Under ordinary circumstances most objects have *properties* which are *characteristic of their type*; for example, gold is yellow and malleable, air is light and gaseous, a diamond is hard and brilliant. Other properties are common to all sensible things: they occupy space in three dimensions and persist in time.

On the basis of such properties and activities, man has always arranged the objects of nature in a broad *system of classes*. The *two* main divisions are: living and nonliving. The chief subdivisions of living beings are: plants, animals, men. And the chief subdivisions of nonliving beings are: solids, liquids, and gases. These divisions and classifications are obvious, and are the result of man's natural tendency to generalize his experiences and to systematize his observations. Besides this division into broader classes, one finds a grouping of things into limited classes. This is evidenced by the class names found in every language: for instance, 'birds,' 'dogs,' 'trees,' 'hands,' 'heads,' 'stones,' 'rivers,' 'flowers,' 'mountains,' 'valleys,' etc. Such classifications belong to all men, irrespective of time, place, and culture.

Through his knowledge of individual objects man, even though primitive and savage, comes to know the various *relationships* which exist between these objects. Things are discovered to be, not in complete isolation, but in definite relation one to another; they are not a jumble and chaos of single beings, but an interrelated group of beings, arranged in a system of mutual dependence: they form together a real *world*. The untrained mind of primitive man may have a world picture which is crude and inaccurate; nevertheless, the fact that he has such a conception is undenied and undeniable.

The ordinary man accepts the objects and phenomena of the physical world without question as to their reality; and he accepts them as he perceives them through his senses. To him *things actually are as they appear*. The rose is truly

red and the lemon yellow, in the meaning that the color actually resides in these objects without reference to any eye that sees them. Ice is cold and a flame is hot; and the qualities of heat and cold are objectively present in the things themselves. The same is true of all other qualities perceived by the senses: they are as objectively real, independent of the senses and of the mind of man, as the objects themselves are real. To the ordinary man a block of metal, say of gold or lead or iron, is actually a continuous substance, and not an aggregate of discrete, separated particles. If a coin and a feather are dropped at the same moment from a second-story window, the coin will reach the ground first, and he is convinced that heavier objects fall faster than those of lighter weight. He judges things to be in reality as they appear to be to his senses.

Of course, even primitive man is aware of the fact that appearances often deceive. Things appear different in a fog or in the twilight from what they do in the bright sunlight. If he is ill, the flavor and odor of many familiar objects seem to have undergone a change. When he plunges a half-frozen hand into tepid water, the water feels uncomfortably hot. A straight stick appears bent or broken, when partly submerged in water. And so with a thousand other phenomena. Such facts, however, are not enough to shake his spontaneous conviction that his senses can be trusted to represent physical reality as it actually exists in nature. Apparent illusions are explained by the lack of proper conditions.

That normal sense perception suffices for man to orientate himself in this physical world according to the

requirements of his ordinary life, is evident from every individual's own experience. That the knowledge of things thus acquired is rather gross and superficial, is also evident. Solely through their own powers the senses can tell us little about very minute and very distant bodies. The field of perception is limited in extent, and the powers of perception are decidedly restricted. Of the inner nature and constitution of physical bodies the intellect alone can judge, and in order to judge of these matters with any degree of certainty or probability, the intellect must rely on the data furnished by sense perception. Since, however, the senses are affected by objects and occurrences only in their grosser external appearances, the intellect frequently lacks the data necessary for a correct and adequate interpretation of the phenomena of nature. As long as the effectiveness of the senses was not increased by means of special instruments and methods, man's ordinary knowledge could not become truly scientific to any great extent.

Such knowledge is mostly prescientific, and by *prescientific knowledge* we understand the knowledge of physical objects and phenomena which is acquired through ordinary sense perception, without the aid of special experimental methods and precision instruments which enable the intellect to formulate well-grounded interpretations concerning the constitution of these objects and the causes which produce these phenomena. Prescientific knowledge is rather meager in content and, in a large measure, inexact and incorrect.

SCIENTIFIC KNOWLEDGE

Science endeavors to give a more precise and comprehensive explanation of the objects and occurrences of nature than is possible through ordinary experience and observation. *Science* is the orderly knowledge of things *in their causes*. In order to achieve this type of knowledge it makes use of more refined methods of observation and experimentation. The sense organs of the scientist are, of course, the same as those of any other human being. By means of various devices and instruments, however, their effective range of perception is increased to a remarkable degree.

Consider the microscope. A drop of water taken from a brook seems, to the unaided eye, to consist of a perfectly clear fluid in which there are no foreign bodies present. When viewed under the microscope, however, the drop is observed to swarm with minute living beings. The microscope thus enables the scientist to obtain much more accurate knowledge about things than plain vision could ever reveal. And there is the telescope. Objects such as the stars, that are far beyond the reach of man's unaided vision, are brought considerably nearer (apparently, of course), so that he can subject them to a closer and more exhaustive scrutiny; facts are thus revealed to him which would otherwise remain unknown. The fine lines of the spectroscope disclose to the trained observer the presence of elements in a body which even the most powerful microscopes and telescopes do not detect. Heat, light,

magnetism, and electricity can be measured in infinitesimal quantities by means of scientific apparatus.

By using such instruments, the scientist eliminates to a great extent the uncertainties involved in the subjective differences of sense organs of the individual observers. The result is a more *objective knowledge* of physical objects and forces. A photographic plate and an electroscope, for example, are not influenced by the emotions, diseases, prejudices, and pet theories of the observer; they record the objective factors at work in nature, irrespective of the wishes or hopes of the scientist using them. The instruments of science thus give us a deeper and more extensive knowledge of individual physical phenomena, and also a more objective picture of the world at large. In this manner *factual observation* is greatly enhanced, far beyond the wildest dreams of the ancients.

Science is the knowledge of things in their causes, and *experimentation* has proved to be a powerful method of discovering and investigating the causes at work in physical phenomena. An experiment is the observation of phenomena under selected and controlled conditions. The intermingling of causes and effects in nature is extremely baffling to the unscientific observer. There is a constant interplay of unseen forces in physical occurrences, and the detection of the actual causes is a difficult task. Unknown forces may always be at work in a given event, and a selective arrangement of conditions will more readily disclose the presence or absence of such causes. At the same time irrelevant facts, which might obscure the issues, are thereby eliminated, making the results more certain. By

shifting the various factors which come into consideration as possible causes and arranging them in varied experiments, the possible causes will be gradually reduced in number, until one single cause is left to account for the phenomenon in question.

From facts the scientist proceeds to the *interpretation of facts*. The first requisite for scientific knowledge is a relatively complete and accurate description of the objects, their properties and activities. This, however, is merely the groundwork of science. Science attempts to understand the physical structure and constitution of bodies and endeavors to explain the phenomena resulting from their causal activities. Common-sense explanations are all too often misleading and inaccurate, if not altogether erroneous. Hence, the scientist must use his imagination and intellect in seeking an interpretation of the facts which will give a true and full account of the phenomena under consideration.

As a rule, the problems are intricate and obscure, and a complete solution is at first unavailable. The scientist then has recourse to *hypothesis* and *verification*. An hypothesis is the provisional explanation of a phenomenon, based on probable arguments, until verified (or disproved) by subsequent evidence. An hypothesis is more than a mere guess or opinion; it is a justifiable assumption which lends itself to a tentative explanation of a fact or law, so that it can be used as a guiding norm in making observations and experiments. A scientific hypothesis must cover all relevant facts, must be simple and consistent, and must lend itself to making reasonable predictions which can later be verified.

Benjamin Franklin, for instance, held the hypothesis that lightning was of the character of an electric discharge; he verified this hypothesis by means of his famous kite experiment. Louis Pasteur, from the fact that the souring of milk was due to a germ, conceived the hypothesis that all fermentation, decomposition, and contagious diseases were caused by microbes; subsequent experiments verified his assumption.

From the above it should be clear that the general method of reasoning employed by natural science is that of induction. *Induction* is the process of reasoning in which we conclude from individual cases to the existence of general laws or principles. It would be an error, however, to judge from this that induction is the sole method of scientific investigation. Once a law of nature is duly verified and established, it can be used as a general principle or truth applicable to individual cases. We are then justified in concluding from the truth of the law to the truth of the individual cases which fall under this law. This method of inference is *deduction*, or the process of reasoning in which we conclude from a general law or principle to a particular instance falling under the general law or principle. Both methods of reasoning are employed by scientists in their investigation of nature.

Natural science rests upon certain *fundamental presuppositions*. It cannot prove everything; it must take some things for granted. One of these presuppositions is the *existence of the physical world*. Obviously, the scientist could never investigate the physical world and the objects and phenomena present therein, if he were not convinced

that the physical world actually exists. This existence is simply accepted as given. A second presupposition of science is the knowability of the physical world. It would be useless for the scientist to begin to examine nature, if he held the opinion that man cannot acquire a true and certain knowledge of it, or that physical objects cannot manifest themselves to man. Another, equally important presupposition is the essential *trustworthiness of man's powers of knowledge*. The true scientist cannot be a skeptic. To maintain that man's faculties of sense perception or reasoning are radically unreliable or even doubtfully reliable in arriving at truth and certainty, would vitiate his research work from the very start; he could never be certain that his conclusions are true. A fourth presupposition is the *uniformity of nature*. If nature were not accepted by the scientific investigator as orderly, constant, and governed by uniform laws throughout the universe at all times, the facts which he establishes today might be reversed tomorrow. If this possibility were conceded, there could be no science of nature, because science treats of general laws and principles, and not of individual objects and occurrences. Lastly, the validity of the *Principle of Causality*, namely, that everything which happens must have a producing cause to account for its being and existence, is a presupposition of natural science. Why look for the causes of phenomena, if the latter can occur without any cause? It is precisely through their causes that the scientist attempts to explain the existence and nature of the phenomena. Science would be futile and illusory, if this principle were invalid. These are the main

presuppositions of science, and they must be accepted by the scientist before he begins his study of nature.

Is the scientist justified in accepting these presuppositions without first establishing their validity? As a scientist, yes. It is the duty of the *philosopher* to establish their reasonableness, and that need not concern us at present, because the proof of the validity of these principles and postulates has been given elsewhere.¹

What is the *purpose* of natural science? It examines individual objects by means of experience and experiment, in order to discover that which is typical or representative of them all as a class. It seeks generalizations and laws, causal relations of a universal character, the elements which explain the constitution of the objects or bodies existing in the physical universe. In other words, the natural sciences are the sciences which seek, by means of experimental methods, to attain certain knowledge about the properties, activities, and constitution of corporeal substances through their proximate causes. Such knowledge is *scientific knowledge*.

PHILOSOPHIC KNOWLEDGE

Philosophy attempts to give us a knowledge of things which is ultimate in their line of being. *Philosophy* is defined as the *science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone*. It is a 'science'; that is to say, it is certain knowledge derived from reasoned demonstrations of causes and reduced to a system. It is a science of beings,' of all things which can be

reached by the human mind directly or indirectly — man, the world, God. It is the science of beings ‘in their ultimate reasons, causes, and principles.’ A ‘reason’ is that by means of which a thing is known and can be understood; a ‘cause’ is that which contributes in some positive manner in the production of a thing; a ‘principle’ is that from which something proceeds. Philosophy is not content with the proximate causes of things, but searches for an understanding and explanation of things in their ‘ultimate,’ most fundamental reasons, causes, and principles. Finally, philosophy is the science of beings in their ultimate reasons, causes, and principles, ‘acquired by the aid of human reason alone.’ It does not seek its information from mystical experience or divine revelation, but intends to solve its problems solely through the use of man’s native powers of knowledge. The material object, or general subject matter, of philosophy is, therefore, all being in the widest meaning of the term; its formal object, or special viewpoint, is all being considered under the aspect of its ultimate reasons, causes, and principles.

The human mind is not even satisfied with the findings of science. Science discloses the ‘proximate’ causes which produce the mysterious phenomena of the physical world. Philosophy would fain uncover the ultimate causes of things. It accepts the discoveries of science when they are reasonably established; but there still are deeper problems behind the problems of science, and these philosophy attempts to solve. All experimental sciences deal with bodies, substances, quantities, energies, physical and chemical changes, space and time, matter and mass, motion

and force, and similar entities. All these things flow from the inner nature of material bodies and receive their ultimate explanation in this inner nature and essence. The problem of essences lies outside the limits of sciences and belongs to the province of philosophy.

While the experimental sciences all treat of the visible universe, each has its own particular field. Physics treats especially of the transmission and transformation of energy in its various forms. Chemistry deals mainly with the properties, compositions, and changes of elements and compounds. Biology is interested in vital organs and functions, and in their development. Geology seeks to trace the past history of the earth. Astronomy studies the universe of the stars. In many ways these sciences develop independently, and at times the findings and conclusions of one science are more or less at variance with those of another. The universe, however, is one, consisting of the same elements and laws throughout. Philosophy seizes upon the factors and principles common to all the sciences and seeks to propound a world picture which will bring these scattered and partly disagreeing fragments of knowledge into a higher synthesis. After all, there can be no real division in knowledge, because there is no real division in nature; nature being a complete synthesis, our knowledge of the world must end in a similar synthesis.

Philosophy views all things in their most general and most fundamental aspects. The physical world consists of an immense variety of bodies, organic and inorganic, elemental and compound. They all, however, agree in this fundamental feature, that they are *material bodies*. And

while certain types of bodies have properties and activities which are characteristic of the types, all types have definite properties and activities which are *common* to all types, because they pertain to bodies as such. The particular sciences are concerned with the special types of bodies, but philosophy deals only with bodies as such and with their most general properties and activities.

Now, that part of philosophy which treats of the material world in this manner is called the *philosophy of nature*.

COSMOLOGY

Cosmology (Gr., *κόσμος* world, and *λόγος*, knowledge or science), as the etymology of the term indicates, is 'the science of the world.' Considered from this standpoint, cosmology deals philosophically with the entire material universe, including inorganic substances, plants, animals, and man; as such, its meaning coincides with 'philosophy of nature.' The term 'cosmology' originated with the philosopher Christian von Wolff, in 1730. Before his time this part of philosophy was designated 'philosophy of nature,' 'natural philosophy,' or simply 'physics'; and the term comprised the study of the whole universe in its philosophic aspects. That is, however, no longer the case. The field has been divided. Man, with his vegetative, sentient, and intellectual life, is the subject matter of psychology. For a similar reason, plants and animals, since they have vegetative, or sentient and vegetative life, are bracketed with man as organic beings and are treated in psychology. Viewed in this manner, plants, animals, and man

are excluded from the subject matter of cosmology. Other cosmologists, however, insist that organic beings, since they belong to the material universe, must be included in the study of cosmology.

Cosmology, as accepted here, is defined as the science of the corporeal universe in its ultimate reasons, causes, and principles. Primarily, though not exclusively, we will direct our attention to inorganic nature, in the sense of individual bodies and in the sense of the universe as the assemblage of all bodies.

The universe is enormously vast in extent, and it consists of innumerable *individual bodies*. The star is a body, and so is the atom; the chemical compound is a body, and so is the chemically simple element. All agree in this that they are '*bodies*,' corporeal beings. It will be one of the chief problems of the cosmologist to answer the question: What is it that all bodies have in common? Bodies, however, are also specifically different among themselves; one element, for example, appears to be totally distinct from another element. This fact, if true, raises another question: What is it that makes bodies specifically different? And since elements are apparently united into compounds and compounds dissolved into elements, a further question arises: Is there a substantial change among bodies, and if so, how is this change effected? The result of all this then leads to the question of ultimate importance: What is the inner constitution of all bodies as bodies?

All bodies, taken together, form a totality which we call the *universe*. Here, too, a number of important questions force themselves upon our mind for a possible solution.

Such questions are: Is the universe a cosmos or only a conglomeration of unrelated bodies? What is the origin of the universe? How did it develop? Is it infinite? Will it last forever or come to an end? What is its purpose, or has it no purpose?

These are some of the problems which confront the cosmologist. If he can find an answer to even some of these questions, he will have performed a valuable service to the student of nature.

COSMOLOGY AND SCIENCE

In the course of the history of philosophy, many types of cosmological theories and systems have been advanced as comprehensive solutions to the problems just mentioned. In general, up to within a century and a half ago, philosophy and science were one; the philosopher was the scientist, and the scientist was the philosopher. In modern times, however, the experimental sciences have blazed a trail of their own, independent of philosophy. Empirical knowledge, that gained by instrumentally refined observation and experimentation, became the goal of the sciences, content with discovering the proximate causes and principles which account for the phenomena of the physical world. Each science restricts itself to its own particular field and is no longer concerned with the more fundamental problems involved.

Cosmology and physical science agree in their general or 'material' object, but differ in their specific or 'formal' object. The *material object* for both is the *corporeal*

universe. The *formal object* for physical science is the 'proximate' causes and principles which explain the phenomena of the material world, while the *formal object* for cosmology is the *ultimate* reasons, causes, and principles of corporeal beings in general and of the universe at large. Thus, although science and cosmology have much in common, they are in no way identified or identifiable, because each treats the world from a different viewpoint. Cosmology begins where science ends.

Cosmology and science are not in opposition to each other. Science has accumulated an immense store of factual information about physical nature, and the data furnished by it are of inestimable importance to cosmology. Cosmology depends almost entirely upon science for the materials of its investigation. It is because of a lack of precise scientific information that so many cosmological theories and systems of bygone days must be discarded as inadequate or erroneous. Since the knowledge of corporeal beings, as acquired through science, is so exact and comprehensive, the task of cosmology has become appreciably easier. True science will always be the ally of cosmology, while cosmology is the complement of science.

METHOD AND DIVISION

In the past philosophers were compelled to build their theories and systems upon a foundation of knowledge which was hopelessly incapable of supporting the large structure based upon it. This knowledge was prescientific, not scientific, and it was very meager in content. Even the

geniuses of *Aristotle, St. Albert, and St. Thomas Aquinas* could not overcome the handicap of unscientific information. They did the best they could with the material at hand, but their best was frequently not good enough. They must be admired for their gigantic efforts rather than for their actual achievements, when it is a question of the philosophy of nature. Their knowledge was encyclopedic in character, but much of it, due to the lack of scientific method, was untrue.

They knew and recognized the value of the inductive method of reasoning from individual facts to universal principles and laws; but they were forced by circumstance to attempt a solution of their cosmological problems by having recourse to deduction, perhaps more than they desired, by reasoning from general principles and axioms to the individual facts. Arguing deductively, however, in this manner regarding facts of the material order is always a dangerous procedure, unless the universal principle has first been established by means of sound inductive reasoning. When the premises are of doubtful truth, the conclusions will also be uncertain.

Fortunately, that condition of affairs has changed. Science, through its discoveries, has been able to supply the cosmologist with abundant accurate information. The very success of experimental science in the last century and a half is ample proof that the inductive method of science was the proper approach to the mysteries of the physical world. No cosmologist can afford to ignore either the material furnished by natural science or the inductive method which has been its chief instrument of investigation.

Science and cosmology deal with the same object, the material universe; it should therefore also be advantageous for both to use the same fundamental method of investigation, namely, *induction*.

Induction is not the sole instrument of cosmological research. There are certain supreme principles of thought and of being — metaphysical, ontological principles — which apply to all systems of thought and of being and are valid at all times and in all conditions. Scientific theories which run counter to them cannot be valid and true, because the laws of thought and of being are in essential harmony. Hence, scientific and cosmological theories can and must be checked by their agreement or disagreement with these supreme principles. It is a legitimate procedure to conclude deductively from the metaphysical principle to the individual case or theory. *Deduction*, therefore, must not be overlooked as a method of investigation in cosmology. As a matter of fact, both induction and deduction have their proper places in the search for truth.

Generally speaking, it has been the fault of philosophers in the past to rely more on the simpler method of deduction than on the slower and more painstaking method of induction. In cosmology this might, and in all probability would, be fatal to the acquisition of knowledge and truth. We will, therefore, follow closely in the footsteps of science and borrow largely from its fund of information. Science is not infallible, of course, nor are all its conclusions and theories free from error or doubt; and science is still learning new facts. But the safest plan for the cosmologist is to accept his material from the hands of the scientist.

The *division* of the book is simple. The student is expected to have a general knowledge of the natural sciences. Since, however, not everything in these sciences is pertinent to the study pursued in cosmology, the first part will contain a summary of the relevant scientific facts and factors concerning the *physical constitution of bodies*. The second part will treat of the *general properties* of bodies. The third part will seek to solve the problem of the *essential constitution* of bodies. The fourth part will then consider the assemblage of bodies as a *universe*. In this manner it is hoped that the student will become fairly well acquainted with the many problems which the cosmologist seeks to solve.

SUMMARY OF CHAPTER I

Science and philosophy are the outcome of man's insatiable desire for knowledge.

1. *Knowledge* results from experience. To the ordinary, unscientific man things actually are as they appear. Such knowledge is mostly *prescientific*, i.e., a knowledge of physical objects and phenomena which is acquired through ordinary sense perception, without the aid of special experimental methods and precision instruments which enable the intellect to formulate well-grounded interpretations concerning the constitution of these bodies and the causes which produce these phenomena.

2. *Scientific* knowledge is the knowledge of things in their causes. To acquire it, the natural sciences make use of refined methods of observation and experimentation. Such knowledge is more exact and objective. *Induction* is the general process of reasoning employed, though deduction also plays a prominent part in scientific research.

3. *Philosophy* is the *science of beings in their ultimate reasons, causes, and principles*, acquired by the aid of human reason alone. Philosophy seizes upon the factors and principles common to all science and seeks to propound a world picture which will bring the scattered and partly disagreeing fragments of knowledge into a higher synthesis.

4. *Cosmology* is the *science of the corporeal universe in its ultimate reasons, causes, and principles*. Since life in its various phases is the subject matter of psychology, we will

restrict the study of cosmology mainly to inorganic nature, in the sense of individual bodies and of the universe as the assemblage of all bodies.

5. *Cosmology and Science*. The material object of both is the corporeal universe. Their formal object is different: science seeks the 'proximate' causes and principles which explain the phenomena of the material world; for cosmology the formal object is the 'ultimate' reasons, causes, and principles of corporeal beings in general and of the universe at large.

6. *Method and Division*. To a very great extent the inductive method of science must be employed, and cosmology must borrow much of its material from the experimental sciences.

On the other hand, scientific and cosmological theories must be checked deductively by their agreement or disagreement with the supreme principles of thought and being.

The *first* part of the book treats of the physical constitution of bodies; the second, of the general properties of bodies; the third, of the essential constitution of bodies; the fourth, of the universe at large.

¹ See the author's *Science of Correct Thinking, Reality and the Mind*, and *The Domain of Being*

Chapter 2

THE ELEMENTS

THAT THE PHILOSOPHER HAS A BROADER AND DEEPER knowledge of the properties, activities, and the physical constitution of material substances, is to a great measure due to the painstaking researches of the physicists and chemists. While the scientists as such do not, or at least should not, delve into philosophical problems, many of their findings contain important philosophical implications. The philosopher must take these implications into account in his own study of nature and of natural bodies. He may disagree with some of the *theories* and *conclusions* of scientists, but he must accept the facts discovered by them. Any philosophical theory or hypothesis which is in disagreement with such facts must be adjudged erroneous, because nature does not contradict itself.

To proceed, then, in an orderly and logical fashion, it will be necessary to find out what the physicists and chemists can tell us of the fundamental properties, activities, and structures present in nature, in so far as they are pertinent to the subject matter of cosmology. Not everything need or will be considered, because cosmology does not treat of chemistry and physics directly.

MATTER AND ENERGY

The chemists and physicists define *matter* as anything which occupies space. This is a scientific, not a philosophical, definition of matter. 'Space' here means the three dimensions of length, width, and depth. Anything that exists in these three dimensions is said to 'occupy space.' In order, however, that any object exist in three dimensions, it must possess length, width, and depth within itself; it must be a three-dimensional object in order that it can occupy three-dimensional space. Matter, then, is a three-dimensional object, and this physical definition can be accepted provisionally as a starting point of discussion.

It is customary to distinguish between *ponderable* and *imponderable* matter. Ponderable matter is any three-dimensional object which has weight, while imponderable matter has no weight. 'Weight' is the measure of the attractive force of the earth for an object in, on, or at a distance from it. It varies with the distance of the object from the center of the earth. All are familiar with the phenomenon of weight. A cubic foot of lead weighs more than a cubic foot of aluminum, and a piece of wood weighs less than a piece of iron of the same size and shape. An example of imponderable matter would be the aether as conceived by scientists. It is a material substance filling the pores of all ponderable matter and pervading all interstellar space of the universe.

Closely akin to the term 'matter' are the terms *material substance*, and *body*. The exact philosophical meaning of these concepts will be reserved for future examination;

here we shall explain the terms simply as currently used by scientists and philosophers. In *scientific* parlance, a 'body' is a portion of matter, and it is thereby distinguished from things like 'quantity,' 'quality,' 'energy,' 'force,' etc. Bodies are divided into two main types or classes, namely, substances and mixtures. 'Substances' are divided into elements and chemical compounds. In *philosophical* parlance, a 'substance' is any being which exists in itself and for itself, not needing any other being in which it must inhere in order to have existence. Such substances may be either spiritual, e.g., God, or material, e.g., organisms, elements, chemical compounds, mixtures, electrons, protons, etc. 'Bodies' are material substances which are individual beings with a complete identity of their own. Philosophy and science, it should be noted, do not use these terms in identical meanings. The context will show in which meaning the terms are used.

Energy is the *capacity for performing work*. In order to understand energy in the meaning of the physicist, we must know the meaning of 'work.' Work is the product of a force by the distance through which the force acts; that is to say, *work equals force times distance*. In all types of work resistance in some form must be overcome. In pulling a bag of potatoes over a cement floor, we encounter frictional resistance: by overcoming this resistance work is done. In lifting this bag of potatoes vertically from the floor, we do work against the force of the earth's attraction. Again, if the bag of potatoes rests on the floor and we set it in motion or change its velocity (disregarding friction in the process), we

do work against its inertia. In all such cases this work is measured by the formula 'force times distance traveled.'

Scientists sometimes use the terms 'energy' and 'work' as identical in meaning. Strictly speaking, however, the meanings are diverse. Energy is the *cause* of work, but not the work itself. Energy is present in a body, enabling it to do work on another body by displacing it through a certain distance. Work is done in a body when this energy becomes active; but energy may be present without being active. Hence, 'energy' and 'work' are distinct terms with different meanings. This will become clearer when we consider the two types of energy, potential and kinetic.

By *potential energy* we understand the energy which a particle, body, or system of bodies possesses in virtue of its position or configuration in reference to the *position* or *configuration* of other particles, bodies, or systems. If a rubber band is stretched, work is done on it by changing the position or configuration of its particles. During the time in which it remains in this stretched condition it is at rest; but it possesses an amount of energy equal to that of the work done upon it in stretching it. That is evidenced by the fact that, if the rubber is released, it will immediately and of itself reverse the work done on it by returning to the previous position or configuration of its particles. This energy of the rubber band, due to its position, is potential energy. It is called *potential*, because it is latent and nonactive, but is capable of *becoming* active and doing work when released. Potential energy is energy stored up in a body which is held by some constraint from passing over into motion.

By *kinetic energy* we understand the energy which a particle, body, or system of bodies possesses in virtue of its *movement*. Through their movement bodies can do work on other bodies; while doing this work, they gradually lose velocity. When a speeding bullet strikes a block of wood, it does work on the wood by overcoming its resistance and penetrating it; but in doing so, its velocity is slowed down more and more, until it eventually comes to rest. The energy of the bullet is due to its motion, and that is 'kinetic' energy (*κίνησις*, movement). The kinetic energy of a flash of lightning will shatter a tree; that of an ignited charge of dynamite will demolish a building; that of an electric generator will drive trains, illuminate cities, heat dwellings, cook food, and melt rocks. Kinetic energy is really potential energy which has become active, after the constraint, which has held the potential energy in a stored-up condition, has been removed. Energy is the active agent or cause which produces all the changes in the universe.

One form of energy can be transformed into *another*. The chemical energy of a storage battery or a dry cell is transformed into electrical energy. The electrical energy, when passing through the filament of a lamp, is transformed into light and heat. Light activates a selenium cell and sets mechanical appliances in motion. The gravity energy of falling water turns a turbine, which operates an electric generator, and is thus transformed into electrical energy. The chemical energy of exploding gasoline is transformed into the mechanical energy of the automobile motor; on its part, the mechanical energy of the automobile motor, by operating a generator, charges the battery and is

thus transformed into chemical energy; this chemical energy of the battery is transformed into electric energy; and this electrical energy is transformed into light energy and heat energy in the headlights.

ELEMENTS AND CHEMICAL COMPOUNDS

There are many ways of classifying material substance. From the standpoint of cosmology, we are interested only in the most fundamental kinds or classes. Such are *elements* and *compounds*.

In a general sense, an element is the basic type of matter into which physical bodies can be resolved and from which they originate. The question of the original element or elements of the universe agitated the minds of the earliest Greek philosophers; in fact, the attempt to find an answer to this question was the beginning of philosophy among the Greeks. *Thales* (about 620 B.C. to 546 B.C.) considered 'water' to be the ultimate principle of matter. Others took up the problem and offered other solutions. *Empedocles* (about 490 B.C. to about 430 B.C.) mentioned four elements as the ultimate constituents of all bodies and as the basis of all change, namely 'fire,' 'air,' 'water,' and 'earth.' To these four *Aristotle* (384 B.C. to 322 B.C.) added a fifth element, or *quintessence*, namely 'aether'; this he considered to be the distinctive element of all stars, while the four elements of Empedocles enter into the composition of all earthly bodies. Aristotle's teaching was accepted and upheld by intellectual men and philosophers for two thousand years. Even St. Albert the Great and St. Thomas Aquinas were

unable to improve on this list; they made it the basis of their cosmological inquiries.

The beginnings of the modern science of chemistry are found in the endeavors of the alchemists to transmute base metals into silver and gold. Alchemy had been practiced in some form or other for a thousand years or more, up to the sixteenth century. During the sixteenth century the *spagyrist*s took the place of the alchemists. Instead of searching for the 'philosopher's stone' to make noble metals, they directed their efforts toward the discovery of chemical remedies for diseases. In the course of these researches many new substances together with their compounds were discovered, among them some true elements. At the same time, a more scientific knowledge of the chemical and physical properties and activities of these substances was acquired, and this paved the way for modern science. Gradually, through the work of men like *Robert Boyle* (1627—1691), *Becher* (1635—1682), *Stahl* (1660—1734), *Priestley* (1733—1804), *Cavendish* (1731—1810), *Lavoisier* (1743—1794), *Dalton* (1766—1844), and *Berzelius* (1779—1848), a considerable number of elements became known, and chemistry emerged as a science in its own right.

An element, in a chemical sense, is any material substance which cannot be resolved by ordinary chemical means into two or more simpler substances different in nature from itself. A chemical compound is a substance composed of two or more elements chemically combined in definite proportions by weight.

It is stated in this definition that elements, to form a real compound, must be 'chemically combined.' Not every combination results in a chemical compound. Some combinations are nothing more than mixtures. A mixture is a body composed of two or more substances, each of which retains its own specific properties. A mixture has certain characteristics which distinguish it from a true compound. The combining substances in a mixture retain their original identity, so that a mixture is heterogeneous in content. Sodium bicarbonate, starch, and alum are a mixture used as baking powder. In a mixture the composition is variable; any quantity, for instance of alcohol and water, can be united. In many cases the ingredients can be separated from each other by some mechanical device, such as a centrifuge. The original energy of the ingredients is not altered in a mixture.

On the other hand, a true chemical compound is *homogeneous* throughout; it is a chemically new substance with new properties, the original elements losing their chemical identity in the process of combination. Hydrogen, for example; is a highly inflammable gas, with its melting point at -259° C. and its boiling point at -252.6° C. Oxygen is also a gas, supports combustion, with its melting point at -218° C. and its boiling point at -182.5° C. When hydrogen and oxygen unite in the process of combustion, water results. The melting point of water is 0° C., its boiling point 100° C., and it is neither inflammable nor does it support combustion. Hydrogen and oxygen are thus seen to have lost their chemical identity, changing into a new

homogeneous substance quite different from themselves, water.

Furthermore, a chemical compound cannot be reduced to the original elements except by chemical means. Since the compound is homogeneous throughout, every portion, no matter how small, has the same nature and the same properties as the entire compound. Hence, fractioning, or the division of a large amount into ever smaller portions, will never reduce it to its original ingredients. Water, for example, even when vaporized into the smallest possible particles, always remains water. An electric current, however, will separate water into its two component gases, hydrogen and oxygen, because this is a 'chemical' reaction.

Again, a compound is a combination of elements in *definite proportions of weight or volume*. 22.326 liters of hydrogen weigh 2 grams, while the same volume of chlorine, which is 35.5 times as heavy as hydrogen, weighs 71 grams. Hydrogen and chlorine will combine only in this proportion of 1 to 35.5 by weight, or — which is the same — of 1 to 1 by volume. Any excess of either element will remain unchanged in the process. The result of the combination is hydrochloric acid, a new chemical substance with new properties. 8 grams of oxygen, to take another example, will combine with 23 grams of sodium, 39 grams of potassium, 35.5 grams of chlorine, 79.9 grams of bromine, or 126.9 grams of iodine. No matter what the absolute quantities may be (whether milligrams, or kilograms, etc.), this proportion must be maintained for the elements to combine chemically and form a compound. This *law of combining weights* does not apply, as was mentioned

before, to substances united in a mixture; such substances can be mixed together in variable proportions.

Finally, the *quantity of energy* in a compound is not equal to the sum of the energies present in the elements before combination. The compound always either gains or loses energy. Every chemical change is accompanied by heat. In some cases heat is absorbed by the compound, while in other cases heat is emitted and lost. For example, hydrogen burns when combining with oxygen to form water. If 2 grams of hydrogen and 16 grams of oxygen, at standard pressure and temperature, unite at a temperature of 0° C., 68,834 calories¹ are liberated in the process. In the reaction which takes place when 65 grams of zinc are dissolved in dilute sulphuric acid, water is decomposed, 2 grams of hydrogen are evolved, and in this process 68,834 calories are absorbed. The quantity of energy in the compound is thus seen to be either smaller or larger than the sum of the energies in the ingredients. Reactions which absorb heat energy are called 'endothermic,' while those which liberate heat energy are called 'exothermic.' Like the proportion of weights, the amount of calories absorbed or liberated in the reaction is always the same for the same quantities under the same conditions.

PHYSICAL AND CHEMICAL CHANGES

Nature is an immense theater of continuous changes. No single bodies or groups of bodies are entirely free from change. Something is done to them, or they do something

to other bodies, in a continuous cycle of activity. The two main classes of changes are physical and chemical.

A *physical change* is a change in which the elements or the compounds of elements *retain their substantial identity* in the alteration. In a physical change nothing happens to the element as an element or to the compound as a compound; they remain that particular element or that particular compound before, during, and after the change is effected. A physical change, therefore, merely alters certain unessential qualities, properties, and energies, without affecting the nature of the material substance as such. A few examples will clarify the concept of physical change.

Heat applied to ice turns it to a liquid, and applied to liquid water turns it to steam; but water is not decomposed into oxygen and hydrogen in the process. Electricity flowing through a tungsten filament in an electric bulb heats it to incandescence; the filament emits heat and light, but it still remains tungsten. Iron filings placed near a magnet become magnetized and themselves act as temporary magnets; but they do not lose the nature of iron on that account. Pressure will decrease, and moderate heat increase, the volume of a gas without destroying the nature of the gas itself. A spring can be coiled, a piece of rubber stretched, a stone ground to powder, a shell shot out of a canon, a machine made to work, but these things retain their identity throughout the change. These examples show various energies and forces acting upon bodies, producing temporary physical changes which do not alter the material substances in their chemical nature.

A *chemical change* is a change in which the substance or substances *lose their identity and become new chemical substances* with new physical and chemical properties and have new energy contents. Such changes are not temporary in character but remain permanent, until another chemical change sets in. The formation of chemical compounds, as explained in the foregoing section, is the result of a chemical change. There are, however, various kinds of chemical changes. They can be arranged in four groups: chemical combination, decomposition, displacement, and double decomposition.

In a chemical *combination* elements or compounds unite to form complex substances. Magnesium in air, upon being heated to kindling temperature, bursts into flame with a blinding white light, forming the white powder of magnesium oxide. Hydrogen and oxygen combine to form water. In a chemical *decomposition* compounds are reduced to simpler compounds or to the elements. Mercuric sulphide, an ore called cinnabar, when roasted, decomposes into mercury and sulphur. By heating silver oxide, the compound is broken down into oxygen and metallic silver. In chemical *displacement* one element takes the place of another element in a compound. If zinc is put into a copper sulphate solution, a reaction occurs in which copper is replaced by zinc. So, too, in a reaction between iron and hydrochloric acid, the iron will replace the hydrogen. In *double decompositions* two compounds react to form two new compounds. Thus, silver nitrate and sodium chloride react, and the result is silver chloride and sodium nitrate. In such and similar reactions new chemical substances arise

which possess relative stability; and all these processes are characterized by a great difference in properties, by definite proportions of substances, and by a change in energy content.

THE TABLE OF ELEMENTS

Each element is distinguished from every other by definite physical and chemical properties, such as specific gravity, melting point, boiling point, ductility, malleability, compressibility, hardness, coefficient of expansion, refractive index, density, heat of combustion, heat of formation, conductivity of electricity and heat, combining weight, etc. Some elements are rare, others appear in great quantities; some are dense, others are diffuse; some are found under ordinary conditions in a free state, some always in compounds, some both free and in compounds; some appear under ordinary conditions as solids, some as liquids, some as gases; some are metals, others are nonmetals; some are active, others inert; some are normally radioactive, but most are not.

The elements are arranged in a progressive series called the *Table of Elements*. The position or place in the series determines the element's atomic number. (See Periodic Table) The place of all elements in the table depends, generally speaking, on their *atomic weight*. By an *atom* chemists and physicists understand the smallest particle of an element into which the element can be divided chemically while still remaining a portion of this particular element. It is the smallest particle of an element which can

exist for itself or combine with other similar particles to form a molecule. A *molecule* is the smallest portion of a compound or, if an element can exist in the free state, of an element. Since a compound is composed of at least two elements, no molecule of a compound can consist of less than two elemental atoms; if the compounds are more complex in their chemical composition, their molecules must be proportionately more complex. By *atomic weight* scientists mean the *relative weight* of an element compared with that of oxygen taken as a standard.

TABLE OF ELEMENTS AND THEIR ISOTOPES														
Note: The numbers under the heading 'Isotopes' represent the number of isotopes of this element so far discovered; each number stands for the atomic weight of such an isotope. These isotopes which constitute 70 or more per cent of the total quantity of the isotopes of any element are printed in italics. (S) signifies that an element is 'simple' or pure, with no isotopes discovered. Blank spaces indicate lack of knowledge or the inability to investigate this particular element.														
At. No.	Element	Symbol	Atomic Weight	Isotopes	At. No.	Element	Symbol	Atomic Weight	Isotopes	At. No.	Element	Symbol	Atomic Weight	Isotopes
1	Hydrogen	H	1.008	1, 2	35	Bromine	Br	79.916	79.81	62	Nobelium	Nb	150.34	.....
2	Helium	He	4.002	4 (S)	36	Krypton	Kr	83.9	78.80, 82, 83.84, 86	63	Europium	Eu	152.00	.....
3	Lithium	Li	6.940	0, 7	37	Rubidium	Rb	85.44	85.87	64	Gadolinium	Gd	157.0	.....
4	Beryllium	Be	9.012	(8), 9	38	Strontium	Sr	87.62	86.87, 88	65	Terbium	Tb	158.9	.....
5	Boron	B	10.81	10, 11	39	Yttrium	Y	88.91	89 (S)	66	Dysprosium	Dy	162.50	.....
6	Carbon	C	12.00	12, 13	40	Zirconium	Zr	91.22	90.92, 94, 96	67	Holmium	Ho	164.9	.....
7	Nitrogen	N	14.008	14, 15	41	Niobium	Nb	93.5	93 (S)	68	Erbium	Er	167.26	.....
8	Oxygen	O	16.000	16, 17, 18	42	Molybdenum	Mo	96.0	95.94, 96, 97.95, 100	69	Thulium	Tm	168.9	.....
9	Fluorine	F	18.998	19 (S)	43	Technetium	Tc	?	?	70	Ytterbium	Yb	173.04	.....
10	Neon	Ne	20.183	20, 21, 22	44	Ruthenium	Ru	101.07	96.90, 99, 100, 101.07, 104	71	Lutetium	Lu	175.00	.....
11	Sodium	Na	22.990	23 (S)	45	Rhodium	Rh	102.91	.....	72	Hafnium	Hf	178.50	.....
12	Magnesium	Mg	24.32	24, 25, 26	46	Palladium	Pd	106.70	106.92, 104	73	Tantalum	Ta	180.95	180.95 (S)
13	Aluminum	Al	26.98	27 (S)	47	Silver	Ag	107.88	107, 109	74	Tungsten	W	183.85	183.85, 186
14	Silicon	Si	28.08	28, 29, 30	48	Cadmium	Cd	112.41	110, 111, 112, 113, 114, 116	75	Rhenium	Re	186.21	186.21, 187
15	Phosphorus	P	30.97	31 (S)	49	Indium	In	114.76	114.76 (S)	76	Osmium	Os	190.2	186, 187, 188, 189, 190, 192
16	Sulfur	S	32.06	32, 33, 34	50	Tin	Su	118.70	112, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124	77	Iridium	Ir	192.22	.....
17	Chlorine	Cl	35.45	35, 37	51	Antimony	Sb	121.76	121, 123	78	Platinum	Pt	195.08	.....
18	Argon	A	39.944	36, 40	52	Tellurium	Te	127.6	127, 128, 129, 130, 132, 133, 134, 136	79	Gold	Au	197.0	.....
19	Potassium	K	39.10	39, 41	53	Iodine	I	126.90	126.90 (S)	80	Mercury	Hg	200.59	196, 197, 198, 199, 200, 201, 202, 203, 204
20	Calcium	Ca	40.08	40, 44	54	Xenon	Xe	131.2	129, 130, 131, 132, 134, 136	81	Thallium	Tl	204.38	203, 205
21	Selenium	Se	78.96	45 (S)	55	Cesium	Cs	132.91	132.91 (S)	82	Lead	Pb	207.2	203, 204, 205, 206, 207, 208, 209, 210
22	Titanium	Ti	47.88	48 (S)	56	Barium	Ba	137.33	135, 136, 137, 138	83	Bismuth	Bi	208.98	209 (S)
23	Vanadium	V	50.94	51 (S)	57	Lanthanum	La	138.91	139 (S)	84	Polonium	Po	210.00	.....
24	Chromium	Cr	52.01	50, 52, 53, 54	58	Cerium	Ce	140.12	140.12 (S)	85	Astatine	At	.....	.....
25	Manganese	Mn	54.94	55 (S)	59	Praseodymium	Pr	140.91	141 (S)	86	Radium	Ra	226.0	.....
26	Iron	Fe	55.85	56, 57	60	Neodymium	Nd	144.24	143, 144, 146	87	Actinium	Ac	227.0	.....
27	Cobalt	Co	58.94	59 (S)	61	Europium	Eu	152.00	.....	88	Radium	Ra	226.0	.....
28	Nickel	Ni	58.69	58, 60	62	Gadolinium	Gd	157.0	.....	89	Actinium	Ac	227.0	.....
29	Copper	Cu	63.55	63, 65	63	Europium	Eu	152.00	.....	90	Thorium	Th	232.04	.....
30	Zinc	Zn	65.38	64, 66, 67, 68, 70	64	Europium	Eu	152.00	.....	91	Protactinium	Pa	231.04	.....
31	Gallium	Ga	69.72	69, 71	65	Europium	Eu	152.00	.....	92	Uranium	U	238.03	235, 236, 237
32	Germanium	Ge	72.60	70, 72, 73, 74, 76	66	Europium	Eu	152.00	.....				
33	Arsenic	As	74.92	75 (S)										
34	Selenium	Se	78.96	78, 80, 82										

Table of Elements

ISOTOPES

Frederick Soddy pointed out that the element lead appeared with different atomic weights, the lead derived from thorium having a weight different from that derived from uranium, although both forms of lead possessed the same chemical properties. This might explain the fractions involved in the numbers of so many atomic weights, because the samples, of which the weights were taken, would be mixtures of elements of both weights. If a greater abundance of one kind were present in the mixture, the resulting atomic weight would not be expressed by a whole number, but by a number with a fraction, because it would be an average. Soddy called such elements *isotopes* (Gr., *ἴσος* equal, *τόπος*, place); they occupy the same position in the table of elements, because they are identical in chemical behavior, though they differ in their respective weights.

The problem was attacked systematically by Sir J. J. Thomson with his 'parabola' method of analysis and by *F. W. Aston* by his 'mass-spectrograph' method. The results of these and similar investigations proved conclusively that many elements are isotopic. Thus a very small amount of hydrogen has an atomic weight of 2 instead of 1, and this accounts for the existence of 'heavy water,' although it is really a case of 'heavy hydrogen' rather than of 'heavy water.' This isotopic form of hydrogen is also called 'deuterium,' with atomic weight 2. Tin which is given in the table of elements as having an atomic weight of 118.70, has eleven isotopes, beginning with 112 and ending with 124. Mercury (at. wt. 200.61) consists of nine isotopes, and lead of eight. Even oxygen, whose atomic weight is standard, is

not a simple or pure element, but appears in three isotopes, namely 16, 17, 18. At least 20 of the elements are considered to be 'simple,' i.e., not isotopic; their weights, for all practical purposes, are expressed in whole numbers.²

A glance at the list of isotopes (see Table), reveals the interesting fact that, with a few exceptions, there is a practically *uninterrupted progression* in atomic weights from 1 (hydrogen) to 238 (uranium). The examination of the isotopic condition of elements is far from complete, and more extensive investigations will no doubt succeed in filling some of the intervening gaps. The significant point should be noted that isotopes of adjacent elements *frequently overlap in their respective weights*. Up to chlorine (at. no. 17, at. wt. 35.457) the weights are in clear progression, without overlapping. But from chlorine on, the weights of the isotopic elements overlap in most cases, reaching back over the atomic weight of the preceding element and forward over the weight of the one following.

Another peculiarity in connection with isotopes is the variation in the *percentage of abundance* for the isotopes of the same element. For example, 99.81 per cent of oxygen has a weight of 16, while only 0.03 per cent has a weight of 17 and 0.16 per cent weight of 18. In the case of hydrogen the proportion is 99.9 with an atomic weight of 1, and 0.003 with an atomic weight of 2. Magnesium appears with isotopes of atomic weights 24, 25, and 26; the percentage of abundance for these isotopes, in the order mentioned, is 77.4, 11.5, and 11.1. Chlorine has isotopes of atomic weight 35 and 37; the percentage for these is 76 and 24. The

standard atomic weight of magnesium is 24.32, and of chlorine 34.457 the large fractions of these two elements is thus explained by the difference in the percentage of abundance of their isotopes. A similar condition prevails among all isotopic elements.

Perhaps even more remarkable than the overlapping of the atomic weights of isotopes is the *inverted order* of a few elements in the table. Argon (at. wt. 39.944) is placed before potassium (at. wt. 39.10); cobalt (at. wt. 58.94) before nickel (at. wt. 58.69); tellurium (at. wt. 127.61) before iodine (at. wt. 126.93); and thorium (at. wt. 232.12) before protoactinium (at. wt. 231). If the progression in atomic weights is the reason for the order of the elements in the table, this procedure is most irregular. Formerly, the atomic weights were looked upon as the main feature of the elements, and the elements received their place in the table accordingly. Now, however, the atomic weights of the elements are considered to be of secondary Importance in distinguishing one element from another. The elements, as elements, are chiefly distinguishable through their chemical and physical behavior and properties. These factors determine their succession in the table. This will be understood more clearly from a study of the Periodic Law.

THE PERIODIC LAW

The 'whole number' rule, as it exists in atomic weights, shows that there is a definite relationship among the elements. When we turn our attention toward a comparison of the elements from the standpoint of their chemical and

physical behavior and properties, we discover a relationship which is far more intricate and profound. Consult the *Periodic Table*. This chart or plan of the elements owes its origin to the genius of D. Mendeléeff, who published his observations and theories in 1869—1871. Though his plan has been modified in certain important details, the plan as such has survived the test of the years and is universally accepted. As the elements are arranged according to their advancing atomic weights, there is at intervals a regular recurrence of elements possessing similar properties, so that such similarities occur in cycles or periods. This periodic recurrence of similar elements is styled the *Periodic Law of Elements*. Mendeléeff arranged the elements into 'series' and 'groups' which show at a glance to which class a particular element belongs. His arrangement left many gaps between the elements as then known, and he predicted the existence of a number of elements to fill these gaps, together with the chemical properties which he claimed they must possess; subsequent discoveries verified his predictions.

The periodic table is divided into groups (families) and series (periods), In the table the 'groups' run vertically, and the 'series' horizontally. A *group*, or *family*, is a class of chemically similar elements. A *series*, or *period*, is a sequence of elements which begin with a group and advance according to their increasing atomic number, until an element is reached which is similar to that of the group from which the sequence started, thus completing the cycle or period.

At the time when Mendeléeff announced the periodic law, he based his table on the principle that the *properties* of elements are *periodic functions of their atomic weights*. Hereby he stated that, if elements are arranged according to their increasing weights, elements with similar properties would recur periodically. This is not true, because, as we have seen, the isotopic weights of different elements overlap, although their properties remain the same. Furthermore, the ‘group’ relationship of argon and potassium, cobalt and nickel, tellurium and iodine, thorium and protoactinium, would of necessity be reversed, placing each in a wrong group, thereby overthrowing the very periodicity which Mendeléeff sought to establish with this principle. The properties of the elements cannot, therefore, be functions of their atomic weights. *Moseley*, 1912—1914, established a new periodic law on the principle that the properties of elements are *periodic functions of their atomic number*. Moseley’s principle corrects the irregularities inherent in Mendeléeff’s system and shows that the atomic number, and not the atomic weight, is the decisive factor in distinguishing and arranging the elements. Modern periodic tables are therefore built up on Moseley’s new periodic law of atomic numbers.

According to this method of arrangement there are nine groups or families; and there are seven series or periods of unequal length. The various series contain the following elements:

Series ———Number of Elements

1.2

2.	8
3.	8
4.	18
5.	18
6.	32
7.	6

Confining ourselves to the first six series, the sequence of places is 2-8-8-18-18-32. The periodicity of the elements is plainly demonstrated here, because these numbers are $2 \times 1^2 = 2$, $2 \times 2^2 = 8$, $2 \times 3^2 = 18$, and $2 \times 4^2 = 32$. The periodic table is thus seen to follow a definite plan.

That this arrangement is not arbitrary, becomes evident from a closer scrutiny of the groups and series.

THE PERIODIC GROUPS

In the periodic table the 'groups' or 'families' are vertical rows of elements possessing similar physical and chemical properties. In comparing the groups among themselves, it is best, for the present, to omit Group O and Group VIII and restrict ourselves to the groups from I to VII. Similarly, it is advisable to leave hydrogen aside for the moment. The reasons for this procedure will become apparent later.

Group I consists of lithium (Li), sodium (Na), potassium (K), rubidium (Rb), and caesium (Cs), and their properties are highly similar. Group VII consists of fluorine (F), chlorine (Cl), bromine (Br), and iodine (I), and here we also discover a very close resemblance in their properties. Group I contains the alkali metals which form basic

compounds, while Group VII contains the halogens which form acidic compounds. These two groups, therefore, represent the two great classes of elements, the metals and the nonmetal; the bases and the acids. As we go forward from Group I toward the middle of the group, Groups II and III become less metallic and less basic in character; and as we go backward from Group VII toward the middle of the group, Groups VI and V become less nonmetallic and less acidic in character. The middle members of the groups, therefore, show the features of both basic (metallic) and acidic elements. Arsenic, tin, and aluminum, for example, form both acid and basic compounds. The sequence of the groups passes, therefore, through gradual stages from the metallic to the acidic elements.

THE PERIODIC TABLE												
The number alongside the symbol is the atomic number; under the symbol, the atomic weight												
GROUPS →	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
SERIES	Li 6.94	Be 9.01	B 10.81	C 12.01	N 14.01	O 16.00	F 18.99	Ne 20.18				
2	Na 22.99	Mg 24.31	Al 26.98	Si 28.09	P 30.97	S 32.06	Cl 35.45	Ar 39.94				
3	K 39.10	Ca 40.08	Sc 44.96	Ti 47.88	V 50.94	Cr 52.00	Mn 54.94	Fe 55.85	Co 58.93	Ni 58.69	Cu 63.54	Zn 65.37
4	Rb 85.47	Sr 87.62	Y 88.91	Zr 91.22	Nb 92.91	Mo 95.94	Tc 98.91	Ru 101.07	Rh 102.91	Pd 106.42	Ag 107.87	Cd 112.40
5	Cs 132.91	Ba 137.33	Hf 178.49	Ta 180.95	W 183.84	Re 186.21	Os 190.23	Ir 192.22	Pt 195.08	Au 196.97	Hg 200.59	Tl 204.38
6	Fr 223.02	Ra 226.07	Ac 227.03	Th 232.04	Pa 231.04	U 238.03	Np 237.05	Pu 239.05	Am 243.06	Cm 247.07	Bk 247.07	Cf 251.08
7												

The Periodic Table

Another feature of the various groups, when compared with one another, is their difference in *electric character*. Beginning with Group I, the first groups are *electric-positive* i.e., in an electrolytic solution these substances travel to the negative pole or cathode. The latter groups are electronegative; they seek the positive pole or anode in electrolysis. In other words, the basic groups of elements, situated toward the left-hand side of the periodic table, give up positive ions (cations) in an electrolytic solution, while the acidic groups, toward the right-hand side, give up negative ions (anions).

Since the *physical properties* flow naturally from the chemical, a periodic recurrence of physical properties among the members of the various groups is also found to exist. Such properties are: density, atomic volume, vibration frequency, malleability, conductivity of heat and electricity, etc.

While the periodicity of the elements is unquestionably well established, this recurrence of similar elements is not a mechanical repetition. Some groups possess greater resemblance in their members than others. The members of a group correspond to the characteristics of the group only in a general way; in some instances the resemblance is rather slight. The resemblance decreases as the length of the series increases and as the elements become more complex. As we pass down the list of the groups vertically, all groups manifest a decided tendency to become more basic (metallic) and less acidic. This is noticeable, for example, with regard to selenium and tellurium in Group VI, and even more so with regard to tantalum and proto-

actinium. Furthermore, the last members of each group in the final series, so far as their representatives are known, are radioactive; radioactivity is a property which is absent in the other elements. In general, however, though there are some irregularities and dissimilarities among the members of the various groups, the law of periodicity holds true.

The *Zero elements*, those of *Group 0*, namely helium, neon, argon, krypton, xenon, and radon, occupy an odd position in the periodic table. They were not discovered until a comparatively recent date. They are rare gases, chemically inert, with no tendency to combine with other elements, and electro-neutral. At first it was considered difficult to find a place for them in the periodic table, because they were so different from the other elements. They fit admirably, however, into the general scheme and were designated the 'Zero elements,' Group 0. There is still considerable divergence of opinion as to whether this group should be placed at the beginning or at the end of the other groups, but that is of minor importance. All agree that the Zero elements belong in a position between the halogens and the alkali metals, between Group VII (VIII) and Group I. They form the natural dividing line between one series and the next, and they thus become the logical point of reference for the elements preceding and following them. These gases bear strong resemblances to each other and form a very striking group.

Group VIII consists of three triads of elements. The members of each triad are closely related and form a distinct group among themselves. Their position as a group

in the periodic table will be explained in the discussion of the various 'series.'

It is because of 'group resemblance' that the four pairs of elements occupy *inverted positions* in the periodic table, so that the heavier element precedes the lighter. Judged according to their atomic weights, argon should follow potassium. Argon, however, is an inert gas which resembles neon in all respects; potassium is a very active, electropositive metal, which plainly belongs to the same group as lithium and sodium. The same consideration applies to nickel and cobalt, iodine and tellurium, protoactinium and thorium; their properties demand that they be placed in these respective groups in the table. Chemical properties, rather than atomic weights, are the distinguishing features of the elements.

THE PERIODIC SERIES

A periodic *series* is a sequence of elements arranged horizontally in the periodic table, in such a manner that these elements increase one by one in their atomic number; each series begins with a member of Group I and continues progressively until the sequence reaches the next inert gas in Group 0. After this cycle or series is finished, the next series begins. The *Zero elements* (Group 0) form a natural limit for each series. They are followed immediately by the basic or metallic elements of Group I, which in turn gradually give way to the acidic elements. These latter are followed by another element of Group 0.

The series are of unequal length. The *first series* contains but two elements, hydrogen (H, at. no. 1) and helium (He, at. no. 2). Hydrogen is the fundamental element, very active, and possesses characteristics of both the basic and acidic elements. Its position among the elements is unique, and it has therefore a place more or less for itself in the periodic table; strictly speaking, it does not belong to any particular group. Helium is an inert gas, the first of Group 0, with an atomic weight four times that of hydrogen (at. wt. 4.0022). The *second series* is a 'short' series of *eight* elements, lithium (Li), beryllium (Be), boron (B), carbon (C), nitrogen (N), oxygen (O), fluorine (F), leading to the next member of Group 0, neon (Ne, at. no. 10). The third series is also a 'short' series of eight elements, sodium (Na), magnesium (Mg), aluminum (Al), silicon (Si), phosphorus (P), sulphur (S), chlorine (Cl), ending with argon (A, at no. 18) the third member of Group 0. There is nothing complicated about these short series; they contain typical elements of the basic and acidic groups in their proper order. The following series present difficulties.

The *fourth series* is a 'long' series, and it contains eighteen elements, from potassium (K, at. no. 19) to krypton (Kr, at. no. 36). This series has a triad of elements, iron (Fe), cobalt (Co.), and nickel (Ni), in Group VIII; they are the first of the three triads which appear in this group, and they bear a close resemblance to each other. This is not the only irregularity of this series. Potassium (K) resembles sodium and lithium in Group I, as is to be expected; and calcium (Ca) resembles magnesium and beryllium in Group II. But

here the resemblance ends. Scandium (Sc), titanium (Ti), vanadium (V), chromium (Cr), and manganese (Mn), should belong to the acidic groups; they are, however, distinctly metallic in character. These elements, together with iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), and zinc (Zn), are metallic elements. It is only when we reach gallium (Ga), germanium (Ge), arsenic (As), selenium (Se), and bromine (Br), that the elements correspond again to Groups III, IV, V, VI, and VII of the typical eight-element series and become acidic. If the ten elements, scandium to zinc (at. no. 21—30), were omitted, this series would be in perfect agreement with the two preceding short series. As it is, the sequence is interrupted with calcium, and ten new elements are interpolated, before the regular sequence is resumed with gallium (at. no. 31). These interpolated elements are now considered to be *transitional elements*. It is only as a matter of convenience that they are placed in the periodic table as if they were members of the other regular groups; they should have a place of their own between Group II and Group III. The lithium and sodium series are standard and typical, and so this long series, with its interpolated and transitional group of ten elements, is made to conform to their general scheme of arrangement.

The *fifth series* is also a 'long' series of eighteen elements, from rubidium (Rb, at. no. 37) to the inactive gas xenon (X, at. no. 54). The sequence is the same as in the foregoing long series. The first two elements, rubidium and strontium (Sr, at. no. 38) are in agreement with the first two groups of the lithium, sodium, and potassium series. Then follow ten *transitional* elements, yttrium (Y), zirconium (Zr),

niobium (Nb), molybdenum (Mo), masurium (as yet not entirely certain), ruthenium (Ru), rhodium (Rh), palladium (Pd), silver (Ag), and cadmium (Cd). These occupy the same positions as the ten transitional elements in the long potassium series. From this point on the elements become more acidic, namely indium (In), tin (Sn), antimony (Sb), tellurium (Te), and iodine (I), although indium and tin are metals and antimony has metallic and nonmetallic properties. Xenon ends the series. In this series we again observe a triad in Group VIII, considered as a unit, ruthenium, rhodium, and palladium. This entire series is analogous to the potassium series, and also, if we omit the ten transitional elements, analogous to the standard, typical lithium and sodium series.

The *sixth series*, from caesium (Cs, at. no. 55) to radon (Rn, at. no. 86, or, as it is also called, emanation, Em), is the 'longest' series and contains *thirty-two* members. Here again, the first two elements, caesium and barium (Ba) coincide with the metallic elements of Groups I and II of all the preceding series. These are followed by lanthanum (La) and fourteen other rare earth elements, a new group of transitional elements characteristic of this series. These rare earths have such a close resemblance, that it has proved an extremely difficult chemical task to isolate them from each other and establish their separate identity. We then have hafnium (Hf), tantalum (Ta), tungsten (W), rhenium (Re), osmium (Os), iridium (Ir), platinum (Pt), gold (Au), and mercury (Hg); these, together with lanthanum, are a sequence of elements which correspond to the ten transitional elements found in the two preceding 'long'

series. This caesium series also has a triad in Group VIII, namely osmium, iridium, and platinum, closely related as to properties, similar to the triads of the potassium and rubidium series. After these interpolated elements we have thallium (Tl), lead (Pb), bismuth (Bi), polonium (Po), and an undiscovered element of atomic number 85. Of these, thallium, lead, and bismuth are metallic; polonium is again acidic, and so, in all probability, is the undiscovered element. As will be noticed, the entire series is practically a basic, metallic series; it shows definitely that, as the elements become heavier and more complex in structure, they become less and less acidic. The class of rare earths are usually given a single place in the periodic table. This is permissible, because they are so closely related. In general, however, violence is done thereby to the arrangement of the periodic table. The acidic groups, so clear and marked in the 'short' lithium and sodium series, lose many of their characteristic features in the members of the 'long' potassium and rubidium series, and still more in this 'longest' caesium series; few elements of the higher atomic numbers are acidic.

The *seventh series* contains only six elements, an undiscovered element of atomic number 87 (ekacaesium), radium (Ra), actinium (Ac), thorium (Th), protoactinium (Pa), and uranium (U). Radium resembles barium, strontium, and calcium. Actinium is an analogue of lanthanum. Thorium, protoactinium, and uranium correspond to zirconium, niobium, and molybdenum. Uranium (at. no. 92, at. wt. 238) is, as far as is known, the last of the stable elements. All are *radioactive metals* and in

a Continuous process of disintegration. This may be an indication that this series originally contained a much larger number of elements, of which most have been lost in the course of the ages through conversion into lighter elements. Some scientists are of the opinion that this series was composed of 32 elements, corresponding in number to the caesium series. Others consider this improbable, because the series, so far as its present members are concerned, is more in accord with the rubidium than with the caesium series. At any rate, the last series is considered to be an incomplete series of disintegrated and disintegrating elements.

THE PROBLEM OF PERIODICITY

As we study the periodic table, we cannot deny the fact that periodicity, or a recurrence of elements with similar properties, actually occurs. The inert gases of Group 0 are the *key-elements* which occupy the positions of importance in the whole table; they are stable, electroneutral, inactive, manifesting no affinity for other elements, and have no tendency to combine with others to form compounds. All others are electropositive or electronegative, basic or acidic, metallic or nonmetallic, and combine with others to form compounds. A definite number of series or periods is thus found to exist, starting from an inert gas and ending with the next inert gas.

As early as 1914 *Rydberg* called attention to the fact that the atomic numbers of these Group 0 gases can be

calculated from a series of numbers now called the *Rydberg Series*, expressed in the simple formula:

$$2(1^2 + 2^2 + 2^2 + 3^2 + 3^2 + 4^2 \dots)$$

According to this formula we obtain the following results:

- Element At. No. Rydberg Series
- Helium.....2..... $2(1^2) = 2$
- Neon.....10..... $2(1^2 + 2^2) = 10$
- Argon.....18..... $2(1^2 + 2^2 + 2^2) = 18$
- Krypton.....36..... $2(1^2 + 2^2 + 2^2 + 3^2) = 36$
- Xenon.....54..... $2(1^2 + 2^2 + 2^2 + 3^2 + 3^2) = 54$
- Radon.....86..... $2(1^2 + 2^2 + 2^2 + 3^2 + 3^2 + 4^2) = 86$

This striking fact cannot be accounted for by mere chance; the product of the calculation is too perfect for that. It is plainly a case of periodicity.

We must come to the same conclusion when we compare the series with each other. We discover a remarkable *parallelism*. The first series, that of hydrogen and helium, is unique. One element is active, and the other inert. This small series of two epitomizes within itself all the subsequent series of the periodic table. The lithium and sodium 'short' series are parallel in nearly all respects, each containing 8 elements. The potassium and rubidium 'long' series are also parallel to each other, each consisting of 18

members, of which 10 are transitional. The caesium 'longest' series is composed of 32 elements. If the last, radioactive series, as some scientists believe, also had originally 32 elements, the parallelism would be complete; but this is only a conjecture. There can be no question, however, about the periodicity involved in the parallelism manifested in the two 'short' and in the two 'long' series.

How can this *periodicity be explained*? Such regularity of recurrence must be based upon some fundamental *similarity of atomic structure* within the elements themselves. This follows logically from the entire arrangement of *groups* and *series* and from the steady progression of *atomic weights*. There must exist a profound relationship between the advancing increase in atomic weight, the atomic structure, and the periodic recurrence of similarity in the elements and their properties. At the same time, something must be found in the atomic structure of the elements which is able to account for the isotopes and the irregularities found to exist between certain atomic numbers and atomic weights, since these irregularities apparently disturb the proper sequence of the table.

Scientists are convinced that they have found the answer to these questions in the internal structure of the atom itself. Instead of 92 ultimate material constituents of the universe, scientists have discovered that all elements consist alike of certain fundamental particles of matter. Even the atom is not a simple material substance, but a complex structure. We must now investigate the elemental

atom and see whether we can there discover any clues to the ultimate constitution of physical bodies.

SUMMARY OF CHAPTER II

1. *Matter and Energy.* Matter is anything that occupies space. Energy is the capacity for performing work; it is either potential or kinetic.

2. *Elements and Chemical Compounds.* An element is any material substance which cannot be resolved by ordinary chemical means into two or more similar substances different in nature from itself. A chemical compound is a substance composed of two or more elements chemically combined in definite proportions by weight.

3. *The Table of Elements.* Elements are distinguishable by definite physical and chemical properties. The atomic number represents the Position of each element in the Table of Elements. This position is determined, generally speaking, by the atomic weight of the element, i.e., the relative weight of an element compared with that of another element taken as a standard. The standard is oxygen, with an atomic weight of 16

4. *Isotopes.* Not all elements are pure; they have different weights, though their properties are identical, and these are called isotopes. Isotopes show that the atomic weights of the elements progress in 'whole numbers.'

5. *The Periodic Law.* It is the periodic recurrence of similar elements in the table of elements. The periodic table is arranged according to *groups* and *series*. There are nine groups and seven series. A 'group' is a class of chemically similar elements. A 'series' is a sequence of elements which begin with a group and advance according to their

increasing atomic number, until an element is reached which is similar to that of the group from which the sequence started. The 'periodic law' states that the properties of elements are the periodic functions of their *atomic number*, not of their atomic weight.

6. *The Periodic Groups.* The periodic groups from I to VII represent the two great classes of elements, *metals* and *nonmetals*, bases and acids. As the groups proceed forward from Group I, they become less basic; as they go backward from Group VII, they become less acidic. The middle groups show basic and acidic features. The groups toward the metallic side of the table are *electropositive*; those toward the acidic side are electronegative. Group 0 contains the *inert gases*, while Group VIII contains three triads of metallic elements.

7. *The Periodic Series.* The periodic series contain elements in sequence between one Zero element and the next Zero element. The number of elements in the succeeding series is as follows: 2, 8, 8, 18, 18, 32, 6. The 18, 18, and 32 series contain respectively 10, 10, and 24 transitional elements. The final series is an incomplete, radioactive series.

8. *The Problem of Periodicity.* The periodicity of the elements is an unquestionable fact. Since the reason for the periodic recurrence of similar elements does not lie in their weights, it must be due to the similarity of *atomic structure*.

READINGS

Soddy, Fred., *The Interpretation of the Atom*. Hopkins, B. Smith, *General Chemistry for Colleges*. Lemon, Harvey B., *From Galileo to Cosmic Rays*. Washburn, Edward Wight, *Principles of Physical Chemistry*.

1 A calorie is a unit of heat, namely the amount of heat required to raise the temperature of one gram of water 1o C.

2 See F. W. Aston, *Mass-Spectra and Isotopes* (New York: Longmans, Green, and Go., eq), Appendix II, pp. 236, 237

Chapter 3

ATOMS AND SUBATOMIC PARTICLES

THE MIND OF MAN HAS ALWAYS SOUGHT TO REDUCE THE multiplicity of things to simpler units. The enormous multitude of living and nonliving bodies did not escape this unifying and simplifying tendency of the mind. *Thales* conceived the idea that all bodies are but modifications of one fundamental element, water. His idea, however, seemed to carry the principle of reduction too far. *Aristotle* advocated five ultimate elements, and his views dominated the minds of medieval thinkers. Modern chemistry endeavored to solve the problem by means of a strictly scientific, experimental analysis of chemical compounds. The result was amazing. Instead of being able to resolve all types of bodies into a few elements, chemists were forced to admit the existence of about 92 irreducible elements as the ultimate constituents of nature. However, the periodic recurrence of definite groups of elements pointed to some underlying principle of unity among them. Just what this principle might be, no one for a time seemed able to conjecture.

It was reserved to the scientists of our own generation, through a deeper knowledge of *electricity*, to effect a

reduction of the 92 elements to a few fundamentally distinct types of matter as their common components.

ELECTRICITY

To the genius of *Faraday* goes the credit of having first uncovered experimental evidence which showed that electricity must be essentially atomic. In his experiments with chemical electrolytes, he found, in 1833 and after, that a solution containing, for example, a hydrogen compound reacted to a definite amount of electric current in such a way that under all conditions the same amount of hydrogen made its appearance at the negative electrode.

To illustrate. In order to release 1.0078 grams of hydrogen out of a solution by depositing it at the electrode, a quantity of electricity amounting to a faraday, or 96,494 coulombs,¹ will be required. But this same quantity will also deposit 107.88 grams of silver out of a silver nitrate solution. Hydrogen and silver are univalent elements. Now, the atomic weight of hydrogen is 1 and the atomic weight of silver is 107.88. Consequently 1.0078 grams of hydrogen and 107.88 grams of silver contain an equal number of atoms, and each atom of both elements must carry an equal charge or quantity of electricity in the solution. It has been estimated that the number of atoms of hydrogen in 1.0078 grams is 6.064×10^{23} (606,400,000,000,000,000,000,000); there are, of course, the same number of silver atoms in 107.88 grams of silver. If we now divide the 96,494 coulombs by this number, we obtain the charge on a single atom: this charge is 15.9×10^{-20} coulombs

(0.000,000,000,000,000,000,159). This is equivalent to 4.77×10^{-10} electrostatic units. Copper being a bivalent element with an atomic weight of 63.57, it requires two faradays ($2 \times 96,494$ coulombs) to deposit 63.57 grams out of a solution; 1 faraday will deposit half this amount, namely 31.8 grams. Since iron in a ferric solution is trivalent, it requires three faradays to deposit an amount in grams equal to the number of its atomic weight, 55.84; one faraday would deposit one third of this, and two faradays two thirds.

These processes are invariable, and the unit charge is constant. Fractions never occur; the charges are found only in unit charges or in exact multiples of it. The conclusion to be drawn from these facts seemed obviously to be that electricity exists in unitary quantities and must therefore be atomic in its constitution.

Faraday, however, did not draw this conclusion. On the contrary, he favored and defended the theory that electricity consists in *stresses and strains* in the medium surrounding the electrified bodies; the carrier of electricity was the *aether*. To a very great extent this theory was based on the presence of electric fields in cases of electrification. The 'aether-stress theory received strong support from the discovery in 1887 by Hertz that electricity does not require metal conductors but could travel with the speed of light in the form of electric waves. This phenomena seemed inconsistent with the idea of electricity as atomic in character. The 'aether-stress' theory prevailed until the turn of the century, mainly through the efforts of *Clerk-Maxwell and Sir Oliver Lodge*.

In 1895 *Röntgen* discovered *X rays*, and with them he furnished scientists with an instrument of research which revolutionized physics and unraveled many of the mysteries of electricity and of the constitution of the elements. X rays remain unaffected by electric and magnetic fields and are of the nature of light, not of electricity. They are produced in a vacuum tube, when some dense metal, such as tungsten or platinum, is exposed to a stream of rays which emanate from the cathode, or negative electrode, of the tube. These so-called *cathode rays* possess the characteristics, not of waves, but of electric particles. They are deviated from a straight course by a magnetic or electric field, being repelled by a negative field and attracted by a positive field; they have, therefore, negative charges. When directed onto a conductor leading to an electrometer, the conductor shows a negative charge. If these cathode rays fall upon the glass wall of the tube as a target, the glass becomes fluorescent; and if a strong stream impinges for some time upon the target, the target becomes pitted and even incandescent. To produce such effects, the cathode rays must consist of *material particles*, with a negative charge, possessing considerable force of impact. Flowing in the Opposite direction and emanating from the anode, or positive pole, is a stream of particles which have a positive charge; they are called *canal rays* and are the counterpart of the cathode rays. Both types of rays are unidirectional, i.e., they travel in one direction only: the cathode rays travel away from the cathode, and the canal rays travel away from the anode, but never in the reverse direction.

THE ELECTRON AND PROTON

What is the *origin* of the cathode and canal rays? Of what *kind of matter* do they consist? Have they *mass and velocity*? Extensive experiments have been made, and the answer to these questions has been found.

No matter what kinds of elements or compounds are used as electrodes, and no matter what kinds of gases are used in the vacuum tube, the cathode rays are always produced and they always act in the same manner. Every kind of element or substance yields these negatively charged particles. They now go by the name of *electrons*.

When hydrogen gas is used in a tube under low pressure and a current of sufficient strength passes through the gas, a stream of electrons (cathode rays) is generated, traveling in the direction away from the cathode. The canal rays are then observed to consist of hydrogen ions with a positive charge. Since the hydrogen atoms are normally neutral, so far as their electric charge is concerned, it is obvious that the hydrogen atom must consist of two types of matter, one carrying a positive charge (the positive ion) and the other a negative charge (the electron). Since hydrogen is the simplest and lightest of all elements, and since its atom never loses more than a single negative charge (an electron), it must be assumed that the positive hydrogen ion also consists of a single portion of matter carrying a unit charge of positive electricity. This positive hydrogen ion, therefore, is the exact counterpart of the negative electron, and is called by a special name, the proton. Consequently, it is assumed on very strong evidence that the hydrogen atom

consists of two distinct particles of matter of equal, but opposite, electrical charges, a *proton and an electron*; together they form the electrically neutral hydrogen atom.

The proton and the electron represent the minimal, elementary unit charge of electricity. They differ, however, greatly in *mass*. It is impossible to describe here the ingenious methods which scientists have devised for the measurement of the mass of the various atoms. Suffice it to say that the methods are based on the deflection of particles in an electric and magnetic field. The hydrogen atom has a mass of 1.6617×10^{-24} grams; of this total mass 1.6608×10^{-24} grams goes to the proton, and $0.0008994 \times 10^{-24}$ grams to the electron. The mass of the electron is about 1/1845 of the mass of the hydrogen atom; in other words, the proton, or particle with positive charge, contains practically all the mass or weight which is found in the hydrogen atom, while the mass or weight of the electron in the hydrogen atom is practically negligible. The same applies, of course, to the atoms of the other elements. From this it follows that the atomic weights of the elements are determined, not by the electrons, but by that portion of the elements which possesses the positive charge. Notwithstanding the difference in mass between the proton and the electron, their electric charge is *equal in value and quantity*; otherwise the normal hydrogen atom would not be electrically neutral. Furthermore, no matter from whatever substance and from whatever source we obtain these electrons, *the mass and charge of the electron* is always the same. This charge, determined by many thousands of experiments and by diverse methods, is

calculated to be 4.77×10^{-10} electrostatic units.² Science designates this charge by the letter e .

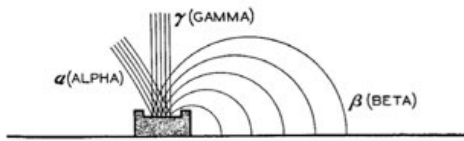
As for the size of the electron, its radius is estimated to be approximately 1.9×10^{-13} centimeters, while that of an atom is about 10^{-8} centimeters. Electrons travel at varying velocities, from about one thirtieth to one third the speed of light, or 109 to 1010 centimeters per second, depending upon the voltages across the electrodes of the X-ray tube.

Various experiments and the calculations based on them bring out the important fact that the charge carried by *gaseous ions* is identical with the charge carried by *ions in liquid electrolytes*, namely a unit charge of 4.77×10^{-10} electrostatic units. And this unit charge varies in exact multiples of the unit charge, 2, 3, 4, 5, and so on. A positive ion is thus nothing but an atom from which one or more electrons have been separated, leaving a net positive charge on the residue; and a negative ion is an atom which has taken on one or more electrons, giving it a net negative charge. The ionization of gases and liquid solutions now receives an adequate explanation, and both processes confirm the view that atoms are not simple entities but *complex structures consisting of positively and negatively charged particles of matter*, and that electricity is *discrete and atomic* in character.

ALPHA, BETA, AND GAMMA RAYS

In 1896 *Becquerel* made the discovery that certain compounds of uranium were radioactive, emitting rays which resembled X rays. Soon after, in 1898, *Marya*

Skłodowska Curie and her husband Pierre discovered radium and other substances more radioactive than uranium. The study of their radiations by numerous scientists, especially by *E. Rutherford* and *Sir Joseph Thomson*, disclosed the fact that these radiations were qualitatively very diverse. They are of three types, and are called alpha (α), beta (β), and gamma (γ) rays, the names being taken from the first three letters of the Greek alphabet. When exposed to a magnetic field, the rays behave in a manner indicated by the diagram:



The *alpha* rays are seen to be deflected to a slight degree and to end abruptly at a certain distance from the source. They are positively charged and possess all the characteristics of material particles. With respect to mass they possess a mass equal to that of a helium atom or four protons, and a charge which is twice that of an electron, namely 9.54×10^{-10} e.s.u.; later we will see that they really are helium atoms shorn of two electrons, leaving a net positive charge of $+2e$. Of the three types of rays they have the least effect upon a photographic plate. A few centimeters of air at standard pressure or one tenth of a millimeter of aluminum absorb them completely. On the other hand, they have an intense power of ionization in gases. Due to their mass and great kinetic energy, they deviate but slightly in a magnetic field. Their velocity is anywhere from 9-14,000 miles per second, i.e., from one thirteenth to one twentieth of the speed of light, depending upon the energy of the

radioactive substance from which they emanate. Alpha particles play a prominent part in radioactivity and in the interpretation of atomic structure.

Beta rays are identical, except for greater velocity, with the cathode rays generated in the vacuum tube; that is to say, they are electrons, having the same negative charge and the same mass. The electrons of the cathode rays seldom attain a velocity greater than one third to one half that of light, while the beta particles (electrons) of radium reach the tremendous velocity of 98 per cent of light. Compared to the alpha particles, their ionizing power is small, while their penetrating power is greater; they can pierce a plate of aluminum which is one centimeter thick. In a magnetic field beta rays can be bent into circles, the swifter rays having the larger diameter.

The *gamma rays*, since they pursue their course without being affected by a magnetic or electric field, are not particles; they are rays similar in nature to X rays, but of shorter wave length. Gamma rays have a wave length of less than 10^{-9} centimeters, while X rays usually range between 10^{-9} and 10^{-8} centimeters; it is possible, however, to generate very 'hard' X rays with a shorter wave length than that of some gamma rays. Both the gamma rays and the X rays are of considerably shorter wave length than the common ultraviolet rays, the latter usually having a wave length of about 10^{-5} centimeters; all three types are electromagnetic in character. Gamma rays possess slight powers of ionization. They are, however, very penetrating; some of the more powerful can pierce 20 to 30 centimeters of iron or 8 to 10 in. of mercury or lead.

The alpha, beta, and gamma rays are active chemically and produce marked effects on many substances in their immediate vicinity. Their effect on the photographic plate and their decomposition of many compounds prove this conclusively; water, for example, is resolved into hydrogen and oxygen, air is formed into ozone and various oxides of nitrogen, and carbon compounds are changed into carbon dioxide and monoxide. The medicinal qualities of radium and other radioactive substances are entirely due to these rays.

COSMIC RAYS

In 1910 *Gockel* noted that an electroscope, when taken in a balloon to 4500 meters, had a rate of discharge which was higher than on the earth. This seemed to indicate the presence of rays which reached the earth from interstellar space; and since this discharge was apparently the same during the night as during the day, it could not be due to the radiation of the sun. Between the years 1922 and 1925, *Millikan*, *Otis*, and *Cameron* made some crucial experiments which seem to prove conclusively that there are rays which come from the outer space of the cosmos, pierce the entire atmosphere, penetrate water down to a depth of fifteen and more meters, and discharge an electroscope. These are the so-called *cosmic rays*. They have a penetrating power which is eighteen times more than that of the most penetrating gamma rays. It is estimated that nearly one half of the energy which strikes the earth in the form of light and heat from the stars is due

to cosmic rays. That this energy does not come from the Milky Way, was shown in localities where the Milky Way is not visible, the amount of cosmic rays being just as great under both conditions; the rays are, to all appearance, distributed uniformly and equally throughout space, because they come in from all directions. The source of these rays, therefore, so far as our present knowledge goes, lies in interstellar space, and not in the sun, stars, or nebulae.

The intensity and penetrating power of cosmic rays vary considerably, showing that they are not all alike. Experiments made in Gem Lake, California, revealed the presence of cosmic rays at a depth of 235 ft., a capacity of penetration equivalent to penetrating more than 20 ft. of lead; *Regener* recorded them at a depth of about 700 ft. of water. The most penetrating of the gamma waves are absorbed at a depth of about 6 ft. of water. Since the energy required to give such penetration to a gamma ray amounts to 2.6 million electron volts,³ the energy evolved to give such enormous penetration power to cosmic rays is proportionately greater and amounts often to tens of millions of electron volts and, in some instances, to hundreds of millions of electron volts. These calculations are based on the curvature tracks of particles made in the Wilson expansion or cloud chamber. The moisture of the chamber does not settle on uncharged, neutral atoms, but on the ions. An electron, proton, alpha or cosmic ray particle, on passing through the chamber, ionizes the gas; moisture particles condense and settle on these ions, and a visible track or trail of the passage of the ionizing particle

remains which can be photographed. The length and curvature of these tracks are an indication of the power of the particles and enables scientists to determine the type and energy of the particles traversing the chamber. This method of research has led to the discovery of a new kind of particle, the so-called 'positron.' All physicists now agree that the positron actually exists.

The *positron* is a particle or corpuscle of matter equal in mass to an electron, but of *positive charge*. Its existence was first discovered by *Carl D. Anderson* and *Robert Millikan* and its nature definitely established in 1932. Photographs of such positrons passing through a six-millimeter lead plate in the cloud chamber have been taken; the curvature before entering and after leaving the lead shows a corresponding loss of energy, the positron entering with an energy of 63 million electron volts and emerging with an energy of 23 million volts. Since that time thousands of photographs taken have proved that among the electronic tracks of particles of over 100 million electron volts fully half are of free positrons. In all these instances negative electrons (or 'negatrons,' as it has been suggested that they now be called) and positrons were found to be 'identical twins,' the same in every regard except as to their opposite charge.

Since 1933 many experiments have been made to obtain positrons from sources other than cosmic rays. Various substances, as beryllium, lead, aluminum, and carbon, were bombarded with alpha and gamma rays, and all yielded positive results. This would seem to indicate that the positrons have their origin in the nucleus of the atoms,

because it is the nucleus which carries the positive charge. Some of these energies are calculated to be about three billion electron volts.

Positrons, it seems, have a short life. After their kinetic energy is spent, they disappear entirely. Scientists, experimenting with positrons, are inclined to believe that they unite with (negative) electrons and vanish by being converted into gamma rays. If this is so, it would mean that matter is converted into radiant energy. What part the positrons play in the formation of atomic structure is very uncertain. In fact, so far as positrons are concerned, science is only at the beginning of its research, and much remains to be done before anything very definite can be said about their nature.

THE NEUTRON

Another new type of subatomic particles has been discovered in recent years. It is the neutron. It had been known for some time that certain elements could be disintegrated by bombarding them with alpha rays. In 1930 *Bothe* and *Becker* noticed that beryllium and other light elements emitted a highly penetrating radiation when bombarded with the alpha rays emanating from polonium, a radioactive element which does not emit any gamma rays. The coefficient of absorption for this radiation was 0.22 per centimeter in lead. The energy required amounted to something like 7×10^6 volts. This meant that the ray in question was more penetrating than the most energetic gamma ray known in connection with radioactive

substances. Bothe and Becker considered these rays to be gamma rays of exceptionally high power. It was also found by *Irene Curie* and her husband *F. Joliot* that, when these alpha particles fell upon paraffin, wax, and other substances containing hydrogen, protons appeared which had received an energy of something like 4 to 5 million electron volts. Since the protons are hydrogen ions and hydrogen is the simplest element, the phenomenon could not be the result of disintegration but of a collision. In that case, however, it seemed impossible that so much energy could be transmitted to the protons, because that would involve a contradiction in the laws of momentum and energy.

Thereupon *Chadwick*, in 1932, after much research and experimentation, proposed the theory that the alpha particles from polonium, used by Bothe, Becker, Curie, and others in bombarding these elements, collided with the nuclei of their atoms and ejected particles which had the general mass of protons but were uncharged. He proposed the name *neutron* for this particle, because, being uncharged, it is electrically neutral. When a charged particle, such as an alpha ray, electron, or proton, passes through a substance, it encounters a great resistance, due to mutual attraction and repulsion, and this absorbs a great deal of its penetrating energy. A neutral, uncharged particle, however, is neither attracted nor repelled while on its course and thus can travel much farther before its energy is spent. Its progress can be stopped, however, by collision with other atoms, and in that case the simple mechanics of colliding bodies comes into play. A neutron

would be non-ionizing, and its passage through the Wilson chamber would leave no fog tracks. After the collision, however, the ejected alpha rays, electrons, and protons would produce ionization and reveal their presence by means of tracks. In the case of beryllium bombarded by alpha rays, the explanation would be that an alpha particle collides with the beryllium atom, is captured, and a neutron ejected from the atom. It is thus assumed that neutrons form a normal portion of the atoms of all elements except hydrogen (the latter having only a single proton as a nucleus). Subsequent investigations proved Chadwick's theory to be correct. Neutrons exist, and they are now used extensively as bombarding agencies in many laboratory experiments.

The exact *nature* of the neutron is still very much in doubt. All agree that the mass of the neutron is of the order of the hydrogen proton. Some scientists incline to the view that the neutron is a proton with an electron so closely attached to it that the two can scarcely be disassociated. If this view is correct, the neutron is a combination of two oppositely charged particles. Other scientists are of the opinion that the neutron is simply an un-electrified portion of matter which becomes a proton through the addition of a positron. Since free positrons actually exist, this latter view seems to have some evidence in its favor. In the former view the neutron is a complex particle, and in the latter view the proton is a complex particle. In any case, there are now known to be *three distinct fundamental entities* entering into the constitution of bodies. Depending upon the nature of the neutron and proton, one must accept either (1)

electrons, positrons, and neutrons; or (2) electrons, positrons, and protons.

SOME OTHER PARTICLES

In the last few years, scientists speak with considerable conviction about the existence of a number of other subatomic particles. There is the *mesotron*. Some physicists call it the '*barytron*' or the '*yukon*.' The discoverers, C. D. Anderson and S. H. Neddermeyer, gave it the name 'mesotron,' and this name is now generally accepted. Its mass is intermediate between that of the proton and electron, and so the name mesotron' is appropriate. The mesotron is something like a heavy electron. There are, it is claimed, both positively and negatively charged mesotrons. It is probable that cosmic rays consist of mesotrons, at least those which possess power of deep penetration.

Then, there are *neutrettos*, *negative protons*, and *neutrinos*. The neutretto is supposed to be a particle equal in mass to the mesotron, but electrically neutral. Its position relative to the positive and negative mesotrons is similar to that of the neutron relative to the proton and electron. Through collision with a neutron, it is thought, a neutretto would be transformed into a negative mesotron, and through collision with a proton into a positive mesotron; this, however, is speculative. In fact, there is but slight experimental evidence in favor of the existence of the neutretto. Scientists also postulate the existence of a negative proton on various grounds, but its existence is not certain. The same must be said of the neutrino. If it exists, it

is assumed that its mass is the smallest of all subatomic particles. It is electrically neutral. Extensive experiments are being conducted to prove the existence of these particles, but so far these efforts have not met with much success.

THE PHOTON

The story of the scientific research into the nature of light is one of the most interesting chapters in the history of physics. It dates back to about 1666, when *Newton* succeeded in dividing sunlight into the spectrum. Because of the fact that light travels in straight lines, Newton advocated the theory that light is corpuscular in nature. At the same time *Huygens*, because of the similarity in behavior observed between light and sound, brought forth the view that light is essentially an aether pulse traveling in waves. In 1800 *Thomas Young* proved that light can be diffracted. He also showed that light, like anything that travels in waves, is subject to interference. If light is corpuscular, the meeting of one ray with another should always produce light of greater intensity. If light is a wave formation, the meeting of the crest of one wave with the trough of another should produce a cancellation of both, resulting in a dark band between two light bands where the crests meet. He demonstrated the fact that such interference and mutual cancellation actually occur. The corpuscular theory was doomed, and the undulatory theory of light was triumphant.

As time went on, heat, wireless waves, ultraviolet and infrared rays, X rays, and gamma rays were all explained by the wave theory without any particular difficulty. Their differences consisted merely in differences of wave length and frequency. The aether was their common carrier. All these types of aether waves, as was to be expected, could be subjected to diffraction and interference, and remained uninfluenced by electric and magnetic fields of force. That X rays were a species of light waves was proved conclusively by Laue in 1912. Light can be diffracted either through a prism or through a grating. Man-made gratings cannot be used to diffract X rays, because the spacing between the lines of an artificial grating cannot be made fine enough; the wave length of X rays is too short. Laue conceived the idea of using the natural, molecular spacings of a crystal for a grating. The X rays gave a diffraction pattern. So also did the gamma rays. There could be no doubt, then, that X rays and gamma rays, like light, were *electromagnetic waves*.

However, difficulties began to arise. Light, when it leaves its source, if it is undulatory in character, must spread outward as a spherical wave, growing larger and larger the farther it recedes from the source. Since its energy is distributed uniformly over this entire wave front, it must decrease in strength with the distance from the source. The phenomenon of the *photoelectric effect* disproves this. It was found that light, especially ultraviolet light, ejects electrons from a metal. Experiments were made, from 1900 on, with light on various kinds of metals in such a way that the intensity of the light was changed while the frequency (color) remained constant, and then the frequency changed

while the intensity remained constant. The result was astonishing.

It was found that the amount of electrons drawn out of the metal was entirely and solely *proportional to the specific frequency of the incident light and altogether independent of its intensity*. To produce the photoelectric effect, or emission of electrons under the stimulus of light, each substance requires a critical wave length; the electropositive elements need a longer wave length than the electronegative. Any ray of light that has a wave length longer than the specific wave length required by a substance will not cause electrons to emerge. The alkali metals, potassium, sodium, and caesium, give the photoelectric effect even with visible light; they are strongly electropositive. Others require ultraviolet rays. In all cases it was discovered that the energy of the electrons ejected under the influence of blue light is twice that of those ejected by red light. Using monochromatic light, for instance blue or red, the number of electrons ejected per unit time will be proportional to the light strength. If the light strength is reduced to one half, only one half as many electrons will emerge as under light of unit strength; and if this strength is reduced to one third, only one third as many electrons will be freed from the metal. However, *no matter at what distance the source of this light is placed from the metal, whether at a distance of a foot or of a mile, the energy of the individual electron is always the same*. Now, if light consists essentially of waves, this would be impossible, because the energy of a wave decreases in its effectiveness when the distance from the source is increased. The only

way to explain this remarkable phenomenon is to assume that light is essentially corpuscular in character. Then it can be understood how 'bundles' or 'parcels' of light energy will remain together, while traveling through space, and not lose their striking power on the way. Since their energy is not spread out and weakened through the expanding action of a spherical wave, they retain their full energy from the moment they leave their source until they strike the metal. Each light dart thus carries an amount of energy proportional to its frequency, and it is with this original and undiminished energy that it strikes an atom and ejects electrons.

X rays and gamma rays act exactly as do ultraviolet and ordinary light rays. They must all, then, be considered as being fundamentally *corpuscular* and *atomic* in nature. Such light darts are now called photons.

THE QUANTUM

In 1900 *Max Planck*, through experiments in heat radiation, came to the conclusion that an atom never emits energy continuously, but only intermittently, in definite quantities or parcels. He designated such a definite parcel a quantum. At the time he still considered light to be essentially a wave phenomenon. These quanta of energy are units equal to, or multiples of $h\nu$, in which ν is the frequency of the radiation and h a universal constant the value of which has been determined as 6.55×10^{-27} ergs. This constant is called 'Planck's h .'

At first it was thought that in the photoelectric effect the atoms absorbed energy from the waves of light continuously and gradually, until they had absorbed a quantity equal to $h\nu$; then the energy is emitted as 'quanta' or parcels. This, however, is not the case. A gradual absorption and subsequent emission of energy does not take place; the electrons shoot out of the metal immediately and with full vigor.

As far back as 1905, *Albert Einstein* made the assumption that light traveled in 'light-quanta' equal to $h\nu$, so that atoms absorbed whole quanta or no energy at all. Light was simply discontinuous and discrete under all conditions. Such a quantum of light, on striking an electron, would transmit to it its entire energy in an undiminished condition, and the electron would then be ejected with an energy $h\nu - p$; the work required to remove the electron from the metal is represented by p . At the time, Einstein's assumption seemed arbitrary. Subsequent experiments, however, especially those made during 1912—1914, proved his assumption to be correct. The wave theory could not account for the energy required for the *immediate emission* of electrons, as soon as light strikes the metal. This energy has been computed quite accurately. Sodium, for example, shows the photoelectric effect with the ordinary light of a candle. A candle placed at a distance of 3 meters from sodium has an energy of one erg per square centimeter per second falling on its surface. On an atom, the cross section of which is of the order of 10^{-15} square centimeters, this energy amounts to about 10^{-15} ergs. This amount of energy is insufficient to free an electron, because not more than

one third of the light beam has a wave length short enough to produce the photoelectric effect; the amount of energy which the atom could thus absorb would not be more than $\frac{1}{3} \times 10^{-15}$ ergs per second. An electron, however, is emitted with an energy amounting to 5×10^{-12} ergs. To absorb this amount, the atom of sodium would have to be exposed to the action of the light for more than four hours before it could expel an electron. It is a fact, though, that electrons are expelled from sodium as soon as the candlelight falls upon its surface. It follows, then, that the incident light from the candle must consist of photons which have the necessary *quantum of energy* represented by $h\nu$. It is thus seen that not only the emission, but also the absorption, of energy takes place in quanta. Einstein's assumption has been vindicated: light consists of photons.

WAVES AND PARTICLES

Light has *momentum*. This can be observed in the Wilson expansion chamber. X rays, gamma rays, and cosmic rays, when striking an electron which is free, impel it forward in the direction of their own movement; they act like projectiles.

A. H. Compton proved conclusively in 1923 that photons and free electrons, on colliding, obey the same mechanical laws observed in the encounter of two billiard balls. The photoelectric effect caused by ordinary light and ultraviolet rays shows that photons have momentum. In all elementary processes, therefore, the behavior of aether waves is that of corpuscles or particles. This, however, does not eliminate

the phenomena of *interference and diffraction*, so commonly observed wherever light rays appear in gross quantities. Waves are still associated with light, so that light exhibits the phenomena of *both waves and particles*.

If this double feature of light was a puzzling mystery to physicists, the mystery became more puzzling when it was discovered that electrons, which are undoubtedly corpuscular, also behave like waves. In 1927 Davisson, Germer, and G. P. Thomson, and later Otto Stern and others, sent a stream of electrons through crystal lattices onto photographic plates. To their amazement they obtained diffraction and interference patterns which were similar to those obtained from X rays under the same conditions. But such a phenomenon is characteristic of wave physics. We thus observe the peculiar fact that particles behave like waves, and waves behave like particles.

This is a most disturbing situation. Waves are not particles, and particles are not waves. Are the ultimate components of nature waves or particles? They cannot very well be both at the same time. This much, however, seems certain: Waves and particles are always associated and found together. But why should particles, since they are not waves, show diffraction patterns when shot through the spacings of a crystal? The following suggestion has been offered. Photons of light, in passing through a grating of very fine wires or of a crystal, can be deflected only by the shape of the wire or crystal surface with which they come in contact; since they are much smaller than the space of the grating between the wires or the crystal lattice, this

intervening space can have no influence on their direction. Reversely, if light is but a system of waves passing through the grating, its deflection depends upon the spacing between the wires or crystal lattice, because its wave front, due to the wave length of light, will cut across the entire spacing. Assuming then, that the speeding particles cause waves of aether to pulse in all directions, the aether waves will be deflected by the grating, and the *particles* follow the guidance of the waves through the wire prism or crystal. The concomitance of waves and particles would thus be explained. Further investigation is needed.

Waves always accompany the elementary processes of particles; but this does not mean that the particles are to be identified with the waves. Nature consists ultimately of certain discrete, atomic entities as units: units of matter or mass; units of electrical charge, both positive and negative; units of radiant energy, photons; and units of action, Planck's constant h . When these units act in an individual capacity, they manifest themselves as discrete entities; but when they combine in large quantities, they present continuous processes which exhibit the form of waves.

SUMMARY OF CHAPTER III

Modern science has succeeded in reducing the 92 elements to fewer fundamentally distinct types of matter as their common components.

1. *Electricity*. Electricity, consisting of positive and negative charges, was at first considered to be a fluid. Faraday's study of electrolytes uncovered experimental evidence which showed that electricity must be 'atomic' in character. However, up to about 1900 the 'aether-stress' theory prevailed. The vacuum tube then revealed the existence of *cathode* and canal rays as *material particles of electricity*.

2. *The Electron and Proton*. Cathode rays consist of *electrons*, each of a mass of $0.0008994 \times 10^{-24}$ grams. The canal rays consist of the positive ions of the substance used in the vacuum tube, shorn of electrons. In the case of hydrogen, these ions are called *protons*, and they have a mass of 1.6808×10^{-24} grams. The electrons have a mass of about $1/1845$ of the proton mass. Electrons carry a negative charge, and protons a positive, and each is calculated to be 4.77×10^{-10} electrostatic units. Their mass and charge are constant. Electricity is thus discrete and atomic in character.

3. *Alpha, Beta, and Gamma Rays*. These rays are emitted by radioactive substances. Alpha rays are helium ions with a double positive charge. Beta rays are electrons. Gamma rays are of the nature of X rays, but of shorter wave length.

4. *Cosmic Rays*. They originate in interstellar space, have a penetrating power far exceeding that of gamma rays, involve energies which reach into hundreds of millions of electron volts.

5. *Positrons*. They are material particles equal in mass to electrons, but of positive charge. They originate from cosmic rays and also through the bombardment of various elements with alpha and gamma rays. It is probable that they are at times converted into gamma rays by uniting with electrons. In all probability, they proceed from the nucleus of atoms.

6. *Neutrons*. They are particles of the general mass of protons, but are electrically neutral or uncharged. They possess a high power of penetration. A neutron may be a proton with an electron closely attached, or an unelectrified portion of matter which becomes a proton through the addition of a positron.

7. *Photons*. They are light darts of unit energy. The aether-wave theory of light has been discredited through the *photoelectric effect*, i.e., the emission of electrons from metals under the stimulus of light. The amount of electrons emitted is proportional to the specific frequency of the incident light and independent of its intensity. Bundles or parcels of light remain together in their passage through space without diminishing their energy. Light is, therefore, corpuscular in character. All forms of light, X rays, gamma rays, ultraviolet rays, etc., have the same character.

8. *The Quantum*. A quantum of energy is a unit quantity or parcel of energy absorbed or emitted by an atom. Quanta are units of energy equal to, or multiples of, $h\nu$, in

which ν is the frequency of radiation and h (Planck's constant), a universal constant with a value of 6.55×10^{-27} ergs.

9. *Waves and Particles*. Light exhibits the phenomena of both waves and particles. Electrons, though particles, also give diffraction and interference patterns when shot through crystals; they then act like waves. *Particles thus behave like waves, and waves like particles*. This is the mystery of modern physics.

Nature consists ultimately of certain discrete, *atomic entities*: units of matter; units of electrical charge; units of radiant energy; and units of action.

READINGS

Soddy, Fred., *The Interpretation of the Atom*. Crowther, James Arnold, *Ions, Electrons, and Ionizing Radiations*. Zimmer, Ernst, *The Revolution in Physics*. Millikan, Robert A., *Electrons, Protons, Photons, Neutrons, and Cosmic Rays*.

1 A *coulomb* is the quantity of electricity conveyed in one second by the current produced by an electromotive force of one volt acting in a circuit having a resistance of one ohm — 96,494 coulombs are called a 'faraday.'

2 By the *electrostatic unit of charge* is meant the charge which, when placed on an object which is centimeter apart from a similarly charged object, makes these two objects repel each other with a force of dyne.

3 An *electron volt* is the energy acquired by any particle of unit electronic charge e , for instance by an electron or proton, in traversing a field which has a voltage of one volt.

Chapter 4

THE TRANSMUTATION OF ELEMENTS

FROM A CHEMICAL STANDPOINT, THE ELEMENTS FORM THE ultimate building materials of the universe. All bodies can be reduced to the elements, and they themselves are irreducible. Up to within recent times, it was an axiom among chemists and physicists that each element possessed a distinct individuality which could not be lost or changed. The alchemist's dream of transmuting elements, of changing a base metal into a noble metal, was considered fantastic and utterly impossible of achievement. While it is still impossible to change lead into silver and copper into gold, scientists have been brought face to face with the undeniable fact that *transmutation*, or the change *of one element into another*, actually occurs.

One type of transmutation is a *natural* transmutation, taking place among radioactive elements; the other type is an *artificial* transmutation, effected in the laboratory of the scientist by bombarding elements with certain kinds of rays. Since such elemental changes are of fundamental importance to the cosmologist for a correct understanding of bodies, both types of transmutation will now be discussed.

RADIOACTIVE SUBSTANCES

Radioactive substances are those which, through their own natural powers spontaneously emit alpha, beta, or gamma rays, or combinations of these rays. Radioactivity was discovered in 1896 by *Henri Becquerel*. He thereby put science on the threshold of far-reaching revelations concerning the structure and constitution of elements and atoms.

The radioactive elements are the heaviest of the elements in the periodic table. The first of these to become known were uranium, thorium, polonium, radium, and actinium. They were noted chiefly for their fluorescence, for the power of their rays to affect a photographic plate in the dark, and for the ability of these rays to penetrate apparently solid bodies. These elements soon became the object of intense research, and a new world opened up before the astonished gaze of the investigators. What chiefly interested the scientists in the beginning was the fact that the rays were of a *kind hitherto unknown*, that they were emitted *spontaneously* without any stimulus or energy supplied by outside agencies, and that their emission was *inevitable* in character. A closer study of the radiations revealed three types of rays, and they were named 'alpha,' 'beta,' and 'gamma' rays.

Very early in the history of radioactivity, *Madame Curie* made the generalization that radioactivity is a *unique property of the atom*. It was her contention that the energies manifested by these substances emanated from the interior of the atom, and in consequence of this the

atom itself must undergo a radical change, a chemical transformation, because the atom, which is the seat of radioactivity, cannot remain intact in the process; in other words, the evolution of so much energy from the very heart of the atom necessitates the *disintegration* of the atom. Her generalization, though attacked at the time, proved to be in perfect agreement with the facts as subsequently discovered. Radioactive elements disintegrate and, in doing so, generate new elements.

Once the truth of her conclusion was recognized in its full value, progress was rapid. An intensive study of radioactivity began, tracing the process of disintegration of these elements in all its ramifications. A number of new transmutational elements were discovered arising through disintegration, and one by one the vacant places toward the end of the periodic table were filled. It was also found that there are three main radioactive substances still in existence, from which all others derive their origin. These are: *thorium, uranium, and actinium*.

THE DISPLACEMENT LAW

The transmutation process of radioactive elements is always accompanied by the emission of intense *radiation* of alpha, beta, and gamma rays. Transmutation occurs only when alpha or beta rays are emitted; the emission of gamma rays never occasions the disintegration and consequent transmutation of an element. At first the relationship between radioactive transmutation and the emission of

alpha and beta rays was not understood. After a time, however, this relationship became clear.

In 1911 *Frederick Soddy* showed that the chemical nature of the element resulting from an alpha-ray change is always identical with that of an element *two places preceding* the parent element in the periodic table. This generalization was extended in 1913 by *K. Fajans* and *A. S. Russell* to the beta rays in such a manner that the chemical nature of the element resulting from a beta-ray change is always identical with that of an element *one place following* the parent element in the periodic table. To illustrate. Suppose the element with atomic number 92 emits an alpha particle; the product of this disintegration will have atomic number 90; if the element of atomic number 90 emits a beta particle, the product will have atomic number 91; if 91 emits an alpha particle, the resulting element will be 89; and so forth.

The importance of the discovery of this law can hardly be overestimated. The mere knowledge of the emission of an alpha or beta radiation was of itself sufficient to predict the group qualities of the resulting element, even before the element itself could be completely isolated and studied; and every prediction turned out to be true. It also enabled the scientists to assign the correct place in the periodic table for every element resulting from such radiations. Most important of all, however, was the solution of the mystery of the *essential difference between elements* and the reason of their *atomic number* or place in the periodic table.

RADIATION IN RADIOACTIVE TRANSMUTATION						
STAGES	URANIUM SERIES		THORIUM SERIES		ACTINIUM SERIES	
FIRST STAGE	α				α	
	β		α		β	
	β		β		α	
	α		β		β	
MIDDLE STAGE	α		α		α	
	α		α		α	
	α		α		α	
	α		α		α	
END STAGE	β		β		β	
	α	β	α	β	α	β
	β	α	β	α	β	α
		β				
		β				
		α				

Every alpha particle has a net charge of two units of positive electricity, namely, $+ 2e$. When an atom emits an alpha particle, the total positive charge of the atom is reduced by two units. By that very fact, however, its chemical nature is changed to such a degree that it is identical with the chemical nature of the element (if there be such an element) two places preceding it; its atomic number in the periodic table is thereby reduced by 2. When, however, an atom emits a beta particle, it loses an electron, for the beta particle is nothing but an electron with a unit charge of negative electricity; and in losing a unit charge of negative electricity, the atom acquires a net charge of one unit of positive electricity. The chemical nature of this atom is now identical with that of the element

(if there be such an element) of the next place following it. The conclusion is inevitable that the succession of atomic numbers or places in the periodic table is determined by a *single unit charge of positive electricity*, each element in this progressive list possessing, in the line of increasing weights, one positive charge more than its predecessor. No matter what the atomic weight of an element may be, its chemical *properties*, as represented by the atomic number, depend on its electric *charge*.

Having explained the Law of Displacement, we must now see how the law functions in the disintegration and transmutation of the radio-elements.

COMPARATIVE TRANSMUTATION

Radioactivity is always accompanied by the following events, which show that the changes involve a *real disintegration of the elemental atom*. Only a fraction of the element becomes unstable at any particular time; but this fraction represents a definite proportion of the total number of atoms of that element, and this fraction differs with the different radioactive elements. The expulsion of alpha particles always involves a loss of mass and a change of chemical properties, resulting in a new type of element. The expulsion of beta particles, though producing no change in mass, involves a change at chemical properties, also resulting in a new type of element. These new elements manifest an entirely different behavior to chemical reagents, when compared to the behavior of their parent elements; this is especially clear in the case of the inert

gases, radon, thoron, and actinon. Since there can be no question here of chemical compounds, it is obvious that the progressive loss of mass through the emission of alpha particles and the continuous change of chemical properties through the emission of both alpha and beta particles, resulting in a change of electric charge, must bring about a profound change *in the very atom itself*. The evolution of large amounts of energy in the process bears this out.

Each of the three disintegration series runs its own inevitable course, and no alteration in the chain of events has ever been discovered. No known chemical or physical agency can hasten or retard the process of transmutation. Each series has its peculiarities. Upon closer examination, however, a definite pattern emerges in the three independent series. All follow a remarkably similar line. This becomes evident when we trace the *sequence of alpha and beta radiations* in each series. A glance at the radiation chart shows this clearly. The middle stage is especially noticeable, inasmuch as each series has four alpha radiations in succession. The end of each series is also identical, except that one branch of the uranium series continues with two beta radiations and one alpha radiation. Each branch, however, ends with atomic number 82, that of the element of lead.

The products of the alpha and beta radiations, in so far as they affect the atomic numbers and atomic weights, can be seen in the chart of *comparative radioactive transmutation* (see chart). It will be noted that an alpha emission involves a loss of two atomic numbers and a loss of four units of atomic weight. On the other hand, a beta

emission leaves the atomic weight unchanged, but increases the atomic number by one unit. This results in numerous *isotopes* and *isobars*. Isotopes, though of different weights, are chemically identical, and thus occupy 'the same place' in the periodic table and have the same atomic number. For example, actinium X, mesothorium I, and thorium X are isotopes of radium, atomic number 88; actinon and thoron are isotopes of radon, atomic number 86; radium C, radium E, actinium C, and thorium' C, are isotopes of bismuth, atomic number 83, which is not radioactive at all. Isobars, as the term indicates, have 'the same weight' although they are chemically diverse; hence, they have different atomic numbers and occupy different places in the periodic table. A beta radiation, since it does not change the atomic weight, always gives rise to isobars. For example, uranium X₁, uranium X₂, and uranium II are isobars, with atomic weight 234; uranium Y and protoactinium are isobars, with atomic weight 231; mesothorium I, mesothorium II, and radiothorium are also isobars, with atomic weight 228. If we compare the end products of the three series, we find that the isotopic and isobaric elements are very numerous.

Some of these transmutational elements are so short lived and appear in such minute quantities, that it is almost impossible to determine their atomic weight. For some of them the weights given are not experimentally determined, but are deduced from the type of radiation according to the Law of Displacement.

HELIUM AND RADIOACTIVITY

From the very beginning, since the discovery of the radioactive elements, it had been noticed that helium made its appearance. This led to the conjecture that helium might be a product of radioactive transmutation. The conjecture became practically a certainty when it was found that the alpha particles had the *mass of helium atoms*, but with a *double positive charge*. Compared with the hydrogen atom, the helium atom has an atomic weight of 4, and an alpha particle always has a mass of 4 units of atomic weight. If, then, a helium atom could be shorn of two electrons, it would be an ion with a double positive charge and as such equivalent in every way to an alpha particle. Ramsay had already found helium in uranium and thorium minerals in 1902 it seemed natural to suppose that helium was a disintegration product of these minerals. Experiments were made in 1903 by *Ramsay* and *Soddy* with radium and radon. The results showed beyond doubt that helium was generated through alpha radiation, the spectrum of helium gradually becoming visible as the radon disintegrated. Since that time the transmutation of radio-elements into helium has been observed on many occasions. *Debierne* observed it in connection with actinium, *Mme. Curie* with polonium, *Boitwood* with ionium, *Soddy* and *R. J. Strutt* (Lord Rayleigh) with uranium and thorium. In 1909 *Rutherford* and *Royds* furnished direct proof that the alpha particles emitted by radon are identical with helium.

COMPARATIVE RADIOACTIVE TRANSMUTATION			
(The numbers below the elements are the atomic weights. Underscored names are listed in the Periodic Table.)			
Atomic Number	Uranium Series	Actinium Series	Thorium Series
92	URANIUM (I) (238)	URAN. II (234)	(ACTINO-URANIUM) (235)
91	α URAN. X _{II} (234)	β PROTOACTINIUM (231)	
90	β URANIUM X _I (234)	α URANIUM Y (231)	RADIOACTINIUM (227)
89	α IONIUM (230)	β ACTINIUM (227)	THORIUM (232)
88	α RADIUM (226)	α ACTINIUM X (223)	MESOTHOR. II (228)
87	α	α	α MESOTHOR. I (228)
86	α RADON (222)	α ACTINON (219)	α THORIUM X (224)
85	α	α	α
84	α RADIUM A (218)	α ACTIN. A (215)	α THORIUM A (216)
83	β RAD. C' (214)	β ACTIN. C' (211)	β THORIUM C' (212)
82	α RAD. C (214)	α ACTIN. C (211)	α THOR. C (212)
81	β RA. B (214)	β ACTIN. B (211)	β THORIUM B (212)
	α RAD. C'' (210)	α ACTIN. C'' (207)	α THORIUM C'' (208)
	β LEAD (210)	β LEAD (207)	β LEAD (208)
	α RAD. D (210)	α LEAD (206)	α LEAD (208)
	β (RAD. F) POLONIUM (210)		

All elements found on the same horizontal level, are *isotopes*. All elements having the same atomic weight, are *isobars*.

Inasmuch as alpha particles are helium ions with a double positive charge, it was a foregone conclusion that under ordinary circumstances they would not long remain in this ionized condition. Lacking two electrons, they would seek to capture stray electrons in their passage, thereby becoming helium ions with a single positive charge or entirely neutral helium atoms. Such is actually the case. Helium itself, of course, is not radioactive; it is a by-product of the disintegration process.

It is one of the oddities of nature that *potassium*, *rubidium*, and *tellurium* are also naturally radioactive. They

spontaneously emit beta rays of a comparatively soft type, but their radioactivity is so feeble that hardly more is known than that it does exist. *Neodymium* and *samarium* are now also classed among the naturally radioactive elements.

ARTIFICIAL DISINTEGRATION

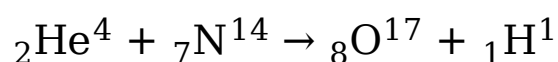
One of the remarkable features of radioactive transmutation is the high velocity and consequent penetrating power of the alpha, beta, and gamma particles, which is far in excess of that ordinarily obtained in a vacuum tube. Voltages of more than a million electron volts are required to effect such speeds. Since the natural disintegration of elements, due to the enormous interatomic energy of the radioactive elements, was an established fact, the question arose among scientists, whether it would be possible to produce an *artificial disintegration* of non-radioactive elements by *bombarding* them with high-speed particles. Nature supplied such projectiles in the alpha particles. It seemed probable that an atom, hit by such a powerful projectile, might be 'smashed' and lose one or the other of its component parts; in that case it should react like a radioactive element and suffer transmutation. Studies of the passage of alpha particles through matter supported this view. Usually these particles will pass through all material substances in a rectilinear course without deflection. Occasionally, however, the Wilson chamber reveals a wide-angle single scattering, which indicates that the alpha particle collided with the massive or nuclear

portion of an atom. The width of the 'angle depends on the mass of the atom struck, whether it be heavier or lighter than, or equal to, the mass of the alpha particle, the results following the ordinary laws of dynamics. In the case of a "head-on" collision there will be no angular deflection, but only a change in velocity depending on the ratio of the masses of the colliding particles and atoms.

Alpha particles of radium C', having a range of 7 centimeters, were shot through hydrogen; after a collision, the hydrogen ion attained a range of 28 centimeters. Nitrogen gas, under bombardment of alpha rays, yielded *hydrogen ions* with a range of 40 centimeters, a range considerably longer than that yielded by hydrogen gas itself. This fact proved that these excessively long-range hydrogen ions could not have their origin in any stray hydrogen atoms mixed with nitrogen; they were *protons* (hydrogen ions) knocked out of nitrogen atoms; their longer range being due to a larger evolution of energy on the part of the nitrogen atoms through collision with alpha particles. Had these protons been the result of a collision with stray hydrogen atoms, their range would not have exceeded 27 centimeters. Thus, it was experimentally demonstrated that *nitrogen*, a nonradioactive element, can be made to *disintegrate* under bombardment by alpha rays.

This disintegration of the nitrogen atom, effected by *Rutherford* in 1919, also brought a *transmutation* in its train. It produced *hydrogen* (proton) and an isotope of *oxygen* of atomic weight 17. In order to illustrate these and similar transmutations graphically, symbols and equations are used, giving the symbol of the elements involved, their

atomic number and atomic weight; the atomic numbers are placed as subscripts to the symbols, and the atomic weights as superscripts. The atomic numbers on both sides of the equation must result in equal sums, and so also must the atomic weights. Applying this formula to the Rutherford nitrogen transmutation, we obtain the following equation:



This equation reads: an alpha particle or helium ion (atomic number 2, atomic weight 4) collides with a nitrogen atom (atomic number 7, atomic weight 14). The alpha particle is stopped and captured by the nucleus of the nitrogen atom, merging with it; at the same time a proton or hydrogen ion (atomic number 1, atomic weight 1) is expelled, reducing the atomic weight of nitrogen by one unit (N^{13}); the four mass units contained in the alpha particle, all of which possess individually the mass of protons, unite with the mass of the nitrogen atom to form oxygen of atomic weight 17. *Oxygen* and *hydrogen* are thus seen to be a transmutational product of the bombardment of *nitrogen* by *alpha* particles. The equation of atomic numbers yields the same sum of ($2 + 7 = 8 + 1$) and the equation of atomic weights equals the same sum of 18 ($4 + 14 = 17 + 1$) The difference between this kind of disintegration and that of the radio-elements is apparent. Radio-elements disintegrate spontaneously in a natural process, through the evolution of inter-atomic energies. This internal process terminates in the emission of alpha and beta rays, and sometimes gamma rays, in such a

manner that there is a gradual loss of atomic mass in definite stages and proportions throughout the entire course of disintegration. In an artificial disintegration the process of transmutation is effected through a disruption of the elemental atom by means of an external agency of great force, and this takes place, in a general sense, with an equilibrium of mass.

Rutherford's method of bombarding nitrogen with alpha particles was applied successfully to a number of light elements, all yielding hydrogen particles. It is a curious fact that the odd numbered elements are subject to disintegration more readily than the even-numbered elements. The latter are far more stable than the former and constitute about 87 per cent of all the elements found in the earth's crust, although there are, of course, as many odd-numbered elements as there are even-numbered. Bombardment by alpha particles shows that odd-numbered elements tend to become even-numbered elements. The explanation seems simple enough. In such a bombardment the odd-numbered element loses a hydrogen particle or proton of unit charge; this makes it even-numbered, and it remains in this state if the bombarding alpha particle is not absorbed. If the alpha particle is absorbed, the element is still even-numbered, because the alpha particle has a positive charge of two. While it seems certain, or at least very probable, that all light elements emit hydrogen particles under bombardment, there is no doubt that the odd-numbered elements up to potassium suffer a definite disintegration, some of them expelling hydrogen particles of long range. The H-particles (i.e., hydrogen particles) of

aluminum, for example, have a range of 90 centimeters in air, manifesting a release of considerable energy within the aluminum atom.

TYPES OF ARTIFICIAL TRANSMUTATION

Although alpha particles were very suitable for bombardment purposes, their heavy mass and double positive charge formed a drawback. Scientists began to look about for new projectiles and new methods. However, not until they were able to construct transformers capable of giving electric currents with potential differences amounting to a million or more volts, could they hope for great success along these lines. This has been accomplished in the last decade, especially in the cyclotron of *Lawrence* and *Livingston*, and in the electrostatic generators of *Van de Graaf* and of *Tuве*, *Hafstad*, and *Dahi*, both producing voltages that run into the millions. The cyclotron, for instance, expels particles with a kinetic energy of 5.8 million electron volts. The results have been truly remarkable.

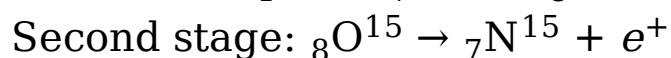
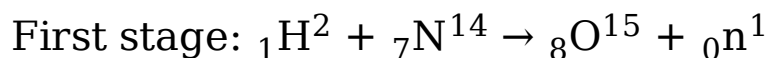
Crocker and *Walton*, in 1932, using a high-voltage discharge tube, bombarded lithium with hydrogen protons and obtained helium nuclei (alpha particles). The equation is ${}_1\text{H}^1 + {}_3\text{Li}^7 \rightarrow {}_2\text{He}^4 + {}_2\text{He}^4$. *Rutherford* bombarded lithium with deuterons (nuclei of heavy hydrogen, H^2), and also obtained two helium atoms. In this case, however, the effect must have been produced with the lithium isotope Li^6 , so that the equation is: ${}_1\text{H}^2 + {}_3\text{Li}^6 \rightarrow {}_2\text{He}^4 + {}_2\text{He}^4$. When

hydrogen is bombarded with deuterons, very heavy hydrogen, H^3 , is produced.

When deuterons bombard deuterons, they result in a proton and in a H^3 hydrogen isotope, according to the equation: ${}_1H^2 + {}_1H^2 \rightarrow {}_2H^3 + {}_1H^1$. Deuterons have a mass of 2; they consist of 2 proton masses. Since, however, they possess a single positive charge, it is evident that each deuteron must consist of 1 proton without an electron and 1 proton with an electron. The proton with an electron is a neutron. When, therefore, deuterons are used to bombard deuterons, it should be possible to obtain a *neutron* as the product of transmutation. The equation would be: ${}_1H^2 + {}_1H^2 \rightarrow {}_2H^2 + {}_0n^1$; the neutron would have a mass of one, but a zero charge (${}_0n^1$). Such is the case. In this way neutrons are obtained and can be used as projectiles. They have the great advantage of being uncharged. This gives them an excellent chance of penetrating into the core of the atom, passing through the 'electrical barrier' surrounding the core or nucleus, because they are neither repelled nor attracted, due to their electroneutrality.

One of the most peculiar transmutations occurs when nitrogen is bombarded with deuterons. The reaction is as follows: ${}_1H^2 + {}_7N^{14} \rightarrow {}_8O^{15} + {}_0n^1$. Not only is a neutron formed, but also an isotope of *oxygen with a mass of 15* (O^{15}). So far as is known, this isotope does not occur in nature; it is the direct result of man's ingenuity. Nor is this all. Far more remarkable is the fact that, after the bombardment with deuterons has ceased, 'induced radioactivity' sets in as a delayed action, causing positrons to emerge, the emissions lasting sometimes for hours after

the original transmutation. The reaction then takes the following course:



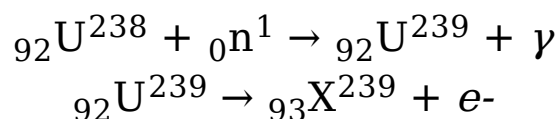
The positron (e^+) has a positive charge, but no (appreciable) mass. Through a process of spontaneous radioactivity, then, the unstable isotope of oxygen (O^{15}) reverts to an isotope of nitrogen of atomic mass 15 (N^{15}) by emitting *positrons*. This is unique. The natural radioelements emit negative electrons (beta particles), but never positrons.

Neutrons are now used extensively as projectiles in artificial disintegration and transmutation, and they have proved to be a most powerful weapon of attack in the hands of scientific investigators. Here is an example of transmutation through bombardment with neutron particles: ${}_0\text{n}^1 + {}_7\text{N}^{14} \rightarrow {}_5\text{B}^{11} + {}_2\text{H}^4$. In this instance nitrogen was changed to boron and helium (alpha particle). The reverse reaction to this also occurs, and then we have: ${}_2\text{H}^4 + {}_5\text{B}^{11} \rightarrow {}_7\text{N}^{14} + {}_0\text{n}^1$. An interesting case is that of 'radio-sodium,' where sodium simply captures the neutron and absorbs it: ${}_0\text{n}^1 + {}_{11}\text{Na}^{23} \rightarrow {}_{11}\text{Na}^{24}$. A different reaction, but with the formation of 'radio-sodium' as a result, has been obtained by bombarding sodium with deuterons:

${}_1\text{H}^2 + {}_{11}\text{Na}^{23} \rightarrow {}_{11}\text{Na}^{24} + {}_1\text{H}^1$. Sodium, when bombarded with deuterons, emits neutrons, protons, and alpha particles, and it also becomes radioactive; *Lawrence, Livingston*, and others, have proved this. Fermi has

obtained radioactive sodium from aluminum by bombarding it with neutrons, according to the formula: $_{13}\text{Al}^{27} + _0\text{n}^1 \rightarrow _{11}\text{Na}^{24} + _2\text{He}^4$. Many elements become radioactive through bombardment by neutrons, about 50 being listed by Fermi between fluorine and uranium.

Fermi, Amaldi, and their associates have put forth the claim that they have succeeded in producing an element heavier than uranium, by bombarding uranium with neutrons. The reaction is given as follows:



This would be element 93. The fact seems fairly well established. A number of Japanese scientists claim to have obtained element through bombardment of uranium with fast neutrons. Even element 95, it is claimed, has been obtained.

All in all, more than 60 elements have now been successfully transmuted by means of neutron bombardment. This is a truly phenomenal achievement, and the end is not in sight. One thing, however, seems quite certain: *it is impossible to form heavy atoms out of hydrogen*. If this is true, then the primordial element or protyle is not hydrogen.

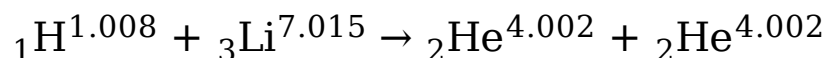
TRANSMUTATION OF MASS AND ENERGY

Many scientists of repute, deeply versed in the physics of the natural and artificial transmutation of elements, are

strongly convinced that in some reactions a *transformation of mass into energy, and of energy into mass*, takes place. This is a most daring hypothesis, but it is based on what appears to be fairly good evidence.

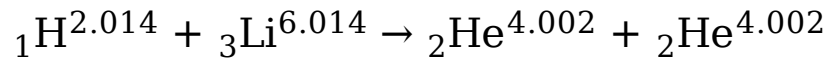
It will be remembered from foregoing sections of this chapter, that the lithium isotope of atomic weight 7 (${}_3\text{Li}^7$), when bombarded by protons (${}_1\text{H}^1$) gives rise to two helium nuclei or alpha particles (${}_2\text{H}^4$), according to the formula: ${}_1\text{H}^1 + {}_3\text{Li}^7 \rightarrow {}_2\text{H}^4 + {}_2\text{H}^4$. In a similar manner, when lithium of atomic weight 6 (${}_3\text{Li}^6$) is bombarded with deuterons (${}_1\text{H}^2$), it also gives rise to two helium nuclei or alpha particles; the formula in this case is: ${}_1\text{H}^2 + {}_3\text{Li}^6 \rightarrow {}_2\text{He}^4 + {}_2\text{He}^4$. The equation in both instances seems perfectly balanced; the atomic numbers add up to 4 on both sides of the equation, and the atomic weights or masses to 8.

These mass numbers, however, are only rough approximations, because they are given in whole numbers or integers. This was done for the sake of convenience. In reality, the mass numbers are *integers with fractions*, and when these more exact numbers are added together on both sides of the equation the *sums are not balanced*. Taking these exact numbers in the above-mentioned equations, this fact becomes apparent. The first formula then reads:



The mass numbers of the hydrogen proton and the lithium atom give the sum of 8.023, while the mass numbers of the two alpha particles or helium nuclei amount to 8.004;

this is a difference of 0.019 mass units in the equation, and this amount seems to be lost. Similarly, there is a lack of balance in the second equation:



On the left side of this equation we have the same 8.028, and on the right, after the transmutation, 8.004; here there is a difference of 0.024 mass units. What has happened? Provided the original mass numbers are correct, mass seems definitely to have *vanished*. If true, either the principle of the Conservation of Mass does not hold, or this mass must have been transmitted into something else. But into what could mass be converted?

Scientists claim that this loss of mass is due to the conversion of mass into energy. The mass of a body increases when its speed is increased. The mass numbers in the formulas represent the masses of these bodies at *rest*. Before the actual bombardment, the lithium atoms are 'at rest'; the masses on the left-hand side of the equation are, therefore, their 'rest masses. Due to the bombardment and the subsequent transmutation of lithium into helium nuclei, these helium nuclei acquire considerable kinetic energies; this is seen from the long tracks they make in the Wilson chamber. These energies have been computed. In the first of the formulas mentioned above, the energy of the nuclei has been calculated to be about 17 million volts, and for the second about 23 million volts. These energies must be added to the 'rest energies' locked in the 'rest masses of the lithium atom. It is fairly obvious that these kinetic

energies must be derived from the 'rest energies' of the lithium atom and not from the bombarding protons and deuterons, because the latter have energies which are at the most only one twentieth to one fortieth of the energies displayed by the helium nuclei. If, then, it is admissible to assume that mass can be transmuted into energy, the expenditure of energy on the part of the helium nuclei would account for their loss of mass. Is this hypothesis admissible? Can we find any experimental evidence to support this hypothesis? It would seem so.

It has been observed that photons are capable of effecting transmutations. If we designate the photon by the letter 'L' the bombardment of deuterons by photons results in the equation: $L + {}_1\text{H}^2 \rightarrow {}_1\text{H}^1 + {}_0\text{n}^1$. The deuteron disintegrates into a proton and a neutron, and the photon itself disappears. The photons used were gamma rays of a radioelement, and they possessed an energy of 2.6 million electron volts and a corresponding mass of 0.003. Inserting this mass of the photon in the equation, we obtain the following quantities: $L^{0.003} + {}_1\text{H}^{2.014} \rightarrow {}_1\text{H}^{1.009} + {}_0\text{n}^{1.009}$. The masses of the proton and the neutron add up to 2.017, while the mass of the deuteron, from which they originate, amounts to only 2.014. Since the parts cannot make a sum greater than the whole, the conclusion to be drawn from this transmutation is that the energy of the photon has been converted into mass, thus balancing the equation. In other words, when a proton and a neutron unite to form a deuteron, they lose 0.003 units of mass or 2.6 million electron volts of energy; and it takes this same amount of energy in absorption to separate them and to give to each

its original rest mass. If this is true, it explains why the atomic masses of the elements are not exact multiples of hydrogen as a standard, and it also explains why hydrogen has a mass larger than one-sixteenth of oxygen: protons and neutrons, in forming the atoms of elements, change in their energy content and therefore also in their mass.

A more direct proof of this type of transmutation is found in the disintegration of photons in pairs of electrons and positrons. The photon used has an energy of 2.6 million electron volts, while the total energy of the electron and positron is one million volts (500,000 electron volts for each), with an excess kinetic energy of 1.6 million volts to account for their speed and range after formation. This process has been observed and photographed by I. Curie and F. Joliot in a Wilson chamber. The photon itself leaves no track in the chamber, because it is uncharged; the electron and the positron, however, emerge from the same point and leave visible tracks enabling the investigators to compute their energies. Besides instances of this kind, cosmic rays produce veritable showers of pairs of electrons and positrons, thus lending valuable support to the interpretation placed by scientists upon this experimental fact.

Many scientists are, therefore, convinced that energy (light) can be, and actually is, converted into mass. Reversely, then, mass should also be transmutable into energy; and they see evidence of this in the loss of mass in the transmutation of elements, when these elements are bombarded by various kinds of particles.

One must not overlook the fact, however, that all this is *interpretation* of fact, and as such speculative. Then, too, mass numbers are *approximations*, not absolute quantities, and a different interpretation might possibly explain the facts just as well. The evidence is not conclusive.

CONSERVATION OF MASS AND ENERGY

If mass can be converted into energy and energy into mass, as outlined above, it is obvious that the principle of the Conservation of Mass and the principle of the Conservation of Energy will no longer stand in their old form. The total amount of mass in the universe will not always remain the same, nor will the total amount of energy remain the same. However, the total amount of mass plus energy would never change, even when mass is converted into energy and energy into mass. In consequence, many scientists, especially those following Einstein, merge the two principles into the one, fundamental principle of the Conservation of Mass-Energy. Other scientists, however, are inclined to be more cautious and conservative in this extreme simplification of nature and maintain mass and energy as irreducible, ultimate units of the physical world.

Philosophically, the conversion of mass and energy in a reversible reaction involves a most serious difficulty. Mass is the result of *matter*. Energy is not matter, but a *quality* of material bodies. Since photons are considered to be a form of pure energy, they should be conceived as devoid of matter. The conversion of energy into mass would thus

involve the *transformation of a quality into a substance*, namely into matter. This cannot be admitted.

Granting all the experimental facts, is it necessary to assume that the photon is 'pure energy'? It would seem not. Might not the photon have a *material carrier*, a material support of some kind? Physicists, of course, usually state that photons have *no mass*. This must not be taken too literally. They also state that electrons and positrons have no mass. What they mean is that this mass is *negligible*, because it is so small compared to that of a proton (1/1845). The electron is a *material particle* of definite mass. Like the electrons, photons exert pressure, have force of impact, disrupt atoms, and give acceleration to particles. As regards *mass*, they are of the order of electrons and positrons. Why, then, should it be necessary to assume that they are 'grains of pure energy' and not rather 'grains of quantified matter,' as Lucien Matte calls them?¹ He points out the fact that 'mass' and 'matter' are not identical concepts and that photons might very well be 'material' particles ('substances' in the philosophic sense) without having 'mass' (in the scientific sense). He offers the further suggestion that photons, under certain conditions, split into electrons and positrons. According to this view, electrons and positrons unite to form photons, and this would explain why photons are uncharged electrically and why in certain reactions, pairs of electrons and positrons appear. This opinion is, of course, speculative; but it seems plausible and it has the advantage that it evades the necessity of postulating a creation and annihilation of matter or energy or both.

The one great fact which has been established through natural and artificial transmutation is this: *The elements are not immutable*, and their change is effected through the loss or gain of subatomic particles, such as electrons, protons, neutrons, and alpha particles. The elements consist, therefore, of *atoms composed of subatomic particles* united in some sort of *structure*. Details of the structure of the atom, as conceived by the scientists, will be outlined in the next chapter.

SUMMARY OF CHAPTER IV

The transmutation of elements, or the change of one element into another, is a fact. Such transmutations are either *natural* or *artificial*.

1. *Radioactive substances*. They emit alpha, beta, and gamma rays spontaneously. Radioactivity is a unique property of the *atom*, involving the disintegration of the atom in the process. The three main radioactive substances are thorium, uranium, and actinium.

2. *The Displacement Law*. According to the Displacement Law, whenever an *alpha* change takes place, the resulting element has a chemical nature identical with that of an element two places preceding the parent element in the periodic table. Whenever a *beta* change takes place, the resulting element has a chemical nature identical with that of an element one place following the parent element in the periodic table. In an alpha change the positive charge of the atom is reduced by two units, and in a beta change the positive charge is increased by one unit. Hence, the chemical properties of elements and their place in the periodic table is determined by the *positive charge* of the elemental atom.

3. *Radioactive Disintegration*. *Thorium*, *uranium*, and *actinium* disintegrate into various new elements through alpha and beta ray emissions. Their courses are similar, though they differ in details. In their middle stages all are characterized by four successive alpha changes. All end in *radio-lead* of atomic number 82. An alpha particle, when

emitted, involves a loss of four units of atomic mass or weight, and two places of atomic number. A beta particle, when emitted, involves no loss of atomic mass, because it is an electron; it increases the positive charge by one, because it involves a loss of a unit negative charge.

4. *Helium and Radioactivity.* Alpha particles are helium ions of atomic mass 4 and + 2 charge. Helium is thus a byproduct of radioactive disintegration.

5. *Artificial transmutation.* It is effected through the bombardment of elements by subatomic particles, such as alpha particles, neutrons, protons, and also by bombardment with deuterons (heavy hydrogen ions). In some of these reactions positrons are emitted as a product. It is claimed that element 93 is also produced. Many elements, after bombardment, become radioactive.

6. *Transmutation of Mass and Energy.* Many scientists are convinced that some artificial transmutations involve a conversion of *mass into energy* and of *energy into mass*. Others disagree with this conclusion. Philosophically, this would necessitate the assumption that a quality (energy) could be converted into a substance (mass, matter) and a substance into a quality; this seems impossible. A photon, which is the energy in question, might possibly consist of quantified matter composed of an electron and a positron.

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1 *'L'Equation Reversible Entre Matière et Énergie en Regard de la Philosophie.*
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Marietti, Torino

Chapter 5

THE STRUCTURE OF MATTER

IN THEIR LAST ANALYSIS ALL BODIES, COMPOUNDS AND elements, are composed of atoms. The *atom* is considered to be the *fundamental unit* of all chemical substances. It is of vital interest to the cosmologist, therefore, to know what reputable scientists have to say concerning the structure of matter and particularly of the atom, in so far as the conservative interpretation of true facts warrants definite conclusions. It is outside the scope of this book to adduce all the evidential facts, argumentations, and calculations which scientists advance in support of their views; an outline of the general results must suffice.

THE STRUCTURAL ATOM

Formerly it was thought that atoms were solid bodies of uniform matter. This was the theory of *Dalton*. Modern physics has disproved this. *Atoms are complex entities*, consisting of negatively and positively charged particles. How do these particles build up the atom?

It is now accepted as certain that all atoms possess a *structure* which is characteristic for each element. This

conclusion is drawn from the periodic recurrence of definite group properties among the elements. The Zero or 0 elements are the natural points of division for these properties, and these Zero elements (helium, neon, argon, krypton, xenon, and radon) appear in the sequence of elements according to a distinctly mathematical plan. A fortuitous aggregation of electrons and positively charged masses could never account for the periodic recurrence of such definite properties between one Zero element and the next. The elements become progressively more massive as they proceed from hydrogen to uranium. Mass alone, however, cannot be the deciding factor of these sequences of group properties. For one thing, the masses (or weights) progress uniformly in a straight line, while the properties of the elements reappear between the Zero elements in cycles. Then, a difference of mass does not always entail a difference in elemental properties, as can be seen in the case of isotopes. Furthermore, the masses of the various elements overlap, and this could not happen if the masses decided the nature of the element. Finally, in a number of instances elements of higher atomic mass (weight) must be placed in the list before one of lower atomic mass, because of their chemical and physical group qualities; this is a plain indication that the mere number of particles constituting the atom does not decide the properties of an element. Yet it is the *properties* which distinguish one element from another. Since, then, the mere numerical increase of constituent particles does not account for the characteristic properties of the elements, it is legitimately concluded that the nature of the element is determined by the

configuration and arrangement of the component parts within the atom. In other words, *atoms have structure*. This structure must determine the existence of the various *kinds* of elements; and the *periodic similarity* of this structure must be the reason for the periodic cycles of properties which appear from one Zero element to another. This seems to be a logical explanation of the facts.

While it is fairly obvious that the atom must possess internal structure, this does not tell us much about what *sort of structure* exists in the atoms of the elements. The correct interpretation of this structure must explain the 'differences' which mark off one element from another and also the 'periodic similarities' which recur at definite intervals. Radioactivity shows that the elements differ among themselves because of a difference in their *positive* charges. When an alpha particle (with a $+2e$ charge) is emitted, the new element loses two places in the Table of Elements; when a beta particle (an electron with $-1e$) is emitted, the new element advances one place, because the loss of $-1e$ is equivalent to the gain of $+1e$. The loss of an electron, however, does not always bring about the birth of a new element. When elements are ionized,' they lose (or gain) one or more electrons; yet these elements retain their specific character and do not change into new elements. For example, hydrogen and helium become ionized by losing electrons, but they remain hydrogen and helium; the same is true of the other elements. Then why should the emission of an electron (beta particle) in radioactivity produce a new element? Evidently, the *position* and *function* of the electrons in the atoms are *not of the same*

kind in all ways, but depend on the internal structure of the atoms.

This much is certain: the electrons carry the negative charges of the atom, and the heavy mass carries the positive charges. By stripping an atom of one or more electrons, it becomes ionized (a positive ion); by adding one or more electrons, it also becomes ionized (a negative ion). There is, however, a definite *limit* to the number of electrons which can be taken from, or added to, an atom. It is obvious, therefore, that some electrons must be more closely united than others to the heavy, massive, positively charged portion of the atom, so that they always remain united. Ordinary ionization, then, occurs through the loss or gain of these 'loosely bound' electrons, leaving the 'elemental' character of the atom intact; in radio-activity, on the other hand, the emission of an electron (beta particle) must mean the loss of a 'closely bound' electron from the massive part of the atom. If all electrons were bound in the same manner to the general mass of the atom, having the same position and function, this great difference in the behavior of the atom in ionization and radioactivity is inexplicable. It is, therefore, assumed that the electrons taking part in the process of ionization must be *outside* the *massive part* and at some distance away: such electrons could be lost or gained without disturbing the 'elemental' character of the massive part. The loss or gain, however, of an electron in the massive part, since the latter determines the atom in so far as it is an element, would involve the disintegration and transmutation of the element itself, as observed in radioactivity. This means that the atom is

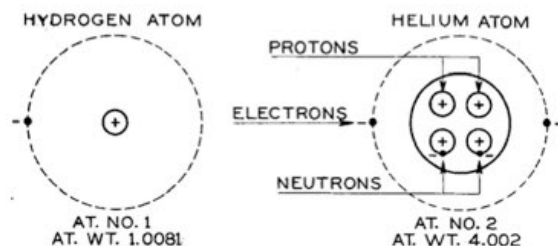
essentially a *nuclear atom*, with the heavy, positively charged portion as the central part or 'nucleus,' and with at least some of the electrons as having positions at some distance from the nucleus. It is thus easily understood how an alpha particle or other projectile, passing near an atom, can separate such outlying electrons from the nuclear mass, ionizing the atom but leaving it essentially intact.

From the relatively very few instances of collisions between alpha projectiles and atoms in the passage of the alphas through a foil, and also from the angle of scattering which some of these alpha particles suffered, *Rutherford* (1912—13) deduced that the atom could not be a compact mass, but a nuclear central mass of net positive charge with a field of negative electrons stationed at relatively great distances from it. This is the accepted view now, and it seems to agree admirably with all the correlated facts.

Hydrogen is the simplest of all elements. Whether disrupted in the discharge tube or through bombardment, the hydrogen atom has never been known to yield more than one electron of unit negative charge and one proton of unit positive charge. The proton, or nucleus, constitutes the mass of the hydrogen atom and apparently cannot be broken up in any way into simpler and smaller parts. It is, therefore, concluded that the hydrogen atom consists of these two parts only — one electron and one proton; together they form the neutral hydrogen atom. *Deuterium*, which is an isotope of hydrogen (${}_1\text{H}^2$), has double the mass of ordinary hydrogen. When a deuteron is bombarded with a photon, it yields a proton and a neutron ($\text{L} + {}_1\text{H}^2 \rightarrow {}_1\text{H}^1 + {}_0\text{n}^1$), each of which has the mass of an ordinary hydrogen

atom. To all appearances, the proton loses its electron, but the neutron retains the electron so that it remains electrically neutral. So far as is known, neutrons never lose their electron. This bears out the view that electrons may be either 'loosely bound' or 'closely bound' to its nucleus. Since the mass of the neutron is slightly less than that of the hydrogen atom, it is often called a 'collapsed hydrogen atom.'

Helium, the element next to hydrogen, has an atomic mass of 4. If it consists of 4 protons, it must also have 4 electrons, because it is electrically neutral in the normal state. Alpha particles are helium ions with a net positive charge of $+ 2e$. Two electrons, therefore, are missing. But a helium nucleus never loses more than 2 electrons. One must, then, conclude that 2 of its electrons are at a distance from the nucleus and can be lost, while the remaining 2 electrons are very closely united to the nucleus and cannot be detached. Its atomic number is, therefore, 2; and its atomic weight is 4. Furthermore, helium is an inert gas, with no tendency to unite with other elements to form compounds; it is a balanced, stable atom. On the other hand, hydrogen is a very active element, possessing a strong tendency to combine with other elements. Why the difference between hydrogen and helium? If the view of the nuclear atom is correct, this is to be expected. The hydrogen atom has a lone electron in its outer field, while the helium atom has 2 electrons in the nucleus and 2 in its outer field. The hydrogen atom is obviously unbalanced, while the helium atom is balanced. The model for both atoms is conceived to be as follows:



The diagram illustrates graphically the balanced, symmetrical state of the helium atom. It is a naturally 'self-satisfied' atom, with all its forces equalized. Such an atom will have no tendency to lose or accept electrons; it will be chemically inert. Through outside force it may be compelled to give up one or both of its outer electrons, and then it will be 'ionized' with a single or double positive charge. Alpha particles, as we know, are helium ions with a double positive charge; they always, however, tend to pick up stray electrons so as to balance the excess positive charge and thereby become electrically neutral and normal again. Since deuterium (heavy hydrogen) consists of a nucleus containing a proton and a neutron, it is highly probable that the helium nucleus consists of two neutrons and two protons.

The facts just given explain the differences between *atomic number* and *atomic weight*, as manifested in the Periodic Table. The net positive charge of the nucleus, after deducting the negative charges of the extranuclear electrons, gives the atomic number. Hydrogen has a net positive charge of 1 on its nucleus; it therefore has atomic number 1. Helium has a net positive charge of 2 on its nucleus, and it has atomic number 2. We arrive at the same atomic number by counting the number of electrons in the

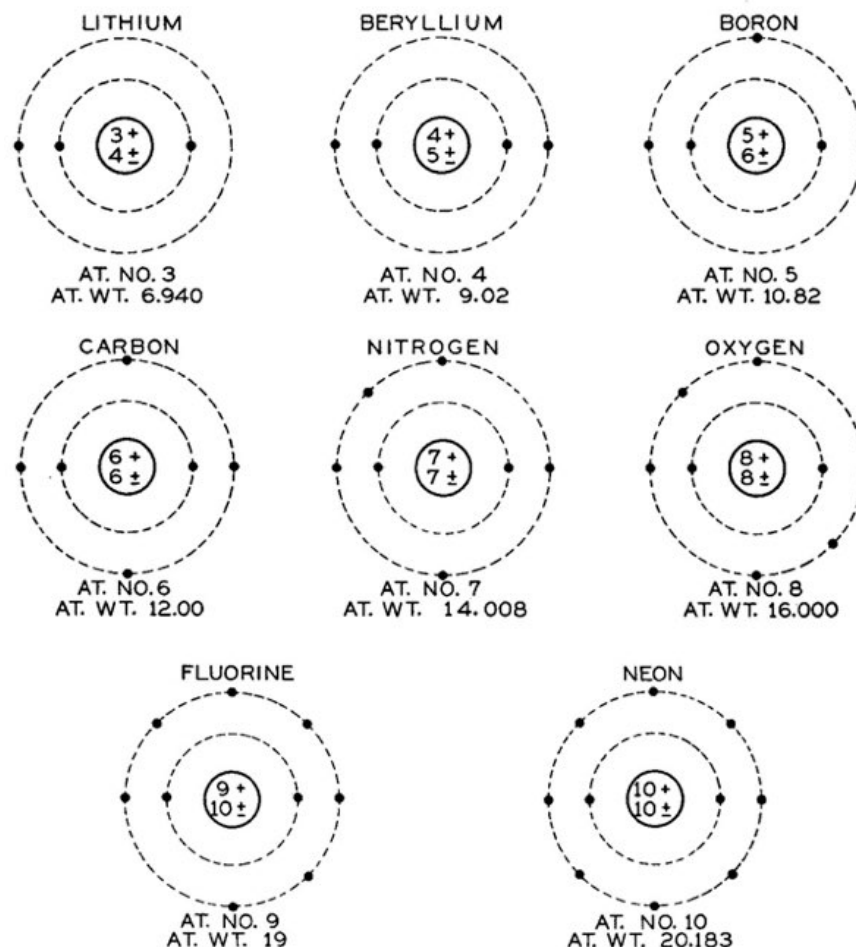
outer field; for hydrogen it is 1, and for helium 2. The character of the atom *as an element* is thus determined by the net positive charge of the nucleus. When the number of outer electrons is increased or diminished, it is a case of *ionization*; but when the nuclear charge is changed, through the loss or gain either of neutrons and protons or electrons (for example, alpha or beta particles) it is a case of the *transmutation* of an element. When a neutron or a number of neutrons (protons and electrons) are added to the nucleus, the mass is increased, but the net positive charge remains the same; we then have *isotopes*. When two atoms have the same mass, but one contains more nuclear electrons (beta particles) than the other, their net positive charge is different and they are also chemically diverse as elements; we then have *isobars*. It is thus seen that some of the most important phenomena of atomic physics receive a logical explanation from this theory of the 'nuclear' atom.

ELECTRONIC SHELLS

Let us now consider the *first short series* of elements between helium and the next inert gas, neon. There are seven members, lithium, beryllium, boron, carbon, nitrogen, oxygen, and fluorine. The properties change gradually from metallic to acidic and from electropositive to electronegative, as we proceed from lithium to fluorine. Neon, like helium, is again an inert element, with atomic number 10 and atomic weight 20. It will be noted that the difference between helium and neon is 8 places, so far as atomic numbers are concerned, and 16 units of mass, so far

as atomic weight is concerned; this alone would indicate that neon also must possess a stable, balanced, symmetrical structure like that of helium. The intermediate elements should possess a structure which leads in a gradual development toward neon. The structure of the atom, as indicated in hydrogen and helium, can be followed through in this series.

When *lithium* is ionized, it has a single excess charge of positive electricity; it becomes electropositive. But it never (or at most very seldom) loses more than one electron, although its nuclear net positive charge must be 3 units, since it has atomic number 3. Why should it lose only 1 electron, when there are 3 in the outer field? It is assumed that the 'helium arrangement' of 2 electrons, which represents a balanced system, is retained in the lithium atom, and the third electron is farther away from the nucleus. That is why, when ionized, lithium loses only this single electron. *Beryllium* has 2 such electrons; *boron*, 3; *carbon*, 4; *nitrogen*, 5; *oxygen*, 6; *fluorine*, 7; and *neon*, 8. In other words, helium is a balanced atomic system with 2 electrons in its outer ring, while neon needs 8 electrons in its second ring or 'shell' in order to be a balanced, symmetrical atom similar to helium. These atoms would then be built up as follows:



These models show how every atom in this series retains the helium configuration ('ring' or 'shell') and builds up a second shell, characteristic of this series, outside the helium shell. When the *octet* of electrons is completed, we have neon, a stable, inactive gas similar to helium; it is balanced and symmetrical, with all its internal forces equalized. The other elements are partly unbalanced and therefore tend to give or take electrons, so as to complete the octet system and thereby become *stable compounds*. Oxygen, for example, lacks 2 electrons in its second shell to complete the octet; it therefore readily unites with 2 atoms of

hydrogen (each of which has an electron) to form the stable compound water (H_2O). Lithium combines readily with fluorine; lithium gives its extra electron and fluorine adds it to its own 7, and the outer shell is filled, forming a stable compound. And so with other elements.

By an *electronic shell* physicists understand a definite field or region surrounding the atomic nucleus, in which the extranuclear electrons are located. These shells are designated by the letters K, L, M, N, etc. The helium shell, i.e., the one next to the nucleus, is the K shell. The one next to this is the L or neon shell. This is followed by the M or argon shell.

Between neon and argon we have the *second short series* of eight elements. Their properties are very similar to those of the first short series. Argon has atomic number 18 and atomic weight 39.944. Argon should, therefore, have a K shell with 2 electrons, an L shell with 8 and an M shell with 8 electrons completing another octet in this M shell, thereby having a stable, balanced, symmetrical atomic structure; it is, as we know, an inactive element like helium and neon. Sodium, according to the nuclear theory, has 1 electron in its M shell; magnesium, 2; aluminum, 3; silicon, 4; phosphorus, 5; sulphur, 6; and chlorine, 7. Their chemical activity is governed by the number of electrons they can give or take.

The *first long series* from argon to krypton has 18 elements. This indicates one of two things: either the N shell of krypton contains 18 electrons, or the N shell has again an octet and the remaining 10 are used to increase the number of electrons in the M shell. Physicists, generally

speaking, accept the latter view. They do this because of the chemical character of the 'interpolated' or 'transitional' elements found in this series. Certain phenomena of energy quanta, optical spectra, and X rays are of such a nature that physicists are convinced that different energy levels exist within each shell. The larger shells contain more energy levels than smaller shells and thus take on more electrons into these levels as the number of elements increase between one inert gas and the next. This would account for the close relationship of the transitional elements, of which the 'rare earths' beginning with lanthanum are a classic example. Thus, the K shell is assumed to have 1 level (10); the L shell, 2(20 and 21); the M shell, 3(30, 31, and 32); the N shell, 4(40, 42, 43, and 42); the O shell, 3(50, 51, and 52); the P shell, 2(60 and 61); the Q shell, 1(70).

Disregarding the distribution of electrons within the energy levels of the single shells, and taking each shell as a unit, the following table shows the results of this speculative arrangement of electrons in the various shells of the atoms of each element.

[chart is too intricate to reproduce and is outdated]

REVOLVING AND SPINNING ELECTRONS

The atom, if the nuclear theory is correct, has a very complicated structure. This structure becomes still more complicated with the assumption that the extranuclear electrons are not stationary but *revolve in orbits* around the nucleus and also have a spin.

Extranuclear electrons, physicists point out, cannot be stationary. An electromagnetic *attraction* exists between the positively charged nucleus and these negatively charged electrons. If stationary, these electrons could not remain at a distance from the nucleus, but would be drawn to the nucleus by an irresistible force; nucleus and electrons would be a compact mass, and all space between the nucleus and the extranuclear electrons would practically be eliminated. This, however, is contrary to all experimental data. What, then, offsets this irresistible attraction?

Physicists have taken their cue from the planetary system of the sun and its satellites. That the earth, for example, does not succumb to the centripetal gravitational attraction of the sun and become one mass with the latter, is due to the centrifugal force of its orbital movement around the sun; the one force balances the other. So, too, physicists argue, an orbital revolution of the extranuclear electrons is required to equalize the electromagnetic attraction of the nucleus. Electrons, therefore, *revolve in orbits* around the central nucleus.

A serious objection was raised against this view of revolving electrons. In describing such orbits, these high-speed electrons should lose energy through radiation, slow down in their velocity, and gradually spiral into the nucleus. *Niels Bohr*, however, showed that this result need not happen, if it be borne in mind that radiation takes place only in the event that definite *quanta of energy* be given up or absorbed by the revolving electron. If we assume various energy levels and energy states in the atom, it would be possible for an electron to revolve in certain orbits and at

certain levels without any radiation. If the electron is forced from its prescribed orbit, photons would be either absorbed or emitted in specified quanta of energy. The hydrogen electron, for example, has a normal orbit. But there are a number of other possible orbits in which it can move. When forced to leave its normal orbit and move in one of these, energy will be expended which manifests itself in the *spectral lines* of hydrogen. This would account for the numerous lines found in the spectrum of hydrogen and other elements. The frequency of the light emitted by the atom would then be the result of a change in the *energy state*; it equals the energy loss divided by Planck's constant h . Experiments and calculations bear out the Bohr theory that the electron emits either a whole quantum of monochromatic radiation or no energy at all. Planck's constant has the dimensions of energy x time, or momentum x distance, and this is termed an 'action.' So long, then, as an electron had an amount of action equal to h or an integral multiple of A , its orbit would be non-radiating or 'stationary'; this would be the natural and preferred orbit for this electron. Whenever, then, an electron makes a 'transitions from one level to another within the shells of the atom, a quantum of energy is absorbed or radiated, and a spectral line is the result. This is a beautiful explanation of the lines of the spectrum known as the *Lyman* series, *Balmer* series, *Paschen* series, and Brackett series.

Various considerations in connection with spectroscopy have inclined physicists to the view that even the revolution of the electrons around the nucleus will not suffice to

account for all the phenomena. The electrons must have a type of angular momentum different from that of its revolution in an orbit. And so the individual electron is conceived as having a *spin on its own axis*, similar to the revolution of the earth on its own axis. Now the atom bears a close resemblance to a solar system, and we have an 'astronomical atom.'

THE ATOM AND WAVE MECHANICS

Although the Bohr theory of the atom, with its electrons rotating around the nucleus as particles or 'charged mass points,' proved very successful in explaining many phenomena of atomic physics, it failed in some important points and seemed to lead to contradictory results. In the opinion of many physicists, it leaned too heavily on the Newtonian mechanics which apply to large bodies; it did not take into full account the behavior of electrons as 'waves.' The attempt has been made in more recent years to explain the atom on the basis of 'wave mechanics' rather than on the basis of 'body mechanics.' The idea of 'wave particles' or 'matter waves' was broached by *Louis de Braglie* in 1925; it was developed into a full fledged theory in subsequent years, notably by *Dirac*, *Schrödinger*, and *Born*. It is difficult to give an adequate presentation of this theory in a brief statement, but the main trend of thought is as follows.

Just as light appears both as particles and as waves, so also do the electrons. Mechanics proved incapable of informing us precisely where an electron could be found in

its orbit; it seemed, rather, to be spread over the entire shell or orbit. Perhaps, then, we should relinquish the idea of the electron as a minute particle or mass point and treat it as *electrical matter moving as a system of waves*. Electrons would not only have energy and impulse, but also the frequency and wave length associated with waves. The electron would indeed be a wave occupying the whole orbit, with crests and troughs following in definite sequence. Under ordinary conditions electrons can be regarded as particles, because their wave nature cannot be detected, due to their extremely short wave length; when, however, their wave length approaches that of X rays or light, their wave nature should be able to be detected, as it is observed in the very fine grating of a crystal lattice, where photons and electrons both show the characteristics of waves (diffraction and interference patterns). This applies not only to electrons. but also to molecules, because *Stern* and *Estermann* in 1930 obtained diffractions of hydrogen and helium. According to de Broglie, electrons as waves could be represented in the following manner:



Calculations show that each frequency has a definite value so far as energy is concerned; *n* other words, the quantization of the frequency involves automatically quantization of the energy. Hence, only energy levels of a definite value can exist in each atom, and these are characterized by whole numbers. Schrödinger's theory of wave mechanics has enabled physicists to explain many

phenomena of a spectroscopic nature much more satisfactorily than did Bohr's model.

It would be erroneous, however, to think that the theory of wave mechanics has solved all difficulties. On the contrary, new difficulties arise from the theory. We do not know, nor are we told, what it is that vibrates and acts like a wave. In the opinion of Schrödinger, we have a condensation and rarefaction of electric charge distributed over the length of the wave structure. When the vibration is strong at any point, there the density of the electric charge is strong; it is strongest at the loops and weakest at the nodes. The charge, therefore, is not concentrated in a mass point, the electron, but distributed in various degrees of density over the whole wave. The electron as a 'particle' has dissolved into a 'charge cloud'; instead of a solid corpuscle we have a denser or rarer fog.

There are serious *objections* to this view. If the charge of the electron 'cloud' is so distributed, the separate parts of the negative cloud of the wave electron must exert forces upon one another, and no account is given of such influences. Then, too, the theory apparently cannot explain the obviously corpuscular character of the electron streams as observed in the cathode rays; they do not behave like waves, but as projectiles and solid particles. Schrödinger contends that the cathode rays are not particles, but 'wave packets.' However, it seems impossible for such 'wave packets' to remain together and not be dissipated, so that the stability of bodies is rendered inexplicable. Apparently, therefore, the *dualism of the particlewave* still remains,

because wave mechanics cannot give an adequate explanation of the energy and impulse found in matter.

Max Born, in 1926, offered a solution for this perplexing problem of the particle and wave nature of matter. Consider light. In the wave theory, the higher the wave crest, the brighter the light. In the photon theory, the larger the number of arriving photons, the brighter the light. If we unite the wave and photon theories, photons and waves both exist, and the height of the wave crest would be the measure of the number of photons present; the photons would be present in the crests. Interference and cancellations of waves would occur without destroying the photons themselves. The waves control the motion of the photons and determine the average number of photons arriving at any particular point. The same hypothesis is made to apply to matter, to electrons and protons. We can never determine the exact position of particles; all we can know is their 'probability distribution' in space. *Heisenberg* had already enunciated his *principle of indetermination or uncertainty*, in virtue of which it would always be impossible to determine at any time the exact position and velocity of an electron: if the position is known, its velocity cannot be determined; if the velocity is known, its position cannot be determined.

Whatever we may think of these attempts to harmonize the particle and wave characteristics of matter, specifically of the electron and photon, it must be recognized that the problem has not been definitely solved. Neither theory dispels the darkness surrounding the atom. The difficulties are increasing, not diminishing.

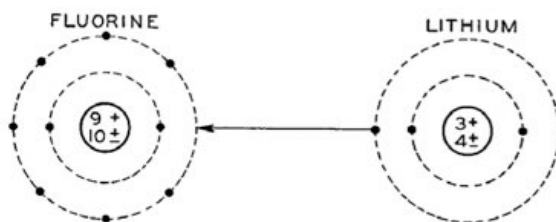
ATOMIC STRUCTURE AND VALENCE

The vast majority of atoms have no isolated existence. They combine with atoms of other elements to form compounds. But atoms do not form compounds at random. They unite in definite proportions, and more readily with those of some elements than with those of others. *Valency* plays an important part in chemical combinations.

Valency, or valence, is defined as the combining capacity of atoms in forming chemical compounds. Valence is measured in terms of hydrogen atoms. The hydrogen atom is the simplest of all and is a natural unit, since it consists of but a single proton and electron. It is a very active element and forms compounds with a large number of elements. The combining capacity, or valence, of elements is, therefore, measured by the number of hydrogen atoms with which they will combine to form a compound or which they will displace from a hydrogen compound. Any element which displaces, or combines with, 1 hydrogen atom is a *monovalent or univalent* element; one which displaces, or combines with, 2 hydrogen atoms, is *bivalent*; 3 hydrogen atoms, *trivalent*; 4, *quadrivalent*; and so on. For example, a chlorine atom will unite with 1 hydrogen atom (HCl); it is monovalent, i.e., chlorine has a valence of 1. Oxygen unites with 2 atoms of hydrogen (H₂O); it is *bivalent*, i.e., oxygen has a valence of 2. Nitrogen has a valence of 3, because an atom of nitrogen will unite with 3 atoms of hydrogen (NH₃). Again, magnesium will displace 2 hydrogen atoms from water and form MgO; magnesium thus has a valence of 2.

Carbon and sulphur will displace 4 hydrogen atoms, forming CO_2 and SO_2 both, therefore, have a valence of 4.

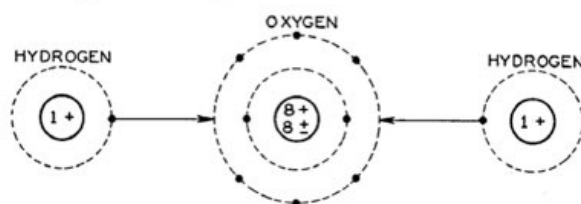
Valence is readily *explained* by the nuclear atom with its *orbital electrons*. The inert gases form a completely balanced structural system and are nonvalent. The other elements possess electrons in their outer shells in an unbalanced condition; they can give or take electrons and form compounds. Lithium, for instance, has one electron outside its 'helium shell.' On the other hand, fluorine has seven electrons outside its 'helium shell,' lacking one electron to complete the balanced and stable octet characteristic of neon, the element next to fluorine. Lithium, therefore, should be able to give its extra electron to fluorine; thereby lithium would resemble the stable helium, and fluorine would resemble the stable neon. United, they should form a stable compound; and this is actually the case. The chemical reaction between them is represented in the following diagram:



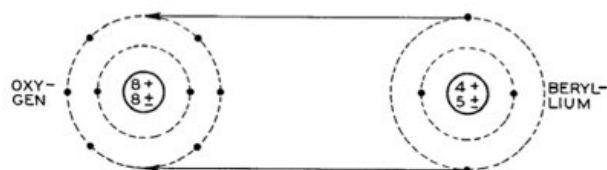
While both fluorine and lithium are monovalent, the difference between the two elements is obvious. Fluorine receives an extra electron to fill in its octet and thereby obtains a unit charge of negative electricity in excess; the fluorine atom becomes a *negative ion* (F^-), and the fluorine element is typically *electronegative*. Lithium, however, loses

an electron and thereby has a unit charge of positive electricity in excess; the lithium atom becomes a *positive ion* (Li^+), and the lithium element is typically *electropositive*. The basic or metallic elements are all electropositive in character, while the acidic or nonmetallic elements are all electronegative; and the reason is clear.

Oxygen has a valence of 2, because it can combine with two hydrogen atoms to form water (H_2O). This action can also be shown diagrammatically:



Oxygen lacks two electrons in its outer shell to complete its octet. The hydrogen atom has only a single electron to give away; it is monovalent. The oxygen atom, therefore, requires two hydrogen atoms to fill its outer shell; it is bivalent. One oxygen atom and two hydrogen atoms form a stable compound (H_2O).



Beryllium, however, is a bivalent element; one atom of beryllium will unite with one atom of oxygen to form beryllium oxide. The structure of the beryllium atom

explains this chemical fact; it has two electrons outside its 'helium shell' which it can release to the oxygen atom.

Valence, therefore, is determined by the number of *transferable electrons*, and the number of transferable electrons is determined by the number of electrons in the *outer shell* of the atom. Such electrons are called 'valence electrons,' and the transfer of such valence electrons is termed 'electrovalence.' Since the phenomenon of valence, both electropositive and electronegative, is typical of all elements according to their 'group properties,' it would seem in general to receive a neat explanation in the *structural arrangement* of the orbital electrons in the atom. This would also explain a great deal (though by no means everything) about *chemical affinity*, the natural tendency which elements possess of forming compounds with definite other elements.

THE CUBICAL ATOM

Chemists, who naturally seek a model of the atom which will explain chemical combinations and reactions, do not find it easy to harmonize the 'mad dance' of electrons in their orbits, as postulated by physicists, with the phenomena peculiar to their own field of research. Since the electrons are conceived as whirling in their respective shells around the nucleus at terrific speeds, it is difficult to understand how the *transfer of electrons* can take place from one atom to another and how a real compound can be formed.

In opposition to the 'astronomical' or 'planetary' model of the atom, *Gilbert N. Lewis* advanced the theory of the

'cubical' atom as more in agreement with chemical facts. According to this view, the electrons are arranged in concentric cubes around the nucleus. Since the cube has eight corners, the octet formation, with an electron at each corner, is the most symmetrical and balanced system possible for an atom. The completed cube, with its octet of electrons, finds its realization in the inert gases (with the exception of helium which, due to the small number of its electrons, has only two outer electrons). Atoms with incomplete outer cubes may either give away electrons to complete the octets of other cubes or accept electrons to complete their own octets; this explains ionization and positive and negative valence. When one cube of eight electrons is completed, the following series of elements forms another cubical shell of electrons, until at the end of the series the next inert gas forms a cube with eight electrons in its outermost shell.

Lewis considers the *pairing of electrons* to be even more important than the fact that atoms demand the *octet formation* in their outer shells. He points out that of hundreds of thousands of known substances very few have odd numbers of electrons in their valence shells; valence electrons are, therefore, almost universally found in a molecule to be multiples of two. Molecules with odd-numbered valence electrons possess singular properties; they are highly paramagnetic, very reactive, and tend to form molecules with electrons of even numbers. Such pairing neutralizes the magnetic field and eliminates the magnetic moment. Due to this pairing or coupling of electrons, Lewis later inclined to the view that the stable

octet is not so much a cube of electrons, but rather a *tetrahedron* possessing a pair of electrons at each of its corners.

The *chemical bond* between atoms in a molecule is nothing more nor less than a pair of electrons which two atoms hold jointly. Valence electrons may be *relinquished* by one atom and given to another, so that both atoms have a complete octet formation; or, valence electrons may be shared in common by the shells of two atoms. This would explain the 'polar' and nonpolar' types of chemical combinations. When two pairs of electrons are *shared*, there is a double chemical bond; when three pairs, a triple bond. This 'sharing' of electron pairs is styled *covalence* and is typical of nonpolar compounds.

Frederick Soddy, the eminent chemist, is convinced that the Lewis-Langmuir 'cubical' atom is a far more appropriate model for explaining chemical phenomena than the Bohr and Schrödinger 'astronomical' atoms in their highly commotional states. The former model meets the requirements of the chemist to a remarkable degree; the latter satisfies the physicist better for the solution of his particular problems. Both models are speculative and theoretical; perhaps neither model represents the actual condition of the physical atom as it exists structurally in nature. The atom is, and will probably always remain, a most mysterious entity.

CRYSTALLIZATION

Research into the properties and structure of crystals throws considerable light on the nature and arrangement of atoms and molecules in bodies. Although it is customary to divide bodies into 'crystalline' and 'amorphous,' it is now generally recognized that all elements and compounds crystallize under certain given conditions.

Crystals are inorganic structures arranged in well-defined *geometric forms*, with definite *planes*, *axes*, and *angles*, irrespective of their size. Every substance assumes a *specific crystal form* characteristic of this particular substance, and the angles between its faces are peculiar to this substance. The cube has perfect symmetry in all directions; but all crystal forms, of whatever kind, possess symmetry of structure. Furthermore, every crystalline substance possesses its own *characteristic physical properties*, such as elasticity, density, electric constants, and optical refraction. Distortion of form occurs in crystals, but this is due to impurities or to interference in their development on the part of adjacent bodies. The quantity of material on hand determines the size of crystals, but not their specific form or shape.

Many crystal substances are *dimorphous* and even *polymorphous*; that is to say, they are capable of assuming 'two forms' or 'many forms,' depending in most cases upon the fact whether they crystallize above or below a certain critical temperature. Examples of dimorphous substances are calcium carbonate (CaCO_3), and mercuric iodide (HgI_2). Examples of polymorphous substances are dioxide of titanium (TiO_2) which appears in three forms (anatase, rutile, and brookite), and ammonium nitrate which assumes

four different crystal forms as it passes from its melting point 168°C to 125°, to 83°, and to 32°. Even simple elements may assume different unrelated crystal forms, as in the case of sulphur and carbon; carbon, for example, appears as graphite and as diamond.

The regularity with which chemical substances assume crystalline form is, of course, not a fortuitous event; it is the result of a law operating among the molecules and atoms. It has long been held that the characteristic arrangement of molecules and atoms in the crystal is due to the forces present in the molecules and atoms themselves, and not to some outside force imposing a shape upon them. The *spontaneity of formation* is proof of this.

That the *atomic constitution* of the elements plays the predominant part in the form and type of crystals, is now admitted by all crystallographers. This is to be expected, since the forces emanating from, and operating in, the atoms are the very forces which control the combination of atoms into molecules and of atoms and molecules into crystals. For instance, potassium, rubidium, and caesium are alkali metals of Group I; they are very similar in chemical and physical properties. There is also a decided similarity in the crystal forms of potassium sulphate, rubidium sulphate, and caesium sulphate. The differences between them are found to be in proportion to their differences in atomic weight and number, as can be seen by replacing one element by others. The same applies to the selenates and atomic groups in general.

A crystal thus becomes an index to the inner constitution of the atoms which are the ultimate building stones of the

crystal and confirms the findings of physicists and chemists regarding the placement of elements in the periodic table.

Modern *X-ray technique* has greatly advanced our knowledge of the arrangement of molecules and atoms within the framework of the crystal. X rays reveal the inner structure of crystals. The 'Laue patterns' made by X rays on a photographic plate, after passing through a crystal, show definitely that crystals consist of a 'unit of pattern' multiplied over and over throughout the structure of the crystal, and each unit lies up against the adjacent unit with utmost precision, so that the relative position and distance of these units is the same everywhere in the crystal. Crystals are not absolute solids; the atoms, or molecules, are arranged in a *space lattice*, occupying the corners and forming *cells* of definite configuration ('unit cell'). Each cell contains the same number of atoms or molecules of the crystalline substance. Thus, each unit cell of rock salt contains one molecule, namely one sodium and one chlorine atom; the unit cell of diamond, two atoms of carbon; the unit cell of quartz, three molecules of silicon dioxide; and so forth.

By measuring the angle of reflection made by the incident ray and the set of planes in a crystal, scientists are capable of calculating with great accuracy the dimensions, volume, and form of the unit cell, the type of lattice, the mass with the number of molecules and atoms in the cells, and the relative disposition of these molecules and atoms. At any rate, such is their claim, and crystallographers produce much evidence to substantiate their findings. All in all, the intensive research work made on crystals and

crystallization confirms the findings of the physicists and chemists in other fields.

Much of what has been stated in this chapter on the structure of matter is scientific theory and not observational fact. It cannot be otherwise. Atoms and molecules have diameters which are shorter than the shortest wave length of visible light; hence, they can never be observed by the human eye. This does not mean that they are fictions of scientists. Our knowledge of these corporeal entities is acquired through indirect methods. This being so, scientific theory must naturally play a large part in the proper *interpretation* of the facts which science has succeeded in uncovering. And where there is theory, there may, of course, be a legitimate divergence of opinions as to the correctness of this interpretation. While this is true, it must be admitted by the impartial student that the general scientific theory of the structure of matter, and also of the structure of the atom, is based on data obtained from diverse and independent experimental sources; it should, therefore, be accepted, at least in its *fundamental features*, as highly probable. On the other hand, it must also be admitted that our factual knowledge of the atom and its structure is still very limited.

SUMMARY OF CHAPTER V

The atom is the fundamental unit of inorganic bodies.

1. *The Structural Atom.* Atoms are complex entities and possess structure. This is concluded from the periodic recurrence of group properties between one Zero element and the next. The difference existing among the elements is not due to their mass or number of particles, but to difference in their *positive charges*. Ionization and radioactivity show that some electrons must be closely united to the positively charged masses, while others are more loosely united. Hence, not all electrons have the same position and function in the atom.

From the small number of collisions between alpha projectiles and atoms, and from the angle of scattering of alpha particles, Rutherford deduced the *nuclear atom*. This atom consists of a central mass of net positive charge with a field of negative electrons stationed at relatively great distances from it. This theory of the 'nuclear atom' offers a good explanation of atomic weight and atomic number, of ionization and transmutation, of isotopes and isobars.

2. *Electronic Shells.* The arrangement and position of the extranuclear electrons in shells explains the existence of electropositive and electronegative elements, of the inactive Zero elements (helium, neon, etc.), and of the periodic recurrence of group properties in the Periodic Table. The completion of an octet of electrons in the outermost shell gives rise to a new Zero element.

Within each shell, physicists claim, there must be a definite number of energy levels.

3. *Revolving and Spinning Electrons.* In order to account for the fact that electrons are not drawn completely to the positively charged nucleus, due to their electromagnetic attraction, Bohr assumes that the extranuclear electrons must revolve in *orbits*. The transition of an electron from one orbit to another would demand the emission or absorption of a quantum of energy; this accounts for spectral lines. Various considerations in connection with spectroscopy have also inclined physicists to accept an individual *spin* in the electron. More recent theories attempt to harmonize this 'astronomical atom' with *wave mechanics*.

4. *Atomic Structure and Valence.* Valency, or valence, is the combining capacity of atoms in forming compounds. It is measured in terms of hydrogen atoms; the number of hydrogen atoms with which other atoms will combine to form a compound or which they will displace from a hydrogen compound, determines their valence. The orbital electrons are the valence electrons. These electrons can be transferred from one atom to another, accounting for electropositive and electronegative valence, for group properties, for affinity between elements, and for the formation of chemical compounds.

5. *The Cubical Atom.* Chemists are not quite satisfied with this commotional dynamic atom. Lewis advanced the theory of the 'cubical atom' as more in agreement with chemical facts. According to this view, the electrons are arranged in concentric cubes around the nucleus; in the

completed cube the octet of electrons would be such that one electron is situated at each corner of the cube. Due to the 'pairing' or 'coupling' of electrons, Lewis later advocated a tetrahedral form for the atom, instead of the cubical form.

6. *Crystallization.* Crystals are inorganic structures arranged in well-defined geometric forms, with definite planes, axes, and angles, irrespective of their size. Every substance assumes a *specific* crystal form, possessing characteristic physical properties, determined by the internal forces of the atoms and molecules. Atoms and molecules are arranged in a *space lattice*, with unit *cells* of equal dimensions.

PART II

**THE GENERAL PROPERTIES OF
BODIES**

Chapter 6

QUANTITY AND EXTENSION

RECENT INVESTIGATIONS INTO THE PHYSICAL constitution of inorganic bodies have revealed many interesting and important facts. There are about 92 distinct elements or types of atomic bodies. Atoms are themselves composed of subatomic particles, namely, electrons, positrons, protons, and neutrons. Electricity is a concomitant feature of all matter. The mystery of electricity, however, has not been cleared up, because we do not know wherein consists the intrinsic difference between positive and negative electricity. While there is still very much to investigate, we have learned that a definite minimal quantity of electric charge is bound to a definite minimal quantity of matter. These quantities, though exceedingly small, possess a distinctly measurable magnitude.

This brings us to the consideration of a property of all bodies which is fundamental and universal in character — *quantity* and *extension*. Closely allied to the concepts of quantity and extension are the concepts of *place* and *space*, *motion* and *time*. These will now be treated at some length.

EXPERIENCE OF QUANTITY AND EXTENSION

Bodies occupy space. That is to say, they have length, width, and depth; they are spread out in three dimensions, and these dimensions can be measured in units or fractions of centimeters, inches, or of whatever standards of measurement we choose to employ.

Our experience of dimensions is based on the commonplace and scientific *observation of our senses*, particularly those of sight and touch. Sight reveals at least two dimensions, length and depth. Everything we see is spread out, with parts which are right and left, up and down; all have surfaces which are horizontal and vertical. The sense of touch, however, reveals most clearly the triple dimensions of a body. Man is intuitively aware through touch of three dimensions in his own body. Movement of the hands over one's own body manifests surfaces which have length, width, and depth. Our own body is recognized as something which belongs to our being. That, however, is not all. Contact manifests the presence of 'other bodies' which do not belong to our being but have a being distinct from our own. They are perceived to have an existence and an entity as real and as actual as our own body, even though they form no part of it. The desk at which I sit and write, the house in which I live, the street over which I walk, the buildings which I visit — all are observed to possess the common three dimensions. They have *extension, quantity*.

We also observe quantity in a different way. There is quantity in the *degrees* in which physical realities appear, expressing a 'more-or-less' of something. Temperatures are

warmer or colder, weights are heavier or lighter, electric currents are stronger or weaker, hurts are more painful or less painful, and so forth. Observations of such a kind involve the concept of quantity.

Then, too, we observe quantity in the *numbers* of concrete objects. We see twenty people in a room, ten houses in a row, five trees in a field, two automobiles passing down the street, a single dog asleep on a doorstep, etc. Numbers always imply quantity.

Scientific observation is not of an order different from that of everyday life; it rests ultimately on the senses, and these are alike for all men. Scientific observation, however, has enlarged the field of research through the use of such instruments as the telescope, the microscope, the spectroscope, the thermometer, etc., thereby obtaining a more refined and critical knowledge of many things which lie beyond the ken of the unaided senses. Much of this scientific knowledge is the result of more accurate measurement. To measure a thing is, for many scientists, almost the same as to know a thing. It thus happens that the quantitative side of material things is often the sole object of research in scientific investigation. At any rate, scientists readily acknowledge that all bodies are affected by quantity as a fundamental property of physical nature; quantity is taken by them more or less for granted.

The philosopher must, therefore, examine 'quantity' and 'extension,' in order to acquire a deeper knowledge of these realities.

CONCEPT OF QUANTITY AND EXTENSION

Strictly speaking, *quantity cannot be defined*. In order to give a true, philosophical definition of it, one would have to define it by means of *genus* and *specific difference*. The genus must express that essential part of the subject which it has in common with other species in the same class, and the specific difference must express that essential part of the subject which distinguishes it from every other species under the same genus; together, the genus and specific difference express the complete essence of the subject defined.¹ The only concepts which could possibly be used as a genus in the definition of quantity would be the concepts 'accident' or 'being,' and such a genus must be predicated of its members in an identical sense, i.e., univocally. That, however, is not the case. The concepts 'accident' and 'being' are not a true genus; their meanings are predicated of the class concepts under them only in an analogical, not in a strictly univocal, sense.² Hence, it is impossible to give more than a descriptive definition of it.

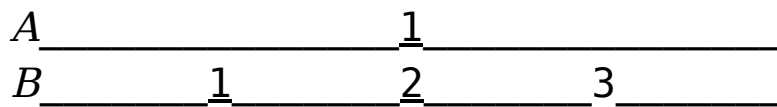
Aristotle, in his usual compact and felicitous manner, defines a quantum (something that is 'quantified,' or possesses 'quantity') as *that which can be divided into its inherent components, each of which* (after the division) *is a single and complete whole*.³ It should be noted that Aristotle's definition is frankly descriptive. It defines a *quantum* or concrete reality which possesses quantity, rather than 'quantity' itself; and it defines it by means of 'divisibility,' which is a resultant of quantity. He could, of course, have defined 'quantity as the property of a thing in

virtue of which it can be divided into its inherent components, each of which is a single and complete whole'; but this abstract form does not change the definition itself.

Let us analyze Aristotle's definition. He says that a *quantum* or quantified reality is 'that which can be divided.' Since it can be divided, it is a whole which is *divisible*; being merely divisible, before the division it is as yet *undivided*: it is a whole which is as yet undivided, but capable of being divided, into its components. These components cannot be present in the whole as *actual* parts, otherwise the division has already taken place, and the thing would no longer be a 'whole capable of division.' In the quantified whole itself the components can only be *potential* parts which become actual only after division. In other words, a thing is said to have quantity, when it is actually one, a unit, an undivided whole; it is, however, potentially multiple, so that after the division the original whole becomes two or more units, each of which is now an undivided whole for itself.

An example will clarify this. A line six inches in length does not consist of six distinct lines in a row, each of which is one inch long; on the contrary, it is a single line, a unit, an undivided line. If we cut this line equally in two, we have two lines of three-inch lengths; if we cut it into three equal parts, we have three lines of two-inch lengths; if we cut it into six equal parts, we have six lines of one-inch lengths; if we cut it into twelve equal parts, we have twelve lines of half-inch lengths. Before the division the line has neither two, nor three, nor six, nor twelve 'actual' parts, because it is simply *one line*; it is, therefore, an undivided whole. Since, however, it is divisible into any of these lengths,

these various lengths are ‘potential’ parts present in the line as a whole; the line is thus seen to be *potentially multiple*, though actually one. After the division, the original single line results into two or more lines, each of which is shorter in length than the original; but each one is again a line for itself, a complete and undivided whole line. The following illustration shows this plainly.



Here we see that *A* is one, a unit, a complete whole, an undivided but divisible line. On the other hand, *B*, after the division of *A* has been made, is actually three lines, each of which is again a single and complete whole, an undivided but divisible line, of the same kind and nature as the original line.

We thus see the truth of Aristotle’s definition, that a quantum is that which is divisible into its inherent components, each of which is a single and complete whole. Two things are required for a thing that is said to be affected by quantity: first, the parts or components into which it can be divided must be present in it before the division, so far as their *reality* is concerned, though they are not there formally as parts; second, these parts or components must be such that, once the division is actually made, they themselves now exist as single and complete *wholes* of the same kind as the original whole from which they derive their origin.

KINDS OF QUANTITY AND EXTENSION

Quantity can be classified in various ways, depending on the difference of viewpoint.

Continuous and Discontinuous Quantity. Quantity is said to be 'continuous,' when it is uninterrupted in its being, so that the components within it are united by *common limits* or *boundaries*. The components are not divided from one another, each having limits or boundaries of its own; they have no limits or boundaries except those of the whole to which they belong, and they are thus united within and by the common limits or boundaries of the whole. For example, the parts of a line have no limits within the line, but are bounded only by the extreme limits of the whole line itself; everything contained within a sphere has no limits inside the sphere, but is bounded solely by the outside limits of the sphere as a whole. If the components of a line or a sphere had boundaries of their own, there would not be a line and a sphere, but a number of lines and segments of a sphere, each possessing a distinct entity. The components of a continuous quantity, therefore, are not an actual multitude of realities in juxtaposition, but one reality; they form an actually undivided, though divisible, whole. *Aristotle* defines a continuous body as one 'whose extremes (limits) are one.

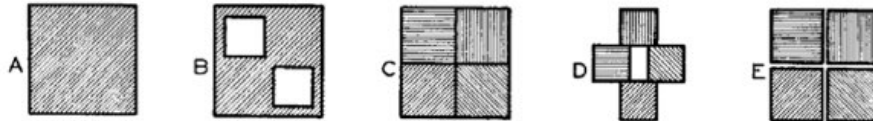
A *discontinuous* or *discrete* quantity is a quantity which consists of components, each of which is an entity for itself, with its own complete limits or boundaries; together, they form some sort of unit or whole in a wider sense. There are two kinds of discontinuous quantities: contiguous and separate. A *contiguous* quantity is one whose components

are in contact at their boundaries. Examples are: billiard balls touching each other; two boards nailed together; the wheels of an automobile and the axle; the human body and the clothes enveloping it; a house and the air surrounding it; the pages of a closed book. A *separate* quantity is one whose components are at a distance from one another and are united by some other intermediate reality, so that their boundaries are not in immediate contact. Examples: a complex of buildings belonging to the same institution; the bricks of a wall united by mortar; a number of cars forming a train; a group of soldiers lined up as a squad or company; a multitude of separate flowers arranged in a design. In these and similar instances there is a definite unit or whole, but each component is a distinct quantity for itself, having its own individual limits or boundaries. The result is not a continuous quantity, but simply a *group* of wholes united into a looser quantitative whole. *Numbers* are discrete quantities.

Continuous and contiguous quantities may be *perfect* or *imperfect*. They are perfect, when they are uninterrupted throughout their entire reality; imperfect, when they are partially interrupted. A solid block of material, for example, is a perfect continuous quantity, and so, too, is an unbroken surface; but a porous block and a surface with perforations through it are imperfect continuous quantities. Two surfaces, touching each other over their entire area, are perfect contiguous quantities, but two surfaces, touching each other over only a part of their adjacent area, are imperfect contiguous quantities. Separate quantities, since they do not touch each other, are always perfect separate

quantities; if they touched at any point, they would be contiguous, not separate, quantities.

There are, consequently, five possibilities concerning the quantities just mentioned, and they are illustrated in the sub-joined diagrams:



A, represents a perfect continuous quantity; *B*, an imperfect continuous quantity; *C*, a perfect contiguous quantity; *D*, an imperfect contiguous quantity; *E*, a (perfect) separate quantity.

Dimensive, Intensive, and Successive Quantity. *Dimensive* quantity is a quantity of extension, of magnitude. Lines, surfaces, and solids belong to this class, because they have dimensions in one, two, and three directions. Any object that occupies space has *dimensive* quantity. Continuous and discontinuous quantities, if they refer to areas, are of this type. *Intensive* quantity is a quantity of degrees, inasmuch as there is an increase or decrease of intensity present. Light, action, heat, electricity, magnetism, and most qualities and energies, admit of an increase or decrease in their intensity. *Successive* quantity is a quantity comprised of components which follow one another in sequence. Motion and time are of this character; the elements of motion and time do not coexist simultaneously, but successively, one element immediately following the other. In order to cover these various types of quantity, we

may describe quantity in general as that *property of a thing by virtue of which measure or number or division is applicable to it*.

What interests the philosopher particularly, is the *nature of a continuum*, i.e., of a reality possessing continuous quantity, continuous extension. Quantities which are discontinuous, whether contiguous or separate, are ultimately composed of *continua* either in contact or at a distance. Hence, if we understand the nature and properties of continuous extension, we also understand the nature and properties of contiguous and separate quantities. Motion and time will receive special treatment in a subsequent chapter.

DIVISIBILITY OF A CONTINUUM

The first problem before us relates to the *divisibility of a continuum*. A continuous quantity, as we have seen, is conceived as an unbroken and uninterrupted extensive whole which is undivided but divisible; it is actually one, but it is also potentially multiple, inasmuch as it can be divided into multiple units. Divisibility presupposes components in the single and complete whole. A thing is said to have *indivisibility* when it does not contain components into which it can be divided. Indivisibility may be either physical or metaphysical. It is *physical*, when there is a natural limit to the divisibility of a (physical) body, due to the absence of means or instrumentalities capable of effecting further division. Such, for example is the present impossibility for the physicist of dividing an electron or proton into smaller

portions. It is *metaphysical* or *mathematical*, when the thing in question does not contain entitatively diverse parts into which it could be divided; since there are no parts into which the thing could be divided, divisibility would involve a contradiction in terms. From the standpoint of extensive quantity, a mathematical *point* is indivisible, because it has no parts and is unextended; it is rather the limit and negation of extension. While no one questions the fact that a material body in concrete nature consists ultimately of parts which are 'physically indivisible' (electrons, protons, etc.) the problem is whether the ultimate extended bodies are also 'metaphysically indivisible.' In other words, taking extension *absolutely and simply* as a continuous quantity, do we ultimately arrive at parts which are metaphysically and mathematically indivisible, or can division go on interminably ad *infinitum*?

Naturally, if a *continuum* is divisible, it must somehow consist of parts; where there is divisibility, there must be some sort of composition. *Zeno*, a philosopher of Flea in ancient Greece (born about 490 B.C.) maintained that every *continuum* is ultimately composed of parts which are mathematically indivisible, i.e., points devoid of all extension; hence, a *continuum* is not infinitely divisible. *Aristotle* (384—322 B.C.) defended the view that continuous extension as such is infinitely divisible, so that it is impossible to arrive at the limit of mathematical division. Some more recent philosophers, as *Leibnitz* (1646—1716), *Boscovich* (1711—1787), *Fechner* (1801—1887), and others, claimed that extended realities consisted ultimately of unextended and indivisible parts, which occupy a certain

field of space through their force and can thus be said to be virtually, though not actually, extended; in this way they attempted to account for the fact of extended bodies and to obviate the necessity of an infinite divisibility.

We follow Aristotle and contend that a continuum, considered purely and simply as an extended quantity, is *infinitely divisible*, in a mathematical sense, *into proportional parts*, i.e., into parts which are halves, thirds, fourths, etc., of the original quantity. It should be obvious that it is impossible to divide extension infinitely into centimeters, meters, kilometers, or similar divisions based on some standard unit of measurement.

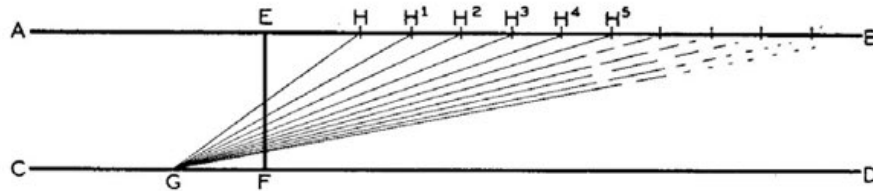
PROOF OF INFINITE DIVISIBILITY

If continuous solids, surfaces, and lines were not infinitely divisible, it could only be because they are composed ultimately of indivisible components. Were these ultimate components extended in any way, they would again consist of components into which they could be divided; in that case they would not be indivisible components. The only reason why the ultimate components of a continuous quantity can be said to be indivisible is, because these ultimate components themselves have no parts and are unextended; but such entities are, by definition, *mathematical points*. Now, mathematical points have no extension. Since the individual points have no extension, any sum of points, even a million or a billion or any other amount, cannot have extension. Consequently, no sum of mathematical points can possibly form a line, or a surface,

or a solid. If, then, a continuous quantity (line, surface, solid) were conceived to consist ultimately of indivisible, unextended components (points), no quantity with a continuous, divisible extension could ever result. But the supposition is, that there is such a reality as a continuum. Consequently, a continuum cannot consist ultimately of indivisible, unextended points. Hence, since the division of a continuous quantity can never reach indivisible, unextended points without parts, the components into which a continuous quantity can be divided will always be extended components. But extended components, not consisting of points but of components with parts, can again be divided into smaller components or parts, *without ever arriving at indivisible points*. The divisibility of a continuous quantity, therefore, can go on without limit. Divisibility without limit, however, is infinite divisibility. Hence, a continuum possesses infinite divisibility in a metaphysical or mathematical sense.

This can also be proved *mathematically*. Draw two lines, AB , and CD , parallel to each other. Extend a line EF from AB to CD , forming right angles to the parallel lines. Draw a line GH , starting from G to the left of EF on the line CD , and arriving at H to the right of EF on the line AB . The line EF will now be intersected. Draw other lines from G to H^1 , H^2 , H^3 , etc. Each line will intersect EF . Since the line AB can be extended infinitely, and since a line from G can be drawn mathematically through EF to AB along the entire length of AB , there is no limit to the divisibility of the line EF . This divisibility would cease only when the line AB coincides and coalesces with CD . But the lines AB and CD are parallel and

can never coincide and coalesce. Hence, the divisibility of the line EF can never reach a limit; it is limitless. But a limitless divisibility is infinite divisibility. Consequently, a continuous line (and the same applies to a continuous surface and solid) has *infinite divisibility*.



This shows that the division of the line EF , as indicated, can never arrive at an unextended portion or mathematical point. The portions, after each successive division, become smaller and smaller, but each remaining portion is *still extended* and therefore still divisible.

These and similar arguments definitely dispose of the contention that continuous quantity consists ultimately of indivisible and unextended points. However, to refute *Zeno* and his adherents more directly, consider the following argument. If his contention were correct, that every continuous quantity is composed of indivisible, unextended points, the conclusion is inevitable that *difference in speed is impossible*: A racing automobile could travel no faster than a snail, and a snail could travel no slower than a racing automobile. In traveling in a straight line, the automobile cannot cover more than one point in one moment of time, because the indivisible point is the smallest portion of space and the indivisible moment is the smallest portion of time. But neither can the snail cover *less* than an indivisible point

of space in an indivisible moment of time. Consequently, both the racing automobile and the snail cover neither more nor less than one point of space in one moment of time; hence, their speed must be identical. That, however, is patently untrue. Therefore, the original supposition is wrong, that a continuous quantity is composed of indivisible, unextended points. As a matter of fact, if this were true, *all motion would be impossible*. A point, being unextended, occupies no area; and a million points occupy no area. Hence, in traveling over points, the supposedly moving object covers no area by passing from point to point. Motion, however, necessarily implies that the moving object covers a certain area in a definite direction. Motion is an undeniable fact. Consequently, areas (i.e., continuous quantities consisting of lines, surfaces, and solids) cannot be composed ultimately of unextended points.

The advocates of *virtual extension* are no more successful than Zeno in the solution of the difficulty which they find in the aristotelian *continuum*. According to their view, the infinite divisibility of extended quantity, as defended by Aristotle, involves the idea of an actually infinite number of parts in every extended body; an actually infinite number, however, is contradictory and therefore impossible. On the other hand, they admit that absolutely simple and unextended points can never account for the extension which is, to all appearances, present in bodies. To obviate this double difficulty, they postulate the existence of 'virtual extension'; the ultimate components of bodies are indivisible and unextended points, but their force extends into the intervening and surrounding space, and it is thus

that extension arises. This theory, however, will not solve their difficulty. Three items enter into their problems: unextended *points*, *space*, and *force*. Now, this intervening space is either continuous in an aristotelian sense, or it is not. If it is continuous, they contradict themselves, because they accept the aristotelian *continuum* which, as they contend, involves an actually infinite number of parts. But if they are willing to accept an infinite number of parts in space, there is no reason why they should not be willing to accept the same situation for the bodies themselves, and they are inconsistent in denying continuity for bodies when they accept continuity for space. In order, then, to avoid the idea of infinite divisibility and an actually infinite number of parts in the surrounding space, they must, to be consistent, also postulate that *space* itself is composed of indivisible and unextended *points*. In that case, however, the forces filling this space cannot be extended, since they cover only *unextended points* of space; as a result the forces themselves can only be indivisible and unextended force points. Hence, everything in nature — the ultimate components of bodies, space, and force — are all indivisible and unextended points. But if this is so, then they have arrived at the position of Zeno, and all extension, even *virtual extension*, is impossible, and the arguments against Zeno apply also to their position. Their theory is thus seen to be untenable.

Continuous quantity or extension, therefore, can never be divided in such a manner that the ultimate parts are actually indivisible and unextended; division will always result in divisible and extended parts.

INFINITE MULTITUDE AND MAGNITUDE

Much of the opposition against the aristotelian concept of infinite divisibility of continuous extension is based on the contention that it involves an *infinite number of parts in a continuum*. The argument is somewhat as follows: Division results in parts; infinite divisibility must, therefore, presuppose an infinite number of parts; God, in His omnipotent power, must be able to carry out this divisibility and make the actual division; extended continuity, therefore, consists of an infinite number of parts; but an infinite number is impossible; consequently, extended continuity with an infinite divisibility is impossible. Let us examine the matter. Fundamentally, the objection rests on the impossibility of an infinite number.

By number we understand a *collection or aggregate measured by a unit*. In speaking of an 'infinite number,' it is essential to distinguish between a 'potentially infinite number' and an 'actually infinite number.' A potentially infinite number is a number which is finite and limited in itself, but is capable of being increased indefinitely, without limit. An actually infinite number is a number greater than which none can be conceived; it is incapable of increase and it cannot be exhausted by successive subtractions; it is *positively without limit in its sum of units*. This latter, the 'actually infinite number,' is in question, and we contend:

An actually infinite number is impossible.

Such a number involves a contradiction in terms, because it involves patent absurdities. Let us examine the matter practically.

Every number begins with 1; this is followed by 2, 3, 4, 5, 6, 7, 8, and so forth, until the infinite number is reached. Half of this supposedly 'infinite' number consists of odd numbers (1, 3, 5, 7, 9, 11, etc.) and half of even number (2, 4, 6, 8, 10, 12, etc.); the sum of these two series (odds plus evens) forms the infinite number. Is the odd series infinite? Obviously not; it is only half as large as the original infinite number. If it were 'infinite,' it would be equal to a number double its size, and the original number would be equal to a number half its size; that would be a contradiction. The odd series, therefore, is finite. For the same reason, the even series must be finite. Both being, singly and individually, finite, each can be exhausted by subtraction of individual units or groups of units. However, the odds plus evens form the original infinite number. Since both series can be exhausted, their sum can be exhausted. Their sum, however, is the original infinite number. Consequently, the original infinite number can be exhausted. If it can be exhausted, it is not infinite, but finite. Hence, the 'infinite' number is a 'finite' number — a contradiction in terms.

Here we spoke of an infinite number composed of single units. But numbers can also be used in groups, for example, groups of 10, and each group can be used as a unit. If an infinite number is possible, it must be possible to have an infinite number of such groups. In that case, however, we would also have an infinite number of the single units which form the group. Using groups of 10, there would be an

infinite number of single units and an infinite number of groups of 10 units. Both numbers are infinite, and yet the infinite number of single units is ten times larger than the infinite number of the groups of ten, while the infinite number of groups of 10 is ten times smaller than the infinite number of single units. We now have a smaller and a larger infinite number. The smaller number is obviously limited in comparison to the larger, yet both are infinite. The unlimited, infinite number is limited, finite — a contradiction in terms.

If an actually infinite number is possible, the *omnipotence* of God, being infinite, must be capable of making it an existing reality. God could, for instance, create an infinite number of human beings. The number of their hands, however, would be twice as large as the number of these human beings, and the number of fingers ten times as large. Evidently, by counting off the number of hands and fingers simultaneously with the number of human beings, the latter number would be exhausted before all the hands and fingers were counted. Consequently, the number of human beings, since it is exhaustible, is finite; and yet it is not finite, but infinite and therefore inexhaustible — a contradiction in terms.

Any number of practical examples, involving similar absurdities, could be multiplied. An actually infinite number is thus seen to be absurd, because it involves a contradiction in terms. The fundamental reason should be obvious: since any number, even a supposedly infinite number, is nothing but the sum of units or groups of units, *each of which is finite*, the total collection or aggregate

must itself be finite. An 'infinite number' is simply a mental fiction, an *ens rationis*, a logical or conceptual being.

An infinite magnitude is impossible.

This follows logically from the impossibility of an infinite number. Magnitude, whether of line or surface or solid, can be *measured in units* of some standard. An infinite magnitude would thus involve an actually infinite number of such units of measurement. An infinite number, however, as just pointed out, is intrinsically impossible, because it involves a contradiction in terms. Hence, an infinite magnitude is itself a contradiction in terms and, therefore, impossible.

Take a practical example. Since an infinite magnitude is infinite, it is without limits. Measuring it in kilometers, one could never exhaust its magnitude and measure it out; if one could, it would not be infinite, but finite, because one would reach its limit. Consequently, there must be an infinite number of kilometers in a magnitude of infinite extent. But there are 1000 meters in each kilometer, and a 100,000 centimeters in each kilometer. It follows, then, that the number of meters is 1000 times larger, and the number of centimeters 100,000 times larger, than the number of kilometers. In counting off the centimeters, meters, and kilometers simultaneously, one would *exhaust* the number of kilometers long before one came to the full amount of meters and centimeters. However, to exhaust and come to the end of any number, means that this number is limited and finite in its amount. The number of kilometers in an

infinite magnitude is both infinite and finite — a contradiction in terms.

‘Infinite number’ and ‘infinite magnitude’ are thus seen to be a contradiction in terms and, therefore, intrinsically impossible. They are of the same order as a ‘square circle’ and ‘wooden iron.’

The *ultimate reason* for the impossibility of an infinite number or infinite magnitude lies in the actual, positive infinity of God’s essence. Since His essence is infinite in perfection, it can be imitated by creatural beings without the possibility of ever exhausting its imitability. The number of creatural beings imitating His essence can always be *increased without limit*; in other words, the number of imitating creatures is always actually finite, but *potentially infinite*. Could the number of imitating finite creatures ever exhaust God’s imitability, God’s essence would be finite, not infinite.

Hence, too, God’s omnipotence cannot create an actually infinite number of creatures, not because of lack of power, but because of the positive infinity of the perfection and imitability of His essence. God cannot make or posit things that involve a contradiction in terms, simply because there is, under such conditions, nothing to make or posit without introducing a contradiction in Himself.

PRESENCE OF PARTS IN EXTENSION

So far we have proved that continuous extension is capable of division without limit, that it does not consist of components which are indivisible and unextended, and that

an actually infinite number is intrinsically impossible. We now come to the problem of the presence of parts in continuous extension. *If* extension is continuous, *are there parts* present in it; and, if so, *in what manner*?

The first question is easily settled. Only a simple entity, one devoid of composition, is indivisible; since it has no parts, it cannot be divided into parts. *A continuum is not simple*; it can be divided into parts. Division presupposes composition, and composition presupposes parts bound together somehow into a composite whole. Division merely breaks down the whole into its components; it does not create the components themselves. Hence, the components or parts must be in the whole or continuous extension prior to the division, so that the division can make an actual separation of them. *A continuum, therefore, possesses parts.*

The second question is more difficult to answer. Two views have been advanced. The one states that the parts of continuous extension are present prior to division *actually* and *formally as parts*. The other states that they are present, not actually and formally, but only potentially, so that there are no actual parts as such until the division is made. *Suarez* (1548—1617) and some scholastics uphold the former view; *Aristotle, St. Thomas* (1225—1274), and the majority of scholastics defend the latter. The difference between these views may possibly be merely a difference in the terminology, and not in the substance, of teaching. Hence, a clarification of terms will be necessary.

We distinguish between the *material, entitative parts* and the *actual formal parts* of a *continuum*. By ‘material’ or

‘entitative’ parts we mean the components in so far as they are realities which, though distinct from one another in their being, have no boundaries or limits marking off the one from the other, but coalesce to form a continuous and *extended whole*; the whole has boundaries, but not the material, entitative components which form the whole. A straight line, for instance, has a boundary or limit at each end; but the components or entitative parts of the line have no boundaries of their own, except the boundaries of the line as a whole. By ‘actual’ or ‘formal’ parts we mean the components in so far as these realities have boundaries or limits marking off the one from the other, with the result that not only the whole as a *whole* but also each part *as a part* has boundaries. A house, for example, is a whole with distinct boundaries as a house; but each brick, piece of wood, nail, pipe, wire, fixture, etc., also has its own boundaries. A thing with material, entitative parts, such as a line, is actually and intrinsically a single unit, and its parts become actual and formal parts only after division, as when we divide a line in two. A thing with actual, formal parts, such as a house, is a collection of multiple units arranged to form an extrinsic whole, and the division between part and part is already present. In the case of material, entitative parts, it is impossible to designate the beginning and end (the boundaries) of the parts and to make definite measurements of them; in the case of actual, formal parts, this designation and measurement can be made.

We contend that in continuous extension the components are *material, entitative parts*, but not *actual, formal parts*.

Bearing the above definitions and explanations in mind, it should be obvious that a continuum contains parts distinct from other parts, at least so far as their reality is concerned. Continuous extension is not a simple, but a composite, entity; actual division can produce in it actual, formal parts, as experience proves when we divide a line, a surface, or a solid. But if division can produce actual, formal parts in a thing which has continuous extension, the material, entitative reality of these parts must be present before the division. Division does not produce the 'reality' of these parts, but merely separates them and gives them definite boundaries.

These parts, however, are *not present* in continuous extension as *actual, formal parts*, i.e., with definite boundaries distinguishing one part from another. If these parts were present with definite boundaries, actually and formally *as parts* and not merely as realities, they could be numbered, and this number would of necessity be either finite or infinite. This number cannot be a finite number, because continuous extension, as we have shown, is infinitely divisible, and infinite divisibility is impossible with regard to a thing that possesses only a finite number of parts. This number cannot be infinite, because an infinite number is a contradiction in terms. Moreover, if the parts in continuous extension were present actually and formally as parts, each part would be delimited from every other part by its own boundaries, because that is what is meant by 'actual' and 'formal' parts. In that case, however, their boundaries would not coalesce into one; at best, parts could only touch other parts at their external boundaries. They

would then be *contiguous*, but *not continuous*. Continuity would thus be destroyed. Consequently, if continuous extension is possible at all, its components cannot be 'actual, formal parts'; formal parts are only potentially present and become 'formal parts' through actual division.

EXISTENCE OF CONTINUOUS EXTENSION

Up to this point, our examination of continuous extension has been more or less abstract; that is to say, we have considered it from the standpoint of its *concept*, as we think and speak of it, without any definite investigation whether continuous extension has *existence in nature*. This naturally raises the question: Has the concept of continuous extension *objective validity*? In other words: Do *objects exist* in nature possessing continuous extension?

In pre-scientific days practically no one doubted the existence of continuous extension in physical objects. With the advancement of science, however, it soon became clear that continuity in bodies was more apparent than real. The *atomic theory* disclaimed any real continuity in molar bodies, such as a lump of gold or carbon; large bodies consist of molecules and atoms, and these have definite weights and shapes, i.e., limits and boundaries which do not coalesce, strictly speaking, into continuous extension. Recent science, with its investigations into electrons, protons, etc., is even more emphatic on this point; even the atom is not a continuous whole, but consists of discrete, separate particles. However, as we shall see, the findings of

modern science do not really touch the problem of actual continuity in any fundamental way.

Philosophically, the existence of continuous extension has been attacked on different grounds. That physical bodies should be a continuous whole, without actual, formal parts, seemed to some philosophers a mystery beyond comprehension. We have previously mentioned that certain philosophers attempted to explain extension by assuming that it consisted ultimately of indivisible and unextended parts, with or without virtual extension. Modern philosophic opposition to the existence of continuous extension arises mainly from *epistemological* difficulties, i.e., from difficulties concerning the validity of man's knowledge act. *René Descartes* (1596—1650) proposed the doctrine that the essence of the soul is thought and the essence of matter is extension. This doctrine placed an impassable gulf between the body and soul in man; a real contact and union between such diverse entities seemed impossible. In consequence, knowledge was considered to be a purely mind-made product. *Phenomenalism and idealism* soon dominated the field of philosophy. It became the general conviction in non-scholastic circles that the mind could not possibly reach the outside world directly. True, the outside world somehow makes an impression on the mind, and the mind reacts by forming certain images of this world; but whether our knowledge of the external world, as thus acquired, truly pictures the world as it exists in itself, is a highly debatable question. Most modern theories of knowledge accept the view that the external world, as it is in and for itself, is unknown and unknowable by us; at best, our knowledge is

only symbolic and representative, not intuitive and presentative. Our knowledge of the world has only *subjective value*. It is not within the province of cosmology to explain all the confusing and conflicting theories of knowledge which have arisen in modern times; their evaluation belongs to *epistemology*.⁴

We are *presentative realists*. We are convinced that we possess, in many ways, an intuitive, direct knowledge of the physical world around us, especially as regards the primary qualities of physical objects, namely, extension, shape, motion, rest.⁵ We assume, in this connection, the essential validity of our consciousness and sense perception. Following this assumption, we maintain that *continuous extension* of physical bodies, at least in their ultimate components, is a fact of nature. According to the present status of scientific knowledge, these ultimate components are electrons, protons, and neutrons, etc. As a matter of fact, these particles may themselves be the product of composition; we do not know. Since we have no evidence of any particles more minute than these, we accept them provisionally as the physical ultimates of ponderable matter. And now to the *proof*.

Our consciousness testifies to the fact that our senses, especially sight and touch, *perceive extension* in two and three dimensions. Unless we wish to accept the complete subjectivism of all knowledge, we must admit that *physical objects* are the cause of this perception. But if the ultimate components of physical bodies are absolutely indivisible and unextended, so that they are not 'continuous' in their extension, nothing in this world would be actually extended.

Under such circumstances, however, it would be impossible for bodies to produce the perception of extension in our sense organs. The objects being unextended and the sense organs being unextended, objects could never appear as extended, whether objectively or subjectively; if they did, all knowledge is falsified, and skepticism is the inevitable outcome. That, however, we cannot admit. Hence, the ultimate components of bodies must be really and continuously extended. It will not save the situation to assume that the *forces* of the ultimate components are extended while the components themselves are unextended. Forces are qualities, and they cannot exist except in a material substrate as their subject. If the subject is not extended, the force cannot be extended; and if the force is extended, the subject is extended. But the subject of force is the particle of matter which is the ultimate component of the physical body (electron, proton, etc.). Consequently, the ultimate components of physical bodies must be really extended, i.e., continuous in three dimensions. Hence, continuous extension exists.

Science measures the electrons, protons, and other subatomic particles according to their weight, linear dimensions, etc. So far as science is concerned, they occupy definite amounts of space. This would be impossible, if these particles (or their ultimate components) were not genuinely extended. If the entire picture of the world, as given to us by science, is false, we must despair of knowledge. Hence, we must accept extension as a universal property of physical bodies in their ultimate components. Moreover, the phenomena observed in the *bombardment of atoms* by

subatomic particles are inexplicable except on the supposition that these particles actually collide and, possessing *impenetrability*, tend to hinder each other from occupying the same space. However, if they (or their ultimate components) were unextended mass points or force points, they could neither collide nor stop interpenetration. Consequently, they must have extension. Only *continuous* extension is real extension in the meaning of these experiments, for the reason that otherwise physical bodies would ultimately consist of nothing but contiguous points without continuous extension, and *contiguous points* cannot occupy definite portions of space.

These considerations of a philosophic and scientific character compel us to accept continuous extension as objectively present in nature.

THE FORMAL EFFECT OF QUANTITY

By the *formal effect of quantity* we understand that particular character, determination, or 'form' which a body receives primarily and specifically because it is endowed with quantity; it is the immediate and proper effect which quantity communicates to the bodily substance which it modifies by its presence in it. There are a number of properties which might come under this heading: divisibility, impenetrability, measurability, external extension, and internal extension.

The concepts 'external extension' and 'internal extension' need some explanation. *External* extension is that extension of body in virtue of which its parts are

distinct with reference to *place and space*, so that one part is in one part of space and another part in a different part of space, each excluding the other from the place and space it occupies. This is also called 'local' or 'circumscriptive' extension. *Internal* extension is that extension of a body in virtue of which its parts have a definite *position and order among themselves* and in reference to the *body as a whole*, regardless of the place or space which they occupy. It also goes by the name of 'sital' or 'positional' extension. That a body has three dimensions, measurable in centimeters, etc., is due to its external extension; it possesses volume and shape. However, even if all dimensions were removed, the order of the parts of a body due to its internal extension would still remain the same; the hand of the human body, for example, would be connected to the forearm, the forearm to the upper arm, and the upper arm to the shoulder and thereby to the torso, and there would be no confusion of these parts among themselves and in reference to the whole body.

Each of the properties mentioned has been advocated as the formal effect of quantity. *Measurability* and *impenetrability* cannot be the primary and proper effect of quantity, because they are relative in character, presupposing other bodies, while quantity is an *absolute* property which affects a body *in itself*, even if it were the only body in existence. *Divisibility* is not the formal effect of quantity in a body, because a body must have extensive parts alongside parts among themselves, before they can be separated through division. That leaves either external or internal extension as the formal effect of quantity. *External*

extension is not the formal effect, because a body must have parts which possess a definite position relative to each other and to the whole body, before they can be spread out or distributed in space. Hence, by a process of elimination we arrive at the conclusion that *internal extension* is the formal effect of quantity.

And in truth, *internal extension*, or the position and order of parts in their relation to each other and to the whole, seems definitely to be the one property of quantity which is the *root* and *matrix* of all other properties commonly associated with quantity. Because of this property, bodies have the natural aptitude and exigency to be distributed in space, so as to be externally or locally extended; and because bodies have local extension, they also are measurable, impenetrable, and divisible. Hence, internal extension is the primary and specific determination which is the immediate and proper effect communicated by quantity to a body; and that is what is meant by the 'formal effect' of quantity. That bodies are *material* substances, makes them to be 'bodies'; that they have parts with a definite *position and order* among themselves, makes them to be 'quantified.'

The question has been raised whether *external extension* could, through the omnipotent power of God, be *separated* from a material substance, leaving internal extension intact but depriving the body of its threefold dimensions in space. Philosophically speaking, there is no contradiction in the view, because internal extension would still have the *natural aptitude* and *exigency* for external

extension, even though actual external extension would be missing. That is all philosophy can say on the question.

Such, then, is the nature and character of quantity. It affects the material substance directly and is its most fundamental attribute.

SUMMARY OF CHAPTER VI

All bodies are characterized by quantity and extension.

1. *Experience of Quantity and Extension.* Bodies appear in three dimensions. Our knowledge of this is based on the commonplace and scientific observation of our senses. There is also quantity in the degrees in which physical realities appear. We also observe quantity in the *number* of concrete objects.

2. *Concept of Quantity and Extension.* Aristotle defines a quantum as that which can be divided into its inherent components, each of which (after division) is a single and complete whole. The whole is undivided, but divisible; actually one, but potentially multiple.

3. *Kinds of Quantity and Extension. Continuous and Discontinuous Quantity.* It is 'continuous,' when it is uninterrupted in its being, so that the components within it are united by common limits or boundaries. It is 'discontinuous' or 'discrete' when it consists of components, each of which is an entity for itself, with its own complete limits or boundaries. A discontinuous quantity is either 'contiguous' or 'separate': 'contiguous,' when the components are in contact at their boundaries; 'separate,' when the components are at a distance from one another and are united by some intermediate reality.

Dimensive, Intensive, Successive Quantity. 'Dimensive' quantity is one of extension, magnitude. 'Intensive' quantity is one of degrees. 'Successive' quantity is one whose components follow one another in sequence. Quantity in

general is that property of a thing by virtue of which measure or number or division is applicable to it.

4. *Divisibility of a Continuum.* Continuous quantity, purely as such, is infinitely divisible. Only if division could reach the indivisible, unextended mathematical points, would there be a limit to divisibility. But if unextended points were the components of continuous extension, there never could be a continuum, because no sum of unextended units can produce extension. Hence, a continuous quantity must ultimately consist of extended components, and divisibility can take place without limit, because it can never reach unextended points. If Zeno were correct, change of speed and even motion itself would be impossible. In *virtual* extension, space is either continuous, and then its advocates are inconsistent, or it consists of unextended points, and then all continuity is destroyed.

5. *In finite Multitude and Magnitude.* An infinite number is a contradiction in terms, because any number can be exhausted; it has limits. Some supposedly infinite numbers would be larger or smaller than other 'infinite' numbers; this is a contradiction in terms. Magnitude cannot be infinite in extent; because it can be measured by units, and units can be numbered; hence, infinite magnitude would involve the absurdity of an 'infinite number.'

6. *Presence of Parts in Extension.* Continuous quantity, being capable of division, cannot be simple, but must be composite; hence, it must consist of material, entitative components or parts in some manner. It cannot, however, consist of actual parts, otherwise division has already taken place, and there would not be 'continuous' extension; the

actual parts would be merely 'contiguous.' Hence, the parts can only be *potential* parts.

7. *Existence of Continuous Extension.* We perceive extension in three dimensions. If all bodies consisted ultimately of unextended mass points or force points or both, there would be no extension in nature and bodies could not be perceived as extended. *Science* measures electrons, protons, etc.; hence, they must be extended. The bombardment of atoms shows *impenetrability*; but impenetrability would be impossible for unextended points.

8. *Formal Effect of Quantity.* This seems to be *internal* (situal, positional) *extension*, namely, that extension of a body in virtue of which its parts have a definite position and order among themselves and in reference to the body as a whole. External or local extension follows internal extension as a natural aptitude and exigency; measurability, impenetrability, and divisibility are a natural consequence of external and internal extension. Absolutely speaking, there is no contradiction in the view that external extension can be separated from material substance.

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- 1 See the author's *Science of Correct Thinking* (Bruce Publishing Co.), p. 57
- 2 See the author's *Domain of Being* (Bruce Publishing Co.), pp. 37 ff., 238
- 3 *Metaphysics*, IV, 13
- 4 See the author's *Reality and the Mind* (Bruce, 1936), pp. 98—150
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Chapter 7

PLACE AND SPACE

IN DISCUSSING QUANTITY AND EXTENSION, IS WAS FOUND unavoidable on a few occasions to mention *place and space*. Quantified and extended objects, as they exist in physical nature, have a 'place' and occupy 'space.' 'Place' and 'space' are practically inseparable ideas and terms. Everyone uses these terms in daily conversation, and everyone attaches a fairly uniform meaning to them. However, if pressed for an accurate explanation, few people are capable of giving more than a vague and shadowy definition of 'place' and 'space'; even philosophers find it difficult to fix their exact meaning. Since they play such a prominent part in our mental vocabulary and are so closely connected with all physical bodies and with the universe at large, the cosmologist must seek to understand these concepts in their more fundamental aspects and determine their ultimate essence.

COMMON MEANING OF PLACE AND SPACE

In attempting to arrive at the exact content of concepts such as 'place' and 'space,' we must consider the *common*

usage of the terms. People say that persons and things are *at* or *in* a place; they *arrive* at a place or *leave* a place; they go or are brought *from* one place *to* another place; they are *in* place or *out of* place; and so forth. These and similar expressions plainly indicate that, in their estimation, a 'place' is that which objects change when they *move*, so that one 'place' is at the starting point of the motion and another at the stopping point; and such motion is therefore called 'local' motion. No one ever speaks of a 'place' as if it were or could be in motion itself; on the contrary, when compared to motion, a 'place' is conceived as something which is *stationary* and *immobile*. Sometimes the term is taken in a looser sense, as when we say that a vase is on the table, the table in the room, the room in the house, the house in the city, etc. At other times the term is used in a more restricted sense, and then we mean the immediate locality which corresponds to the volume of the object as such.

Space has a wider signification than 'place.' 'Places' are, generally speaking, *portions* of space; they are *in* space, while 'space' is never spoken of as being in any particular 'place.' Bodies move *in* and *through* space, when they go from place to place; and by the very fact that they are in a definite 'place' they occupy 'space.' Space is also considered to be stationary and immobile, so that all bodies have their motion in space, while space itself does not move with the moving objects. Like place,' space has *three dimensions*, length, depth, and width. We speak of large and small space, wide and narrow space, empty and filled

space, limited and infinite space, parts of space and all space, actual space and possible space.

In whatever way, however, we use the term 'place' and space,' they are thought of, or rather imagined, as *receptacles* or *containers* of extended bodies. Both are thus conceived as being something distinct from the bodies which are in them.

PHILOSOPHIC CONCEPT OF PLACE

'Place' indicates where an object is. Basing our analysis of the term 'place' on its usage, we must distinguish between internal and external place.

The *internal place* of a body is the amount of space contained within the boundaries of the *outside surface* of this body, considered as the receptacle of the body's entire volume. Taken in this absolute sense, every body taken singly and the universe taken as a whole can be said to have a definite place. Even if only a single body were in existence, it would have a 'place' in space, due to its presence within the boundaries of its own limiting surface.

The *external place* of a body is the *surface* of the object or objects *immediately enveloping* this body, considered as the receptacle of the body's entire volume. In this relative sense, the 'place' of a body is determined, not by the volume of the body itself, but by the concave surface of the object or objects which are in direct contact with it and completely surround it on all sides. External place always presupposes other bodies in existence together with the located body itself; these other bodies give it 'place.'

Aristotle defines external place as “the first (or immediate) immobile limit (or surface) of that which contains a body.”¹ Here the ‘limit’ or ‘surface’ of the containing body is considered *formally as a surface* corresponding to definite portions of space, and not materially as consisting of a certain kind of matter (gold, paper, wood, air, water, etc.). An air bubble, for example, in a pane of glass has a ‘place’ there in so far as it is completely surrounded by the concave surface of the glass enveloping it. This surface of the glass corresponds to definite portions of space, when the glass is stationary. If, however, the pane of glass, and the air bubble with it, are moved, let us say, two feet to the side, the concave surface of glass surrounding the air bubble will now correspond to *different* portions of space. *Materially*, the surface enveloping the air bubble has not changed, because it is still the same surface of glass; *formally*, however, precisely as a locating surface, it has changed, because it no longer corresponds to the same portions of space as it did before it was moved: the ‘place’ of the air bubble has changed, even though the material surface of the glass is still the same. On the other hand, if water could be substituted for the glass leaving the air bubble stationary, the air bubble would still be in the same ‘place’; the ‘material’ surface would have changed from glass to water, but the ‘formal’ surface corresponding to definite portions of space would have remained intact throughout the process. Similarly, a fish, stationary in moving water, would remain in the same ‘place,’ because the surrounding surface of water, formally as a surface, does not change its relation to space, even though the

material surface of the water be constantly changing; reversely, a fish, traveling with the water at identical speed, so that the material surface of the water does not change relative to the fish, changes its 'place,' because the surface of the water, formally as a surface relative to space, does not remain the same as both water and fish move along. All this follows from the notion of 'place' and 'space' as something *stationary* and *immobile*. External place, as explained so far, is the *proper* place of a body.

There is, however, also a *common external place* of bodies, and by this we mean, not the immediately contacting surface which envelops the body, but the *general position* of a body with respect to other bodies at *some distance* from it. There is always some body which serves as an immobile point of reference which fixes the spatial relations of the localized body. A man, for example, may stand still on a moving ship. Taking the ship itself as a fixed point of reference, he can be said to have a definite 'place' on the ship; taking the shore, however, as the point of reference, he moves with the ship and changes his 'place' from moment to moment. Things, therefore, may move and not move at the same time, with respect to two different points of reference, without contradiction; but this can never be the case with respect to the same point of reference, for that would be a contradiction in terms. In this manner, anything in a room has a 'place' in the room; anything on the earth has a 'place' on the earth, even though the earth (and with it the room) moves around the sun. The earth is a fixed point of reference for localizing all objects in it, on it, and above it; the sun is a fixed point of

reference for localizing all objects in the solar system. Whether there is an immobile point or axis in the universe which could fix the spatial relations of all objects in it, scientists have so far been unable to discover.

UBICATION

If 'place' indicates 'where' an object is, the *presence* of an object in a place is its *whereness* or *ubication* (Lat., *ubi*, where), in so far as an object is precisely in one place rather than in another. We distinguish a threefold presence of beings in a certain place: circumscriptive, definitive, and repletive.

A *circumscriptive* presence is the presence of a corporeal extended substance in such a manner that it has parts outside parts in the place where it is. This is also called 'quantitative' presence. All bodies in the universe, whether they consist of ponderable or imponderable matter, have this sort of presence 'in a place'; they fill extended space with their own extended reality.

A *definitive* presence is the presence of a spatially unextended substance in such a manner that it can exercise its activity only within certain limits of space. Such is the presence of spiritual beings in the universe; and such, too, is the presence of the immaterial soul of man within the limits of his body as its animating principle. Spirits and human souls have no parts outside parts in their being, because they are simple entities, and thus they can have no circumscriptive or quantitative presence in space; but their

activity is limited to certain restricted areas of space, so that they are 'localized' and are not present everywhere.

A *repletive* presence is the presence of a spatially unextended substance in all space, past, present, and future. This is the presence of God in all things; He is 'everywhere.' It is also called 'ubiquity,' and the infinite perfection which is the foundation for this ubiquity is His 'immensity.' God not only creates things, but His repletive presence within them is necessary for the conservation of their being; were He to withdraw His conserving presence, they would instantaneously drop back into the nothingness from which His creative *fiat* called them forth.

PHILOSOPHIC CONCEPT OF SPACE

In general, as was mentioned previously, *space* is the *three-dimensional container or receptacle of all extended material substances*. Space, as we conceive it, is a peculiar thing. It not only embraces the actual universe, but extends beyond it in all directions as some sort of limitless, infinite, empty reality. If God created a thousand more universes, space would be there to receive them; it is inexhaustible in its receiving capacity. Before the universe was made, space was there to receive it; and if the universe were annihilated, space would remain, ready to receive other universes of any imaginable extent at any future time. Space is thus conceived as an *infinite* and *eternal* sort of entity. What are we to think, from a philosophical standpoint, of this thing called 'space'?

Philosophers have suffered considerable vexation in attempting to arrive at a correct notion of space. Among the ancients, *Democritus* (born about 460 B.C.) and *Epicurus* (341 or 342—270 B.C.) maintained that space is an *actual reality*, existing in itself and prior to all bodies. *Gassendi* (1592—1655) taught a similar doctrine; space is neither a substance nor an accident, but a unique entity, eternal, unchangeable, impervious to the senses, distinct and different in its being from God and from corporeal things.

Newton (1642—1727), *Clarke* (1675—1729), *Fénelon* (1651—1715), and *Bayma* (1816—1892) identified space with the *immensity* of God, because our notion of space implies that it is something infinite and that it had existence before the world was made. *Lessius* (1554—1623) and others identified it with the infinity of God, because only God's infinity can be said to be boundless, to exist before creation, and to contain all created things. Pantheists, quite naturally, consider infinite space as a mode of the *Absolute*.

Kant and his followers considered 'space' to be a *purely subjective sense form*. Objects exist in the physical world outside the mind; they are noumena, things-in-themselves. We cannot know what these things-in-themselves really are. They make impressions on our senses, and the senses react to these impressions with images. These images are clothed by the mind with the intuitions of 'space' and 'time.' In consequence of this, all objects *appear* to us as three-dimensional, as spatial. But spatial dimensions are not objective attributes of the objects themselves in nature. 'Space' and 'time' are subjective, *a priori*, innate *sense forms*, present in the mind before all perception, making

perception possible; they are like molds of the mind, into which the chaotic manifold of outer impressions is cast, appearing after the perception process as affected by 'space' and 'time.' The concept of 'space,' therefore, is a mental construct without any ground or foundation in the objects themselves as they exist in nature. Kant's theory has influenced many modern theories of knowledge. Our knowledge, according to these theories, is *causally produced* by outside objects; whether, however, there is an actual correspondence between our knowledge and the things as they are in themselves, it is impossible to determine. The general view tends toward the opinion that our representation of things is more or less symbolic in character. Obviously, then, 'space' is more *phenomenal* than real.

The modern theory of *Space-Time*, as advocated by *S. Alexander* and others, considers Space-Time to be the stuff and matrix out of which all things and events emerge and evolve. The theory will be treated in the chapter on 'time.'

Leibnitz defended the view that 'place' and 'space' consist in nothing but the *relation* of objects toward one another. *Descartes* identified space with the extended corporeal substance, the difference between them being merely a difference in the mode of conception; in itself, the extension which constitutes space is the same as that which constitutes a body. *Balmes* (1810—1848) was of the opinion that space is the concrete extension of existing bodies.

According to *Henri Bergson*, the world is an endless becoming. There are only actions, not things, in the world; even the atom is simply a view of the mind. The divisibility

of matter is only apparent, because it is the mind which divides the continuity of the extended. This is done by throwing a 'network' beneath the continuity of sensible qualities, and this wholly ideal diagram of arbitrary and infinite divisibility is what Bergson terms *homogeneous space*. Space is thus nothing more than an *ideal scheme* or *symbol* appended to matter, to render the latter divisible by the mind according to our actions and needs.

Scholastics, whom we follow in this question, view 'space,' as we conceive it, not as an actual being, but as a mental abstraction based on the extended reality of bodies. They distinguish between three kinds of space: real, possible, and absolute. *Real* space is the *space occupied* by existing three-dimensional bodies. Thus, the space occupied by ponderable and imponderable matter in our universe is 'real' space. If there are other existing universes besides our own, then the space occupied by them is also 'real' space. Since infinite magnitude is impossible, 'real' space is limited in extent, no matter how many universes there may be. And since an actually infinite number is impossible, there can be no actually infinite number of universes in existence; the omnipotence of God can create still more universes. It follows, therefore, that 'real' space is *capable of being increased indefinitely* through the creation of new universes. Hence, more real space is possible than that which is actually filled by presently existing bodies, and this 'possible' space is conceived as extending without limit beyond the confines of the existing universe or universes. Possible or ideal space is thus seen to be space *unoccupied* but *occupiable* by extended bodies, in so far as more bodies

could be created to fill space. *Absolute* space, then, is the *sum of real and possible (ideal) space considered as one*. It makes no difference in our concept of 'space,' whether it is occupied or not. It is simply 'space' in three dimensions extending infinitely in all directions, and that from eternity to eternity. Space, considered as one or a whole, is partly occupied and partly unoccupied; but all of it is 'space.' Since our concepts are usually accompanied by images of the imagination, we also picture absolute space as an immense container, something like an immense box; this is *imaginary space*.

According to the scholastics, 'space,' *as we conceive it*, cannot be an actually existing reality, infinite in extent and eternal in duration, the receptacle of all bodies actual and possible. As such, it has existence only as a concept of the mind. Yet, it is not a purely mental fiction, like a 'square circle.' It is. an *abstraction* of the mind, derived from the extension of existing bodies, with a foundation, or ground, or reason, in this very extension of bodies. Hence, 'space' as we conceive it is a *conceptual being with a foundation in physical nature (ens rationis cum fundamento in re)*.

We contend that the scholastic view of 'space' is the correct one. And now for the proofs.

SPACE NOT A REAL BEING

Space, as we conceive it, is the three-dimensional *receptacle* of all extended bodies, so that the parts of these bodies are commensurate with the corresponding parts of space. Furthermore, space is conceived as a positive sort of

entity which has always been present in the past and will always be present in the future, to receive any extended body which God in His omnipotence may create; and since there is no limit in the past or future to the creative ability of God's omnipotence, space must have, if it is a real being, a *positive eternity*. Finally, since there is no limit to the number of worlds which God's omnipotence can create, and since space must have the necessary extension to receive these worlds, space, if it is a real being, must have a *positive infinity* in extent.

Space, as such a real being, is impossible. It cannot be *infinite* and *eternal*, because only God is infinite and eternal, and space is not God. That space is not God, is obvious, for God has no parts outside parts in three dimensions as space is conceived to have.

Again, space, conceived as a three-dimensional receptacle of *limitless extent*, is impossible. That would involve an infinite magnitude and an infinite number of parts in its being. But an infinite magnitude and an infinite number are a contradiction in terms. Hence, such a being cannot exist.

Furthermore, if space were a real and existing being in the physical order, it would of necessity exist either for itself and in itself or it would exist in another; in the first case it would be a physical 'substance' and in the second case a physical 'accident.' But space, as conceived by us, can be neither a *substance* nor an *accident*. If it were a substance, it must be either a spiritual or a material substance. It cannot be a spiritual substance, because a spiritual substance is a simple entity which has no parts; space,

however, has parts, and these parts are extended. Hence, it would be an extended material substance. But an extended material substance is a 'body.' Space, however, is conceived or imagined as the *receptacle* of all 'bodies,' not as a 'body' itself. There must, then, be a second space to contain the 'body' of this first space; and, since this second space is also a bodily substance, a third space is required to contain the second space; and a fourth is required for the third; and so on, through an *infinite regress*. No one, however, conceives space as requiring another space to receive and contain it. Consequently, space cannot be a 'substance.' Neither can space be an 'accident.' If it were, it would be an extended, three-dimensional accident, demanding an extended, three-dimensional substance in which to exist. But such a substance, as was just shown, must be a corporeal substance, a 'body.' And then the absurdity of space within space in infinite regress would result. Space, therefore, cannot be either a substance or an accident. However, if it exists, it must be either the one or the other; and since it can be neither, it follows that space is not a real, existing being.

From this it should be clear that it is an error to identify space with the *infinity* or *immensity* of God. These attributes of God are infinite perfections, one with the essence of God. God's essence, however, has no parts, much less 'extended' parts. God is a pure spirit, while space is never conceived as a 'spirit' with intelligence, free will, and creative power. God is infinite actuality and activity, while space is conceived as an inert, stationary, immobile thing. This much, however, can be admitted as true: God's infinite

power of creating possible beings and His limitless power to be present in all creatural beings are the *ultimate* reason why we *conceive* space to be infinite in extent and eternal in duration. But that is no justification for *identifying* space with the infinity or immensity of God.

Nor is it correct to identify space with the *external relations* of bodies, as Leibnitz did. Space is conceived by us as the 'receptacle' of bodies, not as their 'relations.' Space is either filled or empty; but no one speaks of filled or empty relations. Space extends far beyond the confines of the universe, where there are no bodies and where, consequently, there can be no 'relations' between bodies.

Similarly, it is erroneous to identify space entirely with *extended material substance*, as Descartes assumed. Extended material substances cannot be said to be filled or empty, as space is said to be. Extended material substances are restricted to the limited extent of the universe, but space extends beyond the universe. Then, too, space is conceived as being the 'receptacle' of extended material substances, not as the substances themselves. Finally, space is stationary and immobile, while extended bodies move in and through space. It is thus seen that our concepts of 'space' and of 'extended material substances' are not at all identical. The same arguments apply to Balme's view. These considerations compel us to draw the conclusion that 'space,' as we conceive it, is not a real being existing as such.

SPACE NOT A PURELY MENTAL BEING

By a 'purely mental, or conceptual, being' we understand something that has no existence and no objective value except *in and for the mind*. The content of the concept of such a being cannot be found anywhere in nature; nor is there anything in nature which could serve as a foundation or ground for such a being, so that the mind might arrive at its concept through a process of abstraction. Subjects and predicates of sentences, grammatical parts of speech, argumentations and their laws of inferences, and so on, are purely mental (conceptual) beings; so, too, are contradictory concepts treated by the mind as if they were entities, such as a 'square circle,' 'wooden iron,' etc. *Kant* and his followers maintain that 'space' is a purely mental form, present in the mind antecedent to all perception and experience, with nothing in nature to account for the concept. This, we claim, is not true; it is not a purely mental construct, but has a *foundation* in the reality of physical bodies and as such has *objective value*.

In order to substantiate his contention that 'space' is a pure intuition of the sense faculty, the product of an *a priori sense form*, *Kant* would have to prove that the notion of 'space' is antecedently present in the mind, prior to all experience, as a subjective condition of sense perception, and not as the result of a mental abstraction or deduction following the perception of extended objects; and he would also have to prove that 'space' is an intuition of sensibility and not a concept of the intellect. *Kant* assumes all this, basing his assumption on the antithesis between mind and matter, introduced by *Descartes* into the problem of human knowledge. That is an epistemological problem which does

not concern us here. Kant's assumption, however, that 'space' is an *intuition of the sense faculty*, is unwarranted and erroneous. 'Space,' as we conceive it, is something unlimited in extension and duration; and no sense faculty, being limited itself, can perceive or imagine such a thing. Only the *intellect* can have a *concept* of an unlimited reality. Hence, our notion of 'space' is a 'concept,' not an intuition of sensibility. Again, the assumption that 'space' is the result of an innate, subjective, a priori sense form, antecedently present in the mind prior to all experience and making perception possible, is radical and arbitrary, because no one is conscious of anything present in the mind prior to all experience. On the contrary, our consciousness testifies to the fact that all our knowledge begins with *experience*, and our experience begins with the perception of the actual world of concrete things. It is a matter of plain consciousness that our senses and our mind are *passively influenced* in their operations when perceiving the external world; 'extension' and 'space,' therefore, are not a purely subjective product of our mental operations. We cannot, for example, change the dimensions of our body or of our room or of a building to suit our fancy; they force themselves upon our senses and remain what they are, independent of our sense faculties and of our mind.

'Extension' and 'space,' therefore, are derived primarily from the *objects* and not from the perceiving subject.

Bergson's view on space is entirely *subjectivistic*. His monism destroys all distinction between ourselves and the world and between the things of the world among themselves. The world thus loses all objective reality

(although Bergson claims the world to be real) and becomes a mental illusion. This is contrary to common sense and science.

Science, when not distorted by philosophical theories, gives *experimental proof* that bodies exist, have measurable extension in three dimensions, and move with definite velocities from place to place. Everyday experience is entirely in accord with this verdict of science. The world is real, not an imaginary or idealistic construct of the mind. Unless, then, we wish to nullify all the findings of physics, chemistry, and astronomy, we must accept *extended and moving bodies* as an established fact. But the concept of 'space' is inescapably connected with, and related to, extended and moving bodies as the 'receptacle' in which they exist and move. It is an easy step for the mind to pass from extended and moving bodies to the concept of some sort of a 'receptacle' in which these realities are present. That, however, is precisely what we conceive 'space' to be. To say, then, as Kant and his followers do, that 'space' is a purely subjective product without any foundation in physical things, is contrary to experience and reason. If Kant's theory of space were correct, all genuine science of the physical world would be impossible and superfluous.

THE TRUE NATURE OF SPACE

So far we have been mainly concerned in pointing out what 'space' *is not*; now we are in a position to state what 'space' really *is*.

We conceive 'space' as some sort of *being*. Now, as a being, it must either exist outside the mind and independent of it, or it must exist in the mind and dependent on it. But space, as we have proved, is not a real being which exists outside, and independent of, the mind. If it were, it would perforce be either an actual receptacle of bodies, or the immensity or infinity of God, or the extended substance of bodies, or the physical extension of bodies, or the relation between bodies. We have, however, shown that space can be none of these things. Hence, it must be a being which exists *in the mind* and dependent on it, i.e., a mental, or *conceptual entity (ens rationis)*. As a conceptual being, however, it must be either a purely mental and subjective being without a foundation in physical reality, or it must be a mental being with a foundation in physical reality. It is not the first of these alternatives, as was seen when treating of Kant's theory of space. Hence, space must be a mental, or conceptual entity *with a foundation in physical reality (ens rationis cum fundamento in re)*. In other words, 'space cannot exist as *we conceive it*; in that respect it is a product of the mind. But there is a *reason* or foundation in the things of nature which justifies us in forming such a concept of 'space,' *as if* it had existence outside the mind; that saves it from being a purely mental and subjective entity. Space thus has objective value, even though our manner of conceiving it is subjective.

An *analysis* of how we arrive at the idea of 'space' will make this clearer. From earliest infancy we perceive objects. They are extended, and soon we advert to the fact that they consist of different kinds of material, have

different shapes and sizes, and have length, width, and height. Eventually we become aware of one important item of information: no matter what the material, size, and shape of the various bodies may be, all have one feature in common, namely, *extension in three dimensions*. Through a process of mental abstraction, by prescinding from all material, shape, and size and by fixing its attention solely upon the dimensions of bodies, the mind forms the concept of extension alone, simply as extension, neglecting and putting aside all other features. This is now *abstract extension*. The mind also perceives that one object 'contains' the other: the tumbler contains the water, the kitchen contains the tumbler, the house contains the kitchen, the city contains the house, the countryside contains the city, the earth contains the countryside, the universe contains the earth. Prescinding from all the different types of containers or receptacles, the mind forms the concept of an extended receptacle for all bodies. This is *abstract extension* considered as a *receptacle* for all bodies. This something conceived as the abstract receptacle of existing bodies, is called *space*, real or filled space. Besides these actually existing bodies, the mind is aware that there is room for more bodies, for possible bodies; and this *possibility* of more bodies extends indefinitely beyond the limits of the present universe, in the past, present, and future. This is *possible* or *ideal* space. Combining the two types of space, real (filled) and ideal (possible), the mind conceives absolute space in the abstract as a huge receptacle of immense extension and eternal duration, with the capacity of receiving and containing bodies of unlimited

extension at any time in the past, present, or future. It is in this manner that the human mind arrives at the concept of *space as abstract extension considered as a receptacle for bodies*. Obviously, space so conceived is an abstract reality which exists only in the mind and cannot exist as such in nature.

Summarizing this entire discussion on the nature of space, we argue as follows. Three-dimensional extension which ignores the material, size, and shape of bodies, considering merely extension as such, is abstract extension. But space is three-dimensional extension conceived in this manner. Therefore, *space is abstract extension*. That which receives and contains bodies is the 'receptacle' of bodies. Since space receives and contains all bodies, actual and possible, past, present, and future, space is abstract extension conceived as the *receptacle of all bodies*, unlimited in extension and eternal in duration. As an entity, such a being cannot exist in nature; if it exists at all, it can exist only in the mind as a concept. But a being which exists only in the mind is a mental, or conceptual, being. Consequently, space, as we conceive it, is only a *conceptual entity*, or *mental being*, in the mind. A conceptual being, however, which is present in the mind through a process of abstraction from physical extension in nature, is not a purely mental product, but has a foundation in the extension of physical things outside the mind. Hence, space is a logical, or conceptual, or mental, entity, with a foundation in real things outside the mind. We thus arrive at the final conclusion: *Space is abstract extension, considered as the receptacle of bodies, and as such it is a*

conceptual (mental, logical) being with a foundation in real things. As the scholastics put it: it is an *ens rationis cum fundamento in re*. That is the true nature of 'space.'

VACUA

Closely related to the notion of space is the concept of a vacuum, namely, the total absence of a material, three-dimensional substance in the universe.

Physicists often speak of a 'vacuum.' By this they mean the inside space of a closed vessel, exhausted of gas to a high degree; for example, the inside of an electric-light bulb or of an X-ray tube is said to be a 'vacuum.' In using this term, however, they do not really contend that every vestige of gas has been extracted from the container; the amount remaining, though, is so small, that for all practical purposes of experimentation it is negligible and can be considered as totally absent. When cosmologists speak of a 'vacuum,' they use the term in a philosophical and *ontological* sense, as the total absence of every type of body.

In this ontological meaning, we must distinguish between a 'relative' and an 'absolute' vacuum. A *relative vacuum* is the total absence of all *ponderable matter*. All elemental substances, whether gases, liquids, or solids, consist of ponderable matter. The subatomic components of elements, namely, electrons, positrons, protons, neutrons, etc., also consist of ponderable matter. They have mass and weight and as such are 'ponderable.' A 'relative' vacuum, therefore, excludes all these bodies and particles of matter, but it does not exclude the presence of 'imponderable'

matter. An *absolute vacuum* is the total absence of all *ponderable* and *imponderable matter*. Aether, for instance, as conceived by physicists, is 'imponderable' matter; so far as they are concerned, it possesses no mass and weight. It is, however, provided it exists, a material, three-dimensional substance. An 'absolute' vacuum, therefore, excludes all physical bodies and the aether.

When cosmologists raise the question of a 'vacuum,' they speak of an *absolute vacuum enclosed* entirely by ponderable or imponderable matter, so that there would be a portion of space within the present universe absolutely devoid of any kind of three-dimensional matter. In this case there would be a space interval between bodies without any connecting substance of any kind, an absolute 'hole' in the universe. We contend that an absolute vacuum, as explained, is *possible*.

There is, to all appearances, *no legitimate reason to deny* such a possibility. The only difficulty physicists encounter in creating a vacuum in a glass tube is of a mechanical character. Given the instrumentalities of necessary efficiency, they see no impossibility in exhausting such a tube completely of all ponderable matter. Supposing, then, that aether is not present, an absolute vacuum would be not only a possibility, but in all probability a fact. If a tube can be exhausted entirely of ponderable matter, there should be no *intrinsic* or *ontological* impossibility in the idea of a tube being exhausted of all matter, whether ponderable or imponderable. The mere fact that one type of matter has mass and weight, while the other has not, is of only secondary importance; as *matter* in three dimensions they

are essentially alike. If there is no contradiction in the notion of a 'relative' vacuum, there is no contradiction in the notion of an 'absolute' vacuum. It is not a question here of the actual possibility of *effecting* an absolute vacuum through physical means, but *of the intrinsic possibility* of an absolute vacuum under any and all conditions.

What man cannot do, because of lack of proper instruments and technique, but which he approaches with a remarkable degree of partial success, must be possible for God's *omnipotence*. If God can remove all matter, ponderable and imponderable, from between the inside walls of a hermetically sealed tube, the tube would actually enclose an absolute vacuum. The partial success of man should become a complete success, when the omnipotence of God is brought into consideration. So long as no contradiction in terms is involved in the concept of an absolute vacuum, it must be conceded to be an ontological possibility. But no such contradiction is apparent. Consequently, it is possible. The possibility of such a vacuum within the confines of the universe receives confirmation from the fact that *space outside the universe* is an absolute vacuum devoid of all matter; if there is no contradiction in the concept of such a vacuum outside the universe, there can be no contradiction in the concept of one *inside* the universe. Hence, an absolute vacuum, completely enclosed by ponderable or imponderable matter, is possible.

The objection is made that an absolute vacuum would *annihilate the distance* between the walls of the enclosing body or bodies and bring them into contact. An absolute vacuum, the objectors argue, is really nothing. But if there

is nothing between one body and another, there is nothing to keep them apart and at a distance; an entity can be measured, but a nonentity can neither be measured nor act as a measure. Hence, under the supposition of a void space interval, two bodies cannot be at a distance from each other, but must necessarily be contiguous. In that case, however, there is no vacuum present between them. An absolute vacuum, therefore, is impossible. In *answer* to this objection we contend that the *distance* between bodies *is not altered* by the intervening vacuum. Let us suppose that we have a hollow steel sphere one foot in diameter, filled with air. God can annihilate or remove the air completely. The walls of the sphere will not collapse, as we know, if the steel of the sphere is strong enough to withstand the atmospheric pressure. The only thing left in the sphere is aether, provided aether really exists. Evidently, God can also annihilate or remove this aether and hinder any other body from occupying the space in the sphere. There is no more reason for the walls to collapse now than there was when the air was removed. Although the inner space of the sphere is a complete and absolute vacuum, the distance between the concave walls remains one foot, because *nothing has happened to the sphere*. The reason is obvious: the space once occupied by an *actual* body is the space for a *possible* body of identical volume, and the distance between the inner walls of the sphere is the same as if the space were filled. It is true, of course, to say that there is nothing between the opposite sides of the inner walls of the sphere; but that does not mean that all space and all distance are eliminated between them, because the space and the

distance of a *possible* body, which God can make *actual*, are there. The objection, therefore, is invalid.

That *relative vacua* are present in the physical universe, can hardly be doubted. The space above the mercury column in the empty end of a thermometer and barometer and the space inside electric-light bulbs and various vacuum tubes must be, if the teaching of physical science on the nature of gases is correct, devoid of ponderable matter either entirely or at least in part. In fact, all the evidence of modern science confirms the theory that the ultimate particles of ponderable matter occupy but a small portion of the space of the universe, because electrons and protons constitute only a small part of the total volume of the atom. Whether *absolute vacua* are present, is a question which science has as yet been unable to answer, because it has no means of direct proof for the presence or absence of aether. That an absolute vacuum is ontologically possible, is clear.

COMPENETRATION AND REPLICATION

Two interesting problems concerning the presence of bodies in place and space are those of the possibility of compenetration and replication. Ordinarily, of course, a body possesses *impenetrability* and *unilocation*: it occupies one place and one portion of space (unilocation) and hinders all other bodies from occupying the same place and space which it occupies (impenetrability). Philosophers have raised the question, whether these natural properties of physical bodies are absolutely essential to them, so that

even God's omnipotence could not remove them, or whether they are merely physical properties, so that a compenetration and replication of bodies would be possible with respect to the omnipotence of God. It would seem that compenetration and replication are *metaphysically possible*.

Compenetration. By this we understand the presence of two or more three-dimensional or *circumscriptive bodies in the same place and space*. Physical or circumscriptive impenetrability of bodies implies two things: first, the actual diffusion in space of the dimensive parts of a body, so that each part occupies a distinct and different part of space; second, the active exclusion from this space of any other dimensive part or body. This exclusion is brought about through a double act: the *resistive power or faculty* of the space-occupying body, and the *resistance* or exercise of this resistive faculty; the former is *aptitudinal*, and the latter *actual*, impenetrability. Compenetration, therefore, would be possible, at least through God's omnipotence, if the actual impenetrability could be removed by removing the 'exercise' of this natural power or faculty, thereby leaving the 'aptitudinal' impenetrability intact.

We must distinguish between various sorts of *penetration*. One thing can penetrate another through 'division,' as when a nail enters a board or a bullet enters a body; also through 'infiltration,' as when a gas or liquid passes into and through the pores of another body; or, finally, through 'compenetration,' as when two or more bodies occupy identical space. We are concerned here only with this last form of penetration, because that alone is

compenetration in the strict sense of the term. A compenetration of this kind is unknown to scientists. Nature presents no instances of it; so far as observation and experiment reach, all bodies possess the most rigid impenetrability. That, however, merely proves that compenetration is a *physical impossibility* and leaves the question of its 'metaphysical' or 'intrinsic' possibility or impossibility unanswered. In order that compenetration be metaphysically impossible, it would be necessary to show that its concept involves a *contradiction in terms*. This, we contend, cannot be demonstrated.

It would be a contradiction in terms to state that a body occupies space and does not occupy space; or, that a body is in this place and not in this place; or, that a body possesses impenetrability and does not possess impenetrability; or, that two or more bodies occupy identical space and do not occupy identical space. None of these contradictory statements, however, are made, when we assume that through the omnipotence of God two or more bodies can be present in the same place and occupy the same space. The only thing necessary would be that God hinder two bodies from *exercising their resistive power* relative to each other. The *exercise* of this power is, after all, only a *secondary act* which follows the primary act of the power itself. Unless, then, the exercise of this power is *intrinsically essential* to a body as a body, compenetration should be intrinsically possible. But it is difficult to understand how or why the exercise of this power should be essential to a body as such, since bodily extension demands merely side-by-sideness or extraposition of its parts relative to one another and to the

whole. Hence, it would seem that *no contradiction in terms* is involved in the concept of compenetration. We are, then, philosophically justified in assuming that the compenetration of bodies is intrinsically and metaphysically possible.

Replication. By replication is meant the *simultaneous* presence of one body *in more than one place*, of which each place would suffice of itself to contain the entire body. If it is a question of two places for the same body, it is a case of *bilocation*; if of more than two places, *multilocation*. Experience and observation show that a body is either stationary in one place or moves from one place to another, but it has never been observed that a body can be simultaneously in two or more places. By means of induction, then, it is certain that replication is *physically impossible*. However, as in the case of compenetration, this would not necessarily establish the fact that replication is intrinsically and metaphysically impossible. That point can still be argued, taking the omnipotence of God into consideration. Certainly, if replication involves a contradiction, it is intrinsically and metaphysically impossible. If, for example, a *duplication of place* would necessarily bring about a *duplication of the body*, that would be a contradiction in terms. The supposition is, that *one* body can be in two separate places, and the actual result would be that we have, not one, but two bodies, each of which occupies its own place; one body would be two bodies, and that is a contradiction in terms. The real difficulty of the problem consists precisely in this: Can a

body retain its *unity of being* in such a supposed bi-location or multi-location? It would seem that it can.

The unity of a being depends entirely on the *unity of substance*; so long as the substance or entity is one, its being is one. But the unity of substance does *not* depend on the unity of *place*. This is obvious from the fact that bodies change places without changing their substance or entity. Hence, the multiplicity of place does not, in itself, necessarily induce a multiplicity of substance. Of course, from the fact that bodies can occupy different places successively, it does not follow that they can do so simultaneously. Whether, however, the time element, though naturally important, is *essential* to the problem, is questionable. Since 'presence in a place' is something totally different from 'unity of substance and being,' the successive or simultaneous 'presence in a place' should not affect the substance as such. To assert that a simultaneous presence in two places automatically induces a duplication of the body's substance, is simply to beg the question at issue. If there is no contradiction in terms in assuming the presence of two bodies in one place (compenetration), there can hardly be a contradiction in assuming that one body can be in two places (replication). Compenetration does not fuse the substance of the two bodies into one, and replication should not increase the substance of one body into two. To say that a body is in two places and still only in one, or that it is in one place and yet in two, would indeed be a contradiction; but that is not the case here, because the 'presence,' not the 'substance,' of the body is said to be duplicated or multiplied. A contradiction in terms,

therefore, is not evident. Hence, although the argument is indirect, the opinion, which holds that replication is intrinsically possible, is probable.

Modern scientists, especially those who follow Einstein's theory of relativity, speak of 'non-euclidean' space, 'curved' space, space-time,' and so forth, when referring to the space of the universe. This will be discussed later. Our present interest lies in the philosophical analysis of the concept of place and space; as such, they are not actual realities, but conceptual entities, based on the physical extension of material bodies.

SUMMARY OF CHAPTER VII

Closely related to quantity and extension are the concepts of place and space.

1. *Common Meaning of Place and Space.* According to the common usage given to these terms, 'place' and 'space' are three-dimensional, stationary, and immobile containers or receptacles of bodies, and as such are considered to be distinct from the bodies contained.

2. *Philosophic Concept of Place.* The internal place of a body is the outside surface of this body, considered as the receptacle of the body's entire volume. The *external* place of a body is the surface of the object or objects immediately enveloping this body; this is the *proper* place of a body. The *common external* place is the general position of a body with respect to other bodies at some distance from it.

3. *Ubication.* It is the presence of a body in a definite place. *Circumscriptive* presence is the presence of a body in such a manner that it has parts outside parts in the place where it is. *Definitive* presence is the presence of a spatially unextended substance in such a manner that it can exercise its activity only within certain limits of space. *Repletive* presence is the presence of a spatially unextended substance in all space, past, present, and future.

4. *Philosophic Concept of Space.* Different views have been held by philosophers: space is an actual reality; the immensity or infinity of God; the absolute; a purely subjective sense form; the stuff of the world; relations between bodies; extended substance; concrete extension of

existing bodies. Scholastics distinguish between real, possible (ideal), and absolute space, and maintain that *space is a conceptual being with a foundation in physical nature*.

5. *Space Not a Real Being*. It cannot, as conceived, be an infinite and eternal reality, because that would involve infinite magnitude and number. It would be a three-dimensional material substance, a body; since, however, a body is contained in space, this space would demand another space, and so forth in infinite regress. It is not God's infinity or immensity, because these attributes are one with His spiritual essence; space, however, is not spiritual, because it is extended. It is not the external relations of bodies, because space extends beyond the universe where there are no bodies. It is not extended material substance, or extension itself, because space may be filled or empty and is conceived as the receptacle of extended substance and extension.

6. *Space Not a Purely Mental Being*. Our experience shows that our concept of space comes from external bodies. *Science* proves that extended bodies are real. Such bodies, however, exist in space. Hence, space is related to bodies in nature as their receptacle. Consequently, there must be a foundation in nature for our concept of space, and so this concept is not purely mental.

7. *The True Nature of Space*. We acquire our concept of space through abstraction from the concrete extension of bodies in nature. Hence, space is *abstract extension considered as a receptacle for bodies*; as such it is a conceptual being with a foundation in real things.

8. *Vacua*. A vacuum is the *total absence* of a material, three-dimensional substance in the universe. A 'relative' vacuum is the absence of ponderable matter; an 'absolute' vacuum is the total absence of all ponderable and imponderable matter. An *enclosed absolute vacuum*, one surrounded completely by ponderable or imponderable matter, is possible. God could completely exhaust a steel sphere of all matter.

9. *Compenetration and Replication*. Corn penetration is the presence of two or more circumscriptive bodies in the same place and space. It cannot be said to involve a contradiction; hence, it is intrinsically possible. All that is necessary is that God hinder a body from exercising its resistive power. Replication is the simultaneous presence of one body in more than one place (bilocation, multilocation). This also seems to be intrinsically possible to God. The unity of a being depends on the unity of its substance; and the latter does not depend on the unity of place, since bodies change places without change of substance. It cannot be shown conclusively that the 'simultaneity of place' or the 'duplication of place' would necessarily induce a 'duplication of substance.'

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Chapter 8

QUALITY AND ACTIVITY

WHILE QUANTITY AND EXTENSION ARE OBVIOUS PROPERTIES of bodies and can be subjected to very accurate measurements, there are other properties which are equally important, though they cannot be described in meters and grams. These are the *qualities* and *activities* of bodies. Most scientists are no longer content with the description of the quantitative features manifested by bodies; they have come to the realization that the qualitative properties are even more distinctive and informative. This is due mainly to the study of energy and the activities of bodies resulting from energy.

Since the *inner nature* of bodies cannot be observed directly, but only *indirectly* through its properties, it will be necessary to examine those qualities and activities which are more generally found in all bodies, because it is the purpose of the cosmologist to determine, if possible, the nature of bodies in general.

THE CONCEPT OF QUALITY

The term 'quality' is used in many meanings. Almost any modification and determination of things is designated as a 'quality.' In a strict sense, *Aristotle* describes it as follows: "By 'quality' I mean that in virtue of which people [and things] are said to be such and such."¹ This description is rather vague. A more definite wording can be given to convey the meaning of 'quality': *A quality is an absolute accident completing and determining a substance in its being and in its operations.*²

For a better understanding of quality, it will be necessary to have a clear conception of 'substance' and 'accident.' A substance is a being whose nature it is to exist in itself and for itself, needing no other subject in which to inhere in order to exist. A substance has an amount of entity of its own sufficient for independent existence. Such are electrons and protons, elements and all compounds, plants, animals, and men. An *accident* is a being whose nature it is to inhere in a subject in order to exist. An accident, therefore, is too weak in its own entity to exist in itself and for itself; it needs a subject, a substance, as the support and bearer of its existence. An accident is always the modification and determination of an existing substance. Such are extension, heat, magnetism, electric charge, motion, crystallization, color, resistance, cohesion, activity, shape, etc.; they always presuppose a substance as the subject which they modify and in which they exist.

Some accidents are relative, others absolute. Accidents are *relative*, when their being consists merely in the bearing which one thing has to another. That things are equal in size or number, similar in color or structure,

inferior or superior in value, etc., is due to their mutual bearing toward each other. Accidents are *absolute*, when they confer a real perfection of some kind on the subject in which they inhere. Quantitative dimensions are such; and so, too, are qualities, as will be seen from the definition of quality given a moment ago.

A quality completes and determines (modifies) a substance in its being and in its *operations*. There are, then, two main kinds of qualities: *entitative*, which modify the substance in so far as it is a being in itself, and *operative*, which modify the substance in so far as it is capable of activity and change. The former are more static and passive in character, the latter more dynamic and active. It would be erroneous, however, to draw too sharp a line between these two types of qualities. While the entitative qualities are characterized more by the tendency to stabilize the substance in its own being, there is a certain amount of activity which accompanies the exercise of these qualities. And while the operative qualities manifest themselves more in action, especially in influencing and changing other substances, they also tend to bring about an entitative stabilization of the operating substance itself. This division of qualities is, therefore, more a matter of convenience than of exclusiveness, and this should be borne in mind during the following discussion.

ENTITATIVE QUALITIES

What has just been said concerning the division of qualities into two main kinds, applies also to the following division of

entitative qualities: it is *not exclusive*. Many of these qualities affect matter as such and will, therefore, be present in all states of bodies; other qualities overlap various states. Since it is impossible to mention all qualities found in the manifold types of substances, a selection is made of those entitative qualities which seem to be most *general* and *fundamental* in all types of bodies.

Subatomic States. Subatomic particles, such as electrons, positrons, protons, neutrons, photons, cosmic rays, etc., possess certain states which are decidedly qualitative in character and cannot be explained on the mere basis of quantity. It is necessary to postulate 'qualities' as the root-principles of their existence and nature. That these particles are three-dimensional, is a consequence of their quantity. These particles, however, are qualitatively distinguished in so far as the *amount* and *weight* of their matter (ontological mass) is definitely fixed and stable. We know, for example, that the mass of a proton is about 1845 times that of an electron or positron. Perhaps the most remarkable qualitative difference in these subatomic particles is that of their *opposite electric charge*, which has a fixed and unchangeable character; it affects not only the particle themselves, but also the surrounding medium, producing therein a *field of force*. It is also very probable that they are magnetic in their very constitution. *Inertia* may be a quality, because inertia is, it would seem, something more than the sheer passivity of matter; its ultimate nature is not well understood.

Atomic States. There are a number of qualitative states in the atoms which attract our attention. The nuclear atom

(if the nuclear theory is correct) has a precise *structure*, due to the disposition and configuration of its electrons, protons, and neutrons. This structure is not fortuitous; it is carried out according to a progressive *plan*, as can be seen in the Table of Elements. The differences of properties in each series and the periodic recurrence of similar properties in each group, is evidence of the functioning of entitative qualities of a high order. Furthermore, the aggregation of positive protons into a *nucleus* (although they have the natural tendency to repel each other), attracting some electrons closely and keeping others at a distance (as is evidenced by ionization), can only be explained through the mysterious working of deep-seated qualities which are capable of overcoming the powerful tendencies of their charges. Another qualitative characteristic of the elemental atoms is the *metallic, basic, electropositive* property of those at the beginning of a series and the nonmetallic, acidic, electronegative property of those toward the end of a series, together with the tendency to unite and *neutralize* each other. Throughout these series of elements we observe the fundamental feature of the *octet formation* of planetary electrons, which is most noticeably perfected in the Zero elements, resulting in a balanced, symmetrical, *equalized system*. This accounts for *valence* and partly for *affinity*. Although the various elemental atoms (with the exception of the Zero elements) can give or take valence electrons to form a compound, each resists to the utmost any change or modification of its essential structure: *preservation of identity* is a cardinal property of all atoms. The radioactive elements appear to

be an exception to the law; but even in their case, the emission of alpha and beta particles proceeds according to an intrinsic constitutional necessity in such a manner, that there can be no doubt that unknown qualitative agencies are at work in accordance with a law of their own, since the entire process of disintegration follows an exact sequence and ceases with the production of radio-lead. Another entitative state of each type of atom, due to the agency of an internal quality, is the *fixed volume* which each atom tends to assume and maintain.

Molecular States. There are entitative states peculiar to molecules. Some molecular states of *aggregation* are characteristic. There are elemental atoms which, in their free condition, never unite with another atom of the same element, so that they are monatomic; such is, for example, helium. Others, like oxygen and nitrogen, combine in twos; they are diatomic. Others are triatomic, etc. We say that *cohesion* is responsible for the union of two or more atoms in such a combination; but that is merely a term designating an unknown quality, similar to the term *adhesion* designating another type of molecular attraction. Cohesion and adhesion account for the fact that bodies do not break up into atoms, but appear in closely knit masses. All bodies can assume *gaseous, liquid, and solid states*, depending mainly upon pressure and temperature. Related to these three states are the *fusion* point and the *boiling* point of bodies; under identical conditions these points are determined and fixed. A molecular state, remarkable both for mathematical precision and beauty of structure, is the *crystalline form* of many, and most probably all, substances

of an inorganic nature. What kind of atomic and molecular forces are at work in the development of crystals, scientists do not know. It is certain, however, that we are face to face here with an entitative state of such a pronounced qualitative character, that the ordinary forces present in atoms and molecules will not suffice to give an adequate explanation of the phenomenon.

Molar States. By 'molar' states we understand the states pertaining to larger masses of matter, as distinguished from the masses of atoms and molecules as such. All bodies have the property of *compressibility* and *expansibility*. Under standard conditions, for instance at 0°C and 760 millimeters pressure of mercury, each substance has a definite *density*, so that a certain number of units of mass will occupy a unit volume of space; thus the density of air is 1.293 grams per liter. With the application of heat, or the reduction of pressure, or both, a body will yield to its internal expansive force and occupy a greater volume of space. With the application of pressure, or the reduction of heat, or both, the internal expansive force is partly overcome, and the body will occupy a smaller volume of space. Liquids in small quantities tend to assume a globular shape, as can be observed in a drop of water or mercury, and even large masses of bodies, such as the stars, show the same tendency; this shape is effected by the force of mutual attraction, when bodies are free to move in response to the force. All, of course, have the universal property of *impenetrability*, because it is a fundamental property of matter in all its states. Inasmuch as magnetism is a concomitant phenomenon of electricity, and since all

matter is electrically charged, it follows that *magnetism* is, to a greater or less degree, found in all material substances; often, however, it is present in a neutralized condition and therefore unobservable. Some substances are *paramagnetic*, because they have the property to condense magnetic lines of force; others are *diamagnetic*, because they tend to disperse these lines. Other properties and states, frequently found in bodies, are *hardness, softness, smoothness, roughness, elasticity, tensile strength*, etc.; they are the result of molecular arrangement. There are also varying molar states due to the *conductivity* of heat, electricity, and similar agencies.

These various states and conditions are predominantly 'entitative' in character, because they affect the *being* of substances. They can only be accounted for by the presence of special and general *forces* whose function it is to produce these states, and all such forces go under the general name of 'entitative qualities.'

OPERATIVE QUALITIES

'Operative' means to be 'capable of action.' To 'act' means to do something, to produce some effect, to perform work, to cause a change to occur; or, reversely, it means to receive an effect, to react to an agency, to experience a change in response to some influence exerted upon it. 'Operation' or 'activity,' then, is the exercise of a power or faculty capable of action. Such powers or faculties are *operative qualities*.

All bodily substances without exception manifest activity of some sort. The universe is a tremendous theater of unceasing activity. The most obvious example is local motion. The movement of the stars, the rush of the wind in a storm, the pounding of the surf on the shore, the falling of the rain, the flight of a bird, the speed of a racing automobile, the walk of a man — all are instances of activity in nature.

The concept of ‘operation’ or ‘activity’ is inseparable from the concepts of ‘change,’ ‘cause,’ and ‘effect.’ Whenever there is an activity present, a *change* occurs and something new happens. This change takes place either in the ‘agent’ or in the recipient of the action; the reception of the action on the part of the recipient is called ‘reaction,’ and the recipient is called the ‘reagent.’ Action and reaction occur together, and every action presupposes an active potentiality in the agent and a passive potentiality in the reagent. By means of its action the agent actualizes the passive potentiality of the reagent, and therein consists the ‘change.’ In every change something is produced. That which is produced, is the *effect*; that which is actively engaged in bringing about this production, is the *cause*; and the action of the cause in the production of the effect is *causation*.³

An *operative quality* or, as it is also termed, *natural capacity* is defined as a *proximate accidental principle of operation, toward which (operation) it is specifically directed*. It is said to be the ‘principle of operation,’ because the operation proceeds from it. It is the ‘proximate’ principle, in order to distinguish it from the remote

adequate principle of operation, namely, the being's nature or substance; the nature or substance acts through, and by means of, the faculty or operative quality. It is the 'accidental' principle of operation, because it is a power and faculty; we thus distinguish it from any integral or substantial part of the being which may also be a principle of operation, as, for example, the hand or a muscle. Finally, it must be 'specifically directed' toward a certain operation, in order that it may be said to be the faculty or operative quality of this particular action; the intellect, for instance, is the faculty of thinking, because thinking is the special kind of action which proceeds from it and toward which, therefore, it is 'specifically directed.'

It would be useless to attempt to enumerate all the operative qualities found in nature; they are as numerous as there are different kinds of activities. The cosmologist is interested only in the more *fundamental classifications*. And since we recognize faculties or operative qualities only through and in their activities, the best procedure will be to outline the main types of activities. The two main types are 'transient' and 'immanent' activity.

By *transient* (transeunt, transitive) activity we mean the activity which *tends to change another object*, distinct from the agent, thereby making this object the term or goal of the acquired actuality. The agent and recipient are two distinct beings; the agent influences and modifies the recipient, while the recipient is thereby influenced and modified. By *immanent* (vital) activity we understand the activity by means of which a living being perfects itself and *makes itself the goal* for the acquired actuality. Such an

activity does not tend to leave the agent, in order to actualize or change a being distinct from itself; rather, it begins and terminates in the agent itself, so that it is also the passive recipient of the perfection acquired through its activity.

TRANSIENT ACTIVITIES

Transient activities are peculiar to inorganic *substances*. We can group these activities into three broad classes: chemical, physical, and mechanical.

Chemical Activities. Atoms, molecules, and compounds act and react among themselves, thereby effecting various combinations and decompositions. The entire science of chemistry is devoted to the study and explanation of these activities, their processes and results. All material substances have a double aspect; they are both *active* and *passive*. In so far as they have operative forces of their own, they are active and tend to change others by communicating their own properties to them; and in so far as they lack certain actualities, they are passive and subject to outside influences, so that they are changed by them. This is the basis for all transient activities and changes of a chemical nature.

Chemical forces are very powerful, and the changes effected by them are very profound. This is proven by the relatively great amount of heat which is absorbed or emitted in *endothermic* and *exothermic* reactions. That electricity also plays a prominent part in chemical changes, can be seen in *electrolytic* processes. Particularly

noticeable is the *affinity* or selective tendency of combination which exists between the metallic and nonmetallic elements. While it is true that the tendency to form an octet of planetary electrons in the outer shell of an atom plays a prominent part in the selection of certain elements for mutual combination, this does not seem to be an adequate explanation of affinity. It is a common phenomenon in chemical reaction that one element will force another out of a compound and replace it, although the octet formation is established by both. This seems to demand operative forces of a special kind, distinct from those whose tendency it is to complete the octet.

When elements and compounds come in contact with each other, each influences the other. This brings about a mutual *toning down* of these properties, with a resultant *neutralization and equalization* between them, which eventually establishes a most intimate *union* between the various elements participating in the reaction. As the final outcome of chemical reaction we observe a compound with a stable character and a *new behavior*. Chemists say that such changes bring about a *new substance*. This is meant, of course, in a chemical sense; whether these changes are 'substantial changes' in a philosophical sense, is a matter which shall be discussed later. That the properties and activities of the new substances are radically different from those of the component elements, is a fact of common observation. One need but compare those of water with those of oxygen and hydrogen, or those of ordinary salt with those of sodium and chlorine, in order to note the great change which has taken place in the reaction. Inorganic

substances are identified by their various physical and chemical properties. Among the *physical properties* are color, odor, taste, solubility, physical state, and density; among the *chemical properties*, stability toward heat, light, and shock, and behavior toward other substances at different temperatures. All these undergo modification in chemical change.

Physical Activities. While chemical activities tend to change the chemical substances, physical activities tend to change the *qualitative states* of these substances. This is done through energy. The energies at work in physical change are *sound, light, heat, electricity, and magnetism*. The entire field of radiation belongs in this class. Everyone is familiar with the manifestations of these forms of energy and the changes effected by them. We owe the conveniences of our modern civilization to the application of these energies to our need and comfort. Telephone and telegraph, steamship and train, automobile and airplane, radio and television, electric light and household appliances — all are inventions based on the intelligent use of these physical forces. All substances in nature, from electrons to stars, are subject uninterruptedly to the *interplay* and *transformation* of energy, and most of the observable phenomena present in the universe are reducible to the intense activities of these agencies.

Mechanical Activities. Mechanical forces tend to produce *motion* and effect a *change of position* among material substances. All activities of the various forms of energy are accompanied to some extent by mechanical motion and all tend to produce it. There is subatomic

motion in the electrons and protons, whether bound together in atoms or in the free state. Electromagnetism attracts or repels them. Atoms and molecules are in a continuous state of agitation, as can be seen in the Brownian movements. Solids liquefy, liquids flow and vaporize to gases, and gases are in constant commotion. Chemical combinations and decompositions involve spatial movement; explosions are an extreme instance of the fact.

Distinct from the physical and chemical agencies just mentioned is *mechanical impulse*; it is the shock of a moving body producing motion in another. This includes all types of collision, from the bombardment of atoms by subatomic particles to the cosmic hurtling of a comet or meteor against a star. The most potent of all mechanical forces in the universe is the force underlying the phenomenon of gravitation. It affects every particle of ponderable matter, drawing them toward one another with irresistible bonds. It is one of the factors responsible for the movements of the heavenly bodies, namely, the centripetal force which attracts all planets toward the sun.

Physicists often state that a body in motion, on impact, 'communicates its motion to another.' This is either a metaphorical expression or it is an erroneous conception. Motion is not something which can leap from one body to another. Motion is a *body moving* from place to place; it is a *state* of being, *not an entity* distinct from the moving body itself. Hence, motion cannot leave one body and pass over to another. What happens is this: On impact, the striking body activates the mechanical force of motion present in the body suffering the impact and, since action and reaction

are equal, it loses as much activity as the other acquires; a *new motion* arises in the second body, while the original motion in the first body decreases correspondingly or even ceases altogether, depending on the weight of the two bodies and the angle of collision.

Such are the main types and features of transient activities. Of an entirely different kind are immanent activities.

IMMANENT ACTIVITIES

Immanent activities are peculiar to *living beings*, whether of a material or spiritual nature. Since, however, the cosmologist is concerned only with bodily beings as existing in the physical universe, and since living bodily beings are organisms, immanent activity, in this connection, is identical with *organic activity*. Strictly speaking, organic activity or vital function is the subject matter of psychology and will receive full treatment in that department of philosophy. Nevertheless, organisms are *real bodies* and integral parts of the universe. Therefore, they cannot be ignored by the cosmologist. Nor can their activities be passed over in complete silence, because organisms are composed of the material elements and utilize their activities in vital functions. The contrast between inorganic and organic activities throws an interesting side light on both. A short description of the immanent activity of organisms will, therefore, not be amiss.

There are, so far as we know, only three types of organic beings in our universe: *plants, animals, and men*.

Plants: Vegetative Function. The organic substance which is the seat of life is the protoplasm, and the unit of organic structure which carries out vital function is the *cell*. Protoplasm, though it consists ultimately of the ordinary chemical elements, represents a synthesis of extreme diversity and complexity, and nothing even remotely resembling it is found anywhere in inorganic compounds. Left to themselves and operating under the force of their own innate powers, the elements are incapable of forming *organic compounds*. The only inorganic structure which will bear comparison with the cell is the crystal; but the crystal is rigid, dead, devoid of activity, and without any trace of internal *organs* possessing the *differentiation of function* so manifest in the living cell.

Plants, the lowest form of organic beings, have a number of distinctive immanent activities. The most fundamental of these is *metabolism*, the process through which the cell draws into its structure extraneous matter and energy necessary for its vital function. Metabolism comprises a double cycle, the 'anabolic' and 'katabolic.' The former takes the elements with their energy contents, synthesizes them into special compounds, and makes them part of the cell's structure; the latter breaks down these compounds through oxidation, thereby liberating the stored energy for use by the cell.

Next, we see *growth and development*. Through intussusception the process of nutrition builds up the body of the organism to normal size. All plants have a definite structure which is typical of the various species to which they belong. Some consist of a single cell, such as the

amoeba, others develop into gigantic trees with billions of cells, such as the redwoods; some are terrestrial plants, others marine plants; some are vines, others are bushes or trees; some have flowers, others lack them; and so on, through a million specific forms and shapes. Each tends to realize its own *type* through nutrition and specialization.

The power and activity of *reproduction* is one of the most remarkable phenomena of nature. Not only does the plant tend to preserve its own identity as an individual, but also the identity of the species of which it is an individual. The methods of reproduction vary; it may be through direct *fission*, or *mitosis*, or *budding*, or *sporulation*, with or without special sex organs.

Another activity is the plant's adaptation to external stimuli. It seeks to preserve its identity at all cost, changing structure and function to meet the influence of its environment, repairing damaged parts, even regenerating entire structures which have been lost. This power of regeneration is less noticeable in the higher and more specialized forms of life, but the power of adaptation in its general features is found in all plants, animals, and men. Another universal property of living tissue is *irritability*, i.e., the reaction to stimuli; this reaction is of such a character that it results in the well-being of the organism as a whole.

Animals: Sensory Function. In common with plants, animals have the vegetative functions just enumerated, modified and specialized according to the demands of their own peculiar kind of life. Besides these functions, however, animals have a type of function distinctively their own, *sensation* and *perception*, which is a vital function

beginning with the stimulation of a sense organ by an appropriate object and ending in the perception of the stimulating object. There are different kinds of sensation, depending on the different kinds of sense organs. Not all animals are endowed with every kind.

All animals apparently possess the faculty of what is commonly called 'touch' or 'feeling,' but which is more accurately termed the *somesthetic sense*. It is concerned with the experience of bodily conditions and processes. There are sensations of pressure, pain, and heat; sensations of movement in the joints, muscles, and tendons; sensations of equilibrium; sensations of organic needs, satisfactions, fatigues, illnesses, and general well-being.

Taste and *smell* are found in many, but not in all animals. They are chemical senses, stimulated by the chemical properties of bodies. The two senses are closely associated in their operations, and the perceptions arising from each are often confused. The qualities perceived by means of the sense of taste are primarily four: bitter, sweet, saline, and sour savors. Psychologists are at variance in their enumeration of the primary qualities which affect the sense of smell. The following division answers the purpose: flowery, fruity, spicy, resinous, putrid, and burned odors.

The sense of *hearing* responds to the undulatory movements of different media and depends on the frequency and amplitude of the waves impinging on the organ. The range of the vibrations which are audible varies, of course, with different classes of animals. In the case of man the range extends between about 20 to 20,000 frequencies per second. The organ of *sight* or *vision* reacts

to light and to the shape and color of objects. Elements and compounds have the selective power to absorb certain light frequencies and reject others. The latter are reflected from the objects, enter the eye, and affect the rods and cones of the retina; the retina is the physiological seat of vision. The nerves and the brain participate integrally in every process of perception.

These senses are located primarily, though not exclusively, in *peripheral organs*, i.e., in organs which are situated in or near the surface regions of the body. A few senses are located primarily in the brain and are termed *internal senses*; they are the common or central sense, imagination, memory, and instinct or estimative power.

The *common* or *central sense* makes animals aware of their sense acts. This sense consciousness notifies them of the presence of the perceptive acts just mentioned, and also of emotional states, such as pleasure, pain, anger, desire, and of appetitive striving. It enables them to distinguish in a concrete way between the various organs and perceptions and to locate them in the bodily system. This is fundamentally a coordinative sense.

The *imagination* is the power of re-presenting concretely objects which have previously been perceived but are no longer actually present in perception. To a very great extent it is associated with sense memory, which is the power to recall objects and events of the past and to locate past experiences in their proper sequence of time and place. Imagination, however, must not be identified with memory. The imagination can use the materials supplied by the sense perceptions to form images of its own fashioning,

without any regard to conditions of time or place as having been experienced in the past; dreams and the play of fancy belong to this class of imaginative activities.

Estimative power is the ability to recognize in a concrete manner objects which are good or bad for the organism of the animal. As a result of such knowledge, animals may and usually do, perform certain very purposive acts or complicated sequences of acts, although they have no knowledge of the purposiveness of such acts through experience. The urge to perform these acts exists in them prior to all experience. The modern term *instinct*, in addition to the estimative power which is the cognitional element, includes also emotional and motor elements. The influence of instinct is noticed chiefly in actions which are necessary for the preservation of the individual and of the race.

The cycle of perceptive acts is completed in the animal in its *emotional states*. They are the manifestation of *appetitive* powers, by means of which the animal desires an object and strives to obtain it as a good. Feelings and emotions play a dominant part in the life of all conscious organisms as concomitant phases of appetitions. Following the knowledge of an object, an impulse arises in an animal to seek what is pleasant and fend off what is unpleasant; this brings about definite changes in the organic mechanisms of the individual, especially in those which are glandular. This complex set of activities is comprised under the general term *orexis*.

Since the mere desire of an object will not enable the animal to obtain it, it is endowed with the power of

locomotion. Unlike the plants, especially those of a higher order, which are fixed in the soil, animals can move about more or less freely. They have muscles which are activated by motor nerves. Some muscles are 'voluntary,' others are 'involuntary'; these terms, however, are rather inappropriate, because they apply, strictly speaking, only to man and his rational will. What is meant is that some muscular actions are subject to conscious control, while others are not. Types of locomotion are: the swimming of fishes, the crawling of reptiles, the flying of birds, the walking and running of bipeds, quadrupeds, and many-footed animals.

Men: Rational Functions. So far as we know, man represents the highest form of life among the organic beings in the universe. He possesses the vegetative functions of the plant and the sensory functions of the animals. He also possesses vital functions which are specifically his own, namely 'intellection' and 'volition.'

Intellection appears in three phases: ideas, judgments, and inferences. *Ideas* are the intellectual representations of things, and they are very different from the sensory representations of things. Sense images are concrete and individualized; ideas are abstract and universalized. Sense images represent single objects; ideas represent types and classes. Sense images reveal the traits in which single things differ and are particularized; ideas manifest the features which things have in common and which enable the intellect to group them into general classes. *Judgments* are acts of the intellect affirming or denying one idea of another, showing their mutual agreement or disagreement.

And since ideas are representations of things, judgments express the relationships which the intellect conceives to exist between these things in the order of reality. If the judgment agrees with these objective relationships, it is true; if not, it is false. Judgments, therefore, contain truth and error. *Inferences* are a mental process, by which, from certain truths already known, the intellect passes to another truth distinct from these but necessarily following from them. In 'induction' the intellect concludes from particular instances to the existence of a general truth or law; in 'deduction' it concludes from the general truth or law to the truth of a particular instance. The reasoning which underlies all research in science and philosophy is reducible to these two fundamental types of inference. Man also has the faculty of *understanding*, which consists in a direct, intuitive knowledge of principles and things. *Language* is the expression of intellection: that is the reason why man alone is gifted with language.

Volition or *rational appetite* is the activity of the will inclining toward, or striving after, some object intellectually apprehended as good. Man has *free will*, namely, the capability of choice or self-determination. His will necessarily strives for the good; but between motives and alternatives it has a free choice of selection, and the decision lies entirely within the power of the will itself. Though man can choose as he desires, his will is bound by the obligations of the *moral law*. Decisions in conformity with the moral law are morally good; those not in conformity with it are morally evil (sinful, wicked, criminal). Good actions are deserving of merit and reward; evil

actions, of condemnation and punishment. *Conscience* approves of actions conforming to the moral law and condemns those in opposition to it. Our entire concept of society, government, human rights and duties, and judiciary processes has its basis in the fact that man's volition is free in its choice between good and evil.

Concomitant with all these rational functions is *intellectual self-consciousness*. Man, unlike the brute, is conscious of self, of his own *Ego*, in the acts of thinking, willing, and sense perceiving, and he recognizes his own self as the subject of these acts, as the agent who performs them and in whom they occur. He is also aware that these acts and states differ among themselves, while he, in whom they take place and in whom they inhere as in their subject, is one and indivisible, an unchanging, permanent reality amid all the changes which occur within his person. Man alone, among the various kinds of beings existing in the physical universe, is a *person*, i.e., an individual, complete, intellectual substance which is self-contained and autonomous in its operations.

Even this extremely brief outline suffices to bring out with striking clarity the sharp line of demarcation which divides the *immanent* activities of living beings from the *transient* activities of inorganic substances. They are *specifically* different and must have their respective origins in specifically different principles. Hence, the ultimate essential constitution of organic and inorganic bodies must also be of a specifically different nature.

This concludes our investigation of the various general kinds of 'entitative' and 'operative' qualities. There is no

further need to prove that *qualities actually exist* in nature. Our enumeration is not mere speculation. These activities and tendencies of bodies are facts which are verified by everyday experience and by exact scientific observation and experimentation. The principles, however, from which these activities and tendencies proceed, are termed 'qualities.' Consequently, qualities exist. The scientist speaks of 'energies' and 'forces,' while the philosopher calls them 'qualities.' The thing is the same; and it is the thing, not the name, that counts.

ACTION AT A DISTANCE

One of the interesting problems which has emerged from the philosophic examination of bodily activities is the question of the possibility or impossibility of '*action at a distance*.' The term, however, must be properly understood.

Ordinarily, agent and reagent must be present to each other in some manner, in order that the causal action of the former can produce an effect in the latter. This presence may be either 'immediate' or 'mediate.' One thing may be *immediately present* to another in a variety of ways. For example, through the substance itself, as when the mind of man produces a thought of the intellect or an act of the will. Or, by means of a substantial union, as when the soul of man performs vegetative and sensitive functions or locomotion in its own body. Again, by means of contact, as when a man drives a car, wrestles with another, throws a ball, pushes a cart. In these cases no other being intervenes between the cause which acts and the recipient which is

influenced by the causal action. Not all instances of action and reaction are of this kind. In many cases some other body or bodies intervene between the agent and reagent, so that the agent and reagent are only mediately present to each other; the action of the agent reaches the reagent through the mediation of the intervening body or bodies. The manner of being *mediately present* to another differs, depending on the various kinds of mediation possible. Thus, it may be a case of using an instrument, as when a carpenter uses a saw, a welder uses a blowtorch, a butcher uses a knife. Or, it may be by means of some sort of emanation, as when a flower affects the sense of smell through chemical effluvia and the sun influences the eye through light waves. Again, it may be by means of an action impressed upon another cause which is in immediate contact with the reagent, as when a cue ball strikes the first ball of a series of billiard balls set in a row, so that the last one of the series is impelled in a forward direction. In all such instances of mediate causal action, the reagent is at a distance from the agent, and this is, in a true sense, 'action at a distance.'

That, however, is not the sense of the term 'action at a distance' in the meaning of the problem here under consideration. The problem is concerned with the action of an agent upon a reagent *across an absolute vacuum*, so that the agent and the reagent are 'at a distance' from each other *without immediate or mediate presence* in any manner whatsoever. Not even imponderable matter, such as aether, would be present, so as to bridge the absolute gap between them and carry the causal action from the one to

the other; the space interval between them must be devoid of every sort of medium. It is in this restricted meaning that the question of the possibility of an 'action at a distance' becomes a real problem.

Dynamists, who reduce the extension of bodies to indivisible points separated by empty space intervals, maintain that these points act upon one another through forces which fill the intervening empty space. This amounts to an action at a distance. *Kant*⁴ and *Lotze*⁵ also defend the view that forces can act at a distance. Those adherents of the modern theory of *relativity* who deny the existence of the aether in interstellar space, must also, if they are consistent, advocate action at a distance. *Physicists*, generally speaking, deny the possibility of action at a distance. *Scholastic* philosophers, as a rule, maintain its impossibility, although some, among them *Mercier*,⁶ contend that it is possible and consider the arguments adduced to prove the metaphysical impossibility of such action to be unconvincing and invalid.

The problem can be approached from two angles, the physical and the metaphysical. From the standpoint of the former, the question arises whether 'action at a distance' is a *physical possibility*, i.e., whether, according to the laws operating in nature, it is possible for one body to causally influence another separated from it without any intervening medium. From the standpoint of the latter, it is the question whether such an action is a *metaphysical possibility*, i.e., whether it is intrinsically possible in itself, due to the fact that there is no contradiction in terms involved in the very idea of an 'action at a distance'; if it involves a

contradiction, it is metaphysically impossible, and then even God's omnipotence cannot make it possible. Whatever is physically possible, is also metaphysically possible; reversely, whatever is metaphysically impossible, because contradictory, is also physically impossible.

It seems that it can be established that an '*action at a distance*' is *metaphysically impossible*. Let us quote from Cardinal Mercier; he defends the possibility. "The *force* put into play we cannot conceive to be anywhere but in the agent; for if it is an accidental property it depends upon its subject of inherence, and if a substance, it is identical with the agent. The *effect* is wholly in the recipient subject which occupies a position outside the agent. Now, does action pass from the agent to the patient? Certainly not; the agent does not cause any accidental reality originally belonging to itself to pass over into the recipient subject, otherwise every efficient activity would be reducible to a simple displacement of pre-existing realities, to a passing over of accidents. Therefore no transference takes place, nothing passes from one to the other; the effect is a new birth, and takes place entirely within the patient under the influence of an external cause (*Gen. Metaphysics*, no. 144)." He concludes by saying: "In this analysis neither contact nor distance appears as an indispensable condition of activity."⁷ On the contrary, to us it would rather appear that his analysis proves that *contact* (mediate or immediate) is a requisite condition of transient activity, when one body influences another; a complete vacuum would make such an influence impossible.

It is true, as Mercier states, that a *force* is an *accident* and must inhere in its substance as in its subject; it does not pass from the agent to the recipient. The action of the agent can no more be separated from the agent than the wave can be separated from the water or motion from the moving body. How, then, does the action of the agent produce an effect in the recipient? By arousing the latent forces present in the recipient into an action of their own; thereby the recipient is changed, and an effect is produced in it. "The action of a created agent is in the patient," as Mercier himself states in the reference given by himself.⁸

But if that is so, how can the action of the agent influence the recipient without *contact*, mediately or immediately? Since the force and its action cannot leave the agent, the lack of contact due to an absolute vacuum would make it impossible for the agent to affect the recipient. The force and its action need a *bearer*, and the vacuum, being nothing, cannot act as bearer of either force or action. Hence, the agent cannot influence the recipient under such conditions. If the action proceeding from the agent did not terminate in an object *present* to it, it would terminate in *nothing*, because a thing, with respect to a place where it does not exist, is equivalent to nothing in that place. In that case, however, *it could not act at all* in transient activity, and then no effect could be produced. But that is equivalent to saying that an 'action at a distance' is impossible. The supposition, however, is, that such an action is possible. Since to be 'possible' and 'impossible' is a contradiction in terms, and since a contradiction is metaphysically

impossible, it seems clear that an 'action at a distance' is *metaphysically impossible*.

The argument can also be formulated in the following manner. Action presupposes being (*agere sequitur esse*). But no being *exists* at a distance. Therefore, no being acts at a distance. The major premise demands elucidation and proof. Action has two phases: the exercise of the cause in the agent, and the dependence of the effect on this causality of the agent. The *exercise* of the cause is dependent on being; because, in so far as a thing lacks being, it is equivalent to 'nothing,' and 'nothing' cannot perform any action. Hence, in so far as a thing is restricted in its being, it is also restricted in its action. But the *dependence of the effect* on the causality of the agent is also dependent on this being; because, only in so far as a thing is present, can something be said to be dependent on it and sustained by it. Consequently, only where the being is present can the action be said to be present; and, since the active agent is not present at a distance from itself, neither can the action be present at a distance from the agent. But it is only where the action is, that the effect can be. Hence, action at a distance is impossible.

Mercier contends that such arguments really beg the question by presupposing the very point at issue. That is something which the student must decide. Most scholastics judge that the arguments are legitimate.

THE EXISTENCE OF THE AETHER

The *aether*, or *ether*, is a kind of imponderable matter far more subtle than that of visible bodies and is assumed to exist in all those parts of the universe not filled by ponderable matter. Aether, therefore, fills out the space between subatomic particles (electrons, protons, etc.), atoms, molecules, large aggregations of bodies, and the heavenly bodies. Since it is supposed to fill all interstellar space, it is the most widely diffused material substance known.

Experimentally, the existence of the aether has never been positively demonstrated. It is, however, a *postulate of science*. The vast stretches of interstellar space are, to the greatest extent, empty of ponderable matter. Even the spaces between molecules and atoms and between the planetary electrons and the nucleus of the atom are empty, and the distances between them are relatively very great. Every piece of matter 'attracts' every other piece of matter through *gravitational force*. Gravitation permeates the entire universe through all space. Similarly, *waves of radiation* traverse the universe in all directions from the stars. Without the presence of some universal medium of transmission, these phenomena are inexplicable — particularly, if one affirms the impossibility of 'action at a distance.'

Furthermore, the same sort of vehicle is required as the medium for *cohesion*, *chemical affinity*, electromagnetic *attraction* and *repulsion*, *mechanical force*, and for the *elasticity* which exists between particles; these particles do not touch, but remain at a distance. In order, then, to avoid action at a distance, these portions of matter must be

connected by a medium. This medium physicists term 'aether.'

Electrons, positrons, protons, and photons are, so far as scientists can judge in their present state of knowledge, the ultimate particles of ponderable matter. They are, however, always surrounded by *fields of force* and accompanied by phenomena of *wave action*. Evidently, then, they are completely enveloped by a universal medium which becomes agitated by these particles and reacts by means of fields of force and waves. Notwithstanding the corpuscular nature of electricity and light, the existence of aether thus still appears, from the standpoint of science, to be a *physical necessity*.

As to the exact nature and constitution of aether, little or nothing is known. This much, however, is certain: its structure cannot be molecular, but must be *continuous*. If the aether were molecular, the very purpose for which its existence is postulated would be nullified; because in that case it would consist of separate particles with space between them, and the problem of 'action at a distance' would not be solved. Such an aether is useless. Only an aether that is perfectly or at least imperfectly continuous can fill the requirements of a universal medium between particles and portions of ponderable matter which are separated by interspaces.

From these entitative and operative qualities with their respective activities we now pass on to a consideration of 'movement' and 'time,' two concepts always involved in bodily activity.

SUMMARY OF CHAPTER VIII

Qualities and *activities* are important properties of all bodies; they reveal indirectly the nature of a being.

1. *The Concept of Quality.* A quality is an absolute accident completing and determining a substance in its being and in its operations. Hence, there are two main types of qualities: 'entitative' and 'operative.'

2. *Entitative Qualities.* These qualities modify a substance in so far as it is a being for itself; they are more static in character, tending to stabilize the substance in its own being. The states which result from such qualities are *subatomic, atomic, molecular, and molar states*.

3. *Operative Qualities.* These modify a substance in so far as it is capable of activity and change; they are more dynamic in character, tending to influence and change things by action. An operative quality is a proximate accidental principle of operation, toward which (operation) it is specifically directed. There are two main kinds of activity or operation in this connection: 'transient' and 'immanent.'

4. *Transient Activities.* These are activities which tend to change another object, distinct from the agent, thereby making this object the term or goal of the acquired actuality. Transient activities may be *chemical*, when they change the chemical substances, or *physical*, when they change the qualitative states of substances, or *mechanical*, when they produce motion and effect a change of position.

5. *Immanent Activities*. By means of these a living being perfects itself and makes itself the goal for the acquired actuality. There are three main types of organic beings with specific kinds of immanent activity. *Plants* have vegetative functions: metabolism, growth and development, reproduction, and adaptation. *Animals* have sensory function: the somesthetic sense, taste, smell, hearing, sight, central sense, imagination, sense memory, instinct, and also *orexis* and power of locomotion. *Man* has intellection and volition; he is endowed with self-consciousness and is a person.

6. *Action at a Distance*. By this is meant action across an absolute vacuum, without any intervening medium of any kind. It seems to be *metaphysically impossible*. Actions and forces are accidents; as such they must inhere in a substance and cannot pass from one body to another. Hence, one body cannot influence another except by contact, either immediately or mediately. Since action presupposes being, and since no being exists through a distance, it follows that no being can act at a distance.

7. *The Existence of the Aether*. This is a *postulate of science*. The aether is necessary as a universal medium in order to account for gravitation, for the transmission of radiation, for the effects of cohesion, chemical affinity, electromagnetic attraction and repulsion, mechanical force, and elasticity, and for the existence of fields of force and wave action in the universe.

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2 See the author's *Domain of Being*, Ch. 19

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4 *Metaphysische Anfangsgründe der Naturwissenschaft* (Rosenkranz edit.), Vol. 5, p.364

5 *Grundzüge der Naturphilosophie* (Leipzig, 1882), p. 19

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Chapter 9

MOVEMENT AND TIME

ANOTHER FUNDAMENTAL FEATURE OF ALL BODIES IS THEIR existence in *time*. Time, like the three dimensions of space, is a universal condition or modality of all things in the physical universe; for this reason it is often spoken of in our day as the 'fourth dimension' of bodies. And in fact, 'space' and 'time' are always found together; anything affected by space is also affected by time, and *vice versa*.

'Time' is most elusive and mysterious. We encounter it in everything we do and observe; and yet, in the very act of our scrutiny it seems to escape, for it is no longer present but past. Like space, time has always been a problem for philosophic minds. Since it is a species of 'duration,' it will be advisable to begin our investigation into the nature of time by a brief examination of 'duration.'

DURATION

Duration has a close relation to *existence*. It is impossible to conceive the idea of 'duration' without implying them idea of 'existence.' To say that a thing exists for a minute, a day, a year, or a century, is the same as to say that it has a

‘duration’ of a minute, a day, a year, or a century; and an ‘eternal existence’ is identical with an ‘eternal duration.’

It would be erroneous, however, to consider ‘duration’ and ‘existence’ as altogether identical in meaning. While it is true that ‘duration’ necessarily implies ‘existence,’ the reverse is not true: ‘existence’ need not imply ‘duration.’ God could create a being in one instant and annihilate it in the next. In this case the being has had ‘existence’ for one instant; but in no real sense did it have ‘duration,’ because it did not endure in its existence. For ‘duration’ a continued existence, no matter how short, is required. Hence, *duration* is defined as continued existence, or the *persistence of a being in existence*.

Time, since it is measured in instants, seconds, minutes, hours, days, and so forth, necessarily involves the concept of continued existence or ‘duration.’ We can, however, speak of ‘duration’ without in any way bringing in the concept of ‘time.’ The duration of God’s existence, for example, is termed eternity; it is, as the famous definition of *Boethius* (480—525) calls it, the complete and simultaneous possession of interminable life.¹ His existence is without beginning and end, without change and sequence, without past and future. God exists of necessity, and He possesses being and activity in infinite fullness without increase or decrease in an everlasting present. The measurements of time simply do not apply to the duration of God’s existence. God coexists with the thousands and millions of years of time, so that His eternal present corresponds without change to every moment of time as it flows from the future

through the present into the past: God's duration is an *eternal 'now.'*

Spiritual beings, since they do not consist of substantial parts and form no substantial compounds, have an existence different from that of physical bodies. They have a natural existence which, though it had a beginning, has no end. Having received existence, they cannot be destroyed except by annihilation. Such beings cannot suffer change in their substance, but there is succession in their states and activities. In some ways, therefore, they resemble the eternal, unchangeable existence of God and also the temporal, changing existence of physical bodies. Their peculiar species of duration is therefore designated as '*aeviternity*'; they are 'aeviternal.' *Aeviternity* is the duration in existence of a creatural being which of its nature is *substantially incorruptible* and immortal; it is also termed 'hypothetical,' 'relative,' or 'participated eternity.' Due to the fact that spiritual beings undergo changes in their activities and internal states, such as thinking and willing, it is a mooted question whether their existence should not be termed 'temporal' in character. At any rate, the concept of 'time' may be applied to them in a wider sense.

In a strict sense, *time* applies to the duration of *physical bodies*. Our concept of 'time' has been derived from our observation of the continued existence of bodies, due to the fact that we have an immediate awareness of our own body and other bodies in their movements and changing states. While, therefore, we do quite frequently speak of God and spiritual beings as if their existence were measured by the

standards of time, this is done in a figurative and *analogical* sense. This will become clearer as we progress in our investigation.

THE CONCEPT OF TIME

The notion of 'time' is common to all men of all times; it antedates philosophy. Philosophy attempts to evaluate this notion and to determine the nature of 'time.' To proceed logically, therefore, we must begin with the notion of 'time' as it is used in daily life.

'Time' is conceived as *successive duration*. Unlike space, time is not stationary and immobile; on the contrary, it moves onward continuously, and the 'march of time' is a phrase current in every language. Nothing can stop, retard, or hasten it, because 'time moves with an ever even pace'; its movement is steady, inexorable, unchangeable in progress and speed. Nevertheless, in opposition to this statement, 'time flies,' 'time drags,' 'the time is short,' 'the time is long,' 'the time of the race was reduced considerably,' and so on. It is viewed as something which embraces within its capacity all movements and activities of the universe, for we say that 'all things happen in time.' Like space, we conceive it as some sort of an *entity* preceding the creation of the world, as when we state that 'the world was created in time' or that 'the world could have been created at any earlier time'; and we also think of it as extending without limit into the future, irrespective of the future existence of the world, as when we use the expression 'time without end.' We thus give to it the

attributes of a *certain infinity*. On the other hand, it is considered to be altogether *finite*, because 'the time was one second, one hour, one day, one year,' etc. 'Time' consists of the 'past, present, and future'; still, 'the only time is the present, because the past is no more and the future is not yet.' Many contradictory statements are thus made about 'time.' What, then, is this mysterious, contradictory thing called *time*?

To a great extent, it will be noted, the properties of 'time' parallel those of 'space.' It is but natural, therefore, that the opinions of philosophers on the nature of 'time' resemble their opinions on the nature of 'space.' *Epicurus* viewed it as an entity and existence independent of the mind. *Gassendi* conceived it as a special sort of being, neither substance nor accident, totally different from the things and movements which exist in it. *Newton*, *Clarke*, and others, identified it with the eternity of God. *Descartes* looked upon it as a mere mode of thought. *Spinoza* made it an attribute of his pantheistic divine substance. *Kant* maintained that 'time' is a subjective, innate, *a priori* sense form of internal intuition, antecedent to all experience, which makes all things and experiences appear as occurring 'in time'; it is not an objective attribute of things-in-themselves and has no foundation in the reality of nature. His view finds an echo among many scientific philosophers of modern times, notably among the followers of the school of *Einstein*, where 'space-time' is interpreted in a large measure as being more or less a mental construct imposed on the universe.

S. Alexander and many adherents of the recent theory of 'emergent evolution' give an unusual meaning to *space-time*. It lies at the basis of the evolution of the universe. "Space-Time is the stuff of which matter and all things are specifications."

"The stuff of the world which is Space-Time I have also described as Motion, that is Pure Motion, before matter has been generated in it." "The world which is Space-Time never and nowhere came into existence, for the infinite becoming cannot begin to become . . . Space-Time does not exist but is existence itself, taken in the whole." "In truth, infinite Space-Time is not the substance of substances, but it is the stuff of substances. No word is more appropriate to it than the ancient one of hyle ($\upsilon\lambda\eta$). Just as a roll of cloth is the stuff of which coats are made but is not itself a coat, so Space-Time is the stuff of which all things, whether a substance or under any category, are made." According to this view, then, space-time is some sort of primordial, unformed, chaotic entity which eventually becomes, through evolution, every kind of specific being present in the universe; indeed, it even becomes mind and deity.

Bergson maintains that there is no real duration except in our internal (mental) states. We obtain the idea of succession, and thereby of time, in the world by introducing *spatial relations* into our states of consciousness. Real time, therefore, does not exist in the physical world; it is a purely mental product.

The *scholastics*, following *Aristotle*, maintain that 'time' is not a distinct entity or reality; it is a *conceptual entity with a foundation in nature*. Our concept of 'time' is based

on *movement* and *change* in ourselves and in other bodies. In so far as actual movements and changes occur in nature, the time involved in them is *real time*. There are, then, as many 'real times' as there have been, and are, and will be, actual movements and changes in the single bodies throughout the universe from its beginning until its end. The universe was created by God, and that not from eternity (we presuppose that here); hence, God could have created it earlier than He actually did. He could also have created a much larger universe, containing indefinitely more bodies than actually exist. There are, therefore, possible movements and changes which could, but never will, exist. The time involved in these possible movements and changes is *possible time*. The sum of all real time and all possible time, considered merely as 'time in general,' is *absolute time*. If we make a phantasm or image of this absolute time in our imagination and picture it as a kind of receptacle or stream in which all individual times, actual and possible, have a place, we have *imaginary time*. While 'time,' then, in the scholastic view, is not an entity independent of the mind, it is not a pure fiction of the mind, but has a foundation in reality, inasmuch as it is an abstraction derived from actual movement and change in nature. We accept this view, just as we accepted the scholastic view on the nature of 'space.'

TIME NOT A REAL BEING

'Time' is *not a real being* which exists in nature independent of the mind. The reasons are practically the

same as those which were adduced to show that 'space' is not a real being. Briefly, they are as follows.

Time, as we conceive it, extends *without limit* in the past and in the future. Since God is eternal, no limit can be assigned in the past or in the future in which God could not create bodies. Bodies, however, exist 'in time.' Hence, if time is a real entity, it must possess a *positive eternity*. Now, if time is without limit in the past and future, i.e., eternal, it must consist of an *infinite number* of present moments, because it consists of a series of successive present moments which flow continuously from the future through the present moment into the past. But an infinite number is impossible. Therefore 'time,' as a real being, is impossible.

Again, if time were a real being, it would be an entity existing itself and for itself; in other words, it would be a *substance* and, since it is not spiritual, *material* substance. Now, a material substance is a *body*. Time, however, is conceived as being in a continuous process of movement and change; hence, it would be a continuously moving and changing body. But moving and changing bodies are acknowledged by everybody to be 'in time.' Hence, 'time,' since it is a moving and changing body which exists 'in time' demands another absolute time in which to exist as 'in time.' This second absolute time, for the same reason, demands a third absolute time; and this process must be repeated through an *infinite regress*. That, however, again necessitates an infinite number, which is a contradiction in terms. 'Time,' therefore, cannot be a real being.

'Time' cannot be the *eternity* of God. God's eternity is altogether simultaneous and as such without a vestige of

change or succession, while time is characterized by continuous change and succession. Nor can it be an *entity* in the meaning of Epicurus or Gassendi, because such an entity, being eternal in duration, would involve an infinite number of successive moments. Nor can it be the *stuff* out of which all things in the universe are generated through evolution, as is postulated by the space-time of Alexander and others, because 'time' is conceived by everyone as something in *which* all bodies exist, but not *out of which* they are made.

From all this it follows that it is a philosophic error to consider 'time,' as we conceive it, to be a real being existing as such.

TIME NOT PURELY MENTAL

'Time' is not a purely conceptual being without any foundation in the realities of nature; on the contrary, it is based on definite occurrences of motions and changes actually taking place in and among bodies.

For one thing, we *experience* such movements and changes in our own being. Our being is not static, but dynamic. We are continually *doing* things. We develop and change in an active manner. We *move* from place to place. Our bodily and mental states *change* from hour to hour and from day to day.

We can no more doubt or deny these facts than we can doubt or deny our own existence. These realities, however, are not instantaneous in character, but gradual, *successive*, progressive. And therein lies the element of *time*, namely, a

succession of instants and moments which is measured in seconds, hours, days, and years. If these realities exist, time has a foundation in nature and is not purely mental and subjective in character. If time is a purely conceptual being, these realities must also be purely conceptual beings; but in that case, the testimony of consciousness is an illusion, and then all knowledge is an utter impossibility.

Science testifies to the actual *existence of the physical world*. And with the existence of this world there is also given the existence of physical *motion* and *change*. Elements combine to form compounds and then dissolve to form other compounds; this process of combination and dissolution goes on uninterruptedly. Bodies *move* from place to place, not instantaneously, but by passing over definite regions of space. The *earth* revolves on its axis once in every 24 hours and around the sun once in every 365 days. This motion is used as the standard of measurement for other motions, because it is uniform and continuous; it is our 'day' and our 'year.' The day is divided into periods of hours, minutes, seconds, and fractions of seconds, while the year is divided into months. But seconds, minutes, hours, days, months, and years are divisions of *time*. Consequently, 'time' is not a purely subjective construct of the mind, but is founded on the realities and occurrences of nature. To deny that time has a foundation in nature and to assert that it is a purely conceptual being, is tantamount to a denial of the existence of motion in the world and of the world itself. Such a denial, however, means the bankruptcy of scientific knowledge and of all knowledge.

In view of these facts, the contention of Kant, that our concept of 'time' is due solely to an innate, subjective sense form, anterior to all experience, is seen to be entirely arbitrary and unwarranted. Descartes' contention, that times is nothing but a mode of our thought, is also erroneous. And so, too, is the view of Bergson.

MOVEMENT AND TIME

In order to understand the true nature of time, we must have an understanding of movement, because the concept of time presupposes the concept of movement and is derived from it.

By *movement* we mean here *continuous change*. By 'change' we understand the transition of a thing from one positive state of being to another positive state of being. Three elements are required in a change: one state of being as the starting point; a different state of being as the ending point or goal; and a transition or passage from the one state to the other. Both the starting point and the goal are a condition of rest; the 'change' itself consists precisely in the transition or passage between these two points of rest. While the thing is still at the starting point, it is at rest; it does not change, and there is no movement. When the thing has arrived at the goal, it is again at rest; the change is completed, and the movement has ceased. It is only during the period when the thing passes from one state to the other, from the starting point to the goal, that change and movement occur.

This change must be uninterrupted, *continuous*. No gap or stop may intervene between the terminals of the starting point and the goal. If a stop occurred, so that the change were discontinuous at any point, that point would be the goal, the point of rest; the change would cease, and the movement would cease with it. Similarly, a change which is instantaneous, and not continuous, would involve no movement. 'Movement,' as the term plainly indicates, involves *successive stages* in the transition from one state to another, and that excludes instantaneous change.

Movement may be either *quantitative* or *qualitative*, inasmuch as there may be a continuous change either in quantity or quality. We have quantitative movement in *local motion*, namely in the passage of a thing from one place to another. This is the most common and most obvious type of movement, the one most readily associated with 'time.' The distance traveled and the time elapsed are universally associated, as when we say that 'the sprinter's time was ten seconds for the hundred yards,' 'the train made the run between Chicago and New York in sixteen hours,' 'the automobile made eighty miles an hour,' and so on. Qualitative changes or movements are *alterations* in a thing. Such alterations may be physical, as when iron is magnetized and demagnetized, or physiological, as when the human body turns from a healthy into a diseased condition, or psychological, as when the mind works out a problem through a lengthy process of reasoning. Alterations of this kind also have a reference to time, because they involve continuous change and 'take time,' although local motion is not present as the real basis of the

change. It would be an error, therefore, to consider time as being associated only with quantitative movement as observed in local motion; time is found in any continuous change in and among corporeal beings in the universe.

Bearing the nature of movement in mind, it should not be difficult to arrive at the correct philosophic concept of the true nature of 'time.'

THE TRUE NATURE OF TIME

All statements concerning 'time' contain the notion that it consists of progressive, successive movement. We must, then, begin with this general idea.

The notion of *time involves the notion of movement* We cannot think of time without thinking of movement of some sort. This is clear from the fact that we conceive time as being composed of past, present, and future; the present moves into the future, so that the future, moment after moment, becomes the present and, after it has become the present, passes into the past. But that indicates constant change, progression, succession, *movement*. Furthermore, the standards of *measurement* which we apply to time are all taken from movement. The fundamental units of time, as we know it and measure it, are the year and the *day*. Both, however, are taken from the local motion of the earth in its orbit around the sun and from its rotation on its own axis. These units of measurements are acknowledged by all as being most appropriate for the purpose of measuring and marking off time in its forward progression. But this would not be so if time itself did not consist of movement or had

not its foundation in movement. Consequently, time involves the notion of movement.

Time and *movement*, however, are not identical. A comparison of the two concepts will remove all doubt on this score. For example, local motion, which is a species of movement, may be vibratory, as in light, longitudinal, as in a speeding train, rotational, as in a revolving wheel, and reversible, as in a swinging pendulum. The progression of time has none of these variations and attributes; time, though intimately associated with local motion, never goes from place to place. Then, too, a movement may begin, proceed, stop, and begin and proceed again; but time goes on without interruption. Finally, movements are slow or fast, uniform or accelerated, while time moves onward at a steady rate and can never be hastened, retarded, or changed. It is true, of course, that we speak of 'slow time' and 'fast time' with respect to moving bodies, as in a race. What we really mean, though, is the *distance* covered in a given time, not the time itself. Ten seconds, or ten hours, or ten years, are *invariably the same*, considered strictly as intervals of time. Hence, 'time' and 'movement' are not identical.

Time is movement considered abstractly in its succession. The concept of time involves, as we have just shown, the concept of movement, but it is not identical with movement. There must, then, be something in movement which is the essence of time, without which there can be no time. Now, the one thing common to all types of movement is *succession*, the *before-and-after* of movement. But it is precisely this uniform succession of moments, with its

character of before-and-after, which constitutes the essence of that species of duration which we designate by the name 'time.' If, then, we remove from 'movement' the different varieties and the different rates of motion and change, and if we prescind from the manifold types of bodies which have movement, so that we retain in the mind nothing but *abstract movement* itself consisting of *uniform succession*, whether real or possible or absolute, considered in its forward progression with a character of *before-and-after*, then we have time. That is why we find 'time' not merely in local motion, but also in the changes of physical, physiological, and psychological states; they follow in true succession, with a before-and-after, and as such the concept of 'times' is verified in them: successive movement is present, but not local motion. This explains why we can notice the passage of time, when we are motionless and observe no motion, but concentrate our attention on the presence and succession of our internal thoughts and emotions.

Again, 'time' must consist of that by means of which alone we *know* it and can *measure* it; for the essence of a thing is known by its properties, and the measure must correspond in kind to the thing measured. A little reflection will show, however, that we obtain a *knowledge* of time only through the observation of movement or the succession of changes. When we are conscious of movement, we are aware of the passage of 'time'; but when we are unconscious of movement, we are also unconscious of the passage of 'time.' This is a daily experience. If we take a timepiece and watch the movements of the second and

minute hands move around the dial, we become almost painfully conscious of the progress of time, and then time seems to move very slowly; but if we are completely engrossed in thought or emotion, or if we are asleep or unconscious, so that movement escapes our observation, we are unaware of the minutes and hours, and then time seems to move very quickly. Similarly, the *measurement* of time is made by using some unit of motion or change as a standard: for example, we measure time by the movements of the stars, of the earth, of clocks, of water and sand, etc. Consequently, 'time' consists in the succession of movements or changes. Since, however, *concrete* movements and changes are conceived *in time*, time can only be movement in the *abstract*, considered as the *receptacle* of all movements.

Time, viewed as the abstract receptacle of all actual movements, past, present, and future, occurring in the existing universe or universes, is real time. Viewed as the receptacle of all possible movements which could, but never will, occur, it is *possible* time. And viewed as the sum of all real and possible movements, it is *absolute* time. Viewed as the receptacle of movements which have already occurred, it is past time; of movements occurring now, it is *present* time; of movements which will occur, it is *future* time. All features of 'time' thus receive an adequate explanation, when we conceive it as movement considered abstractly in its succession.

Time is based on continuous movement. A movement is continuous, when it proceeds without interruption, without coming to a point of rest. But that is precisely how we

conceive time, in the strict sense of the term, to be. Our concept of time is such that we view it as a movement which goes on and on, at a uniform rate, without a break or gap, from the beginning of the world until its end. It is a species of *duration*, and duration, as was pointed out before, is persistence in existence and as such means *continued* existence. Hence the movement on which the concept of time is based must be a continued or continuous movement. Movement stops, when a point of rest is reached an interruption in the movement, with the movement beginning anew after the interruption, really inaugurates a second movement distinct from the first: movement, of its very nature, thus implies continuity. And since time is abstract movement, we naturally conceive it as being continuous in its progress.

It must be remembered, however, that we do not always use the term 'time' in this strict sense. Frequently, we group a *series of interrupted movements* into a unit of time, so long as these separate movements are connected in some way as a whole of which they are the natural parts. A train, we say, takes sixteen hours to make the trip from Chicago to New York. The trip, of course, is not made without stops; but the entire trip is a whole which may be measured as a whole in terms of hours and minutes. In cases of this kind we sometimes distinguish between 'total time' and 'actual running time.' In the instance mentioned, the 'total time' of the trip is sixteen hours; the 'actual running time' is, let us say, fifteen hours and ten minutes, omitting the fifty minutes consumed by stops on the way. Taking time in the strict sense, there would be as many

'times' as there were runs from stop to stop over the entire route from Chicago to New York, because these runs alone are continuous in character. This brings us to the distinction between 'individual' and 'general' time.

Individual time is manifold; general time is one and uniform. By *individual* (particular, intrinsic) time we understand the succession inherent in any concrete movement taken by itself. This time is independent of any comparison with a standard unit of time such as a minute, an hour, a day, a year. If no creature existed but a single body, and if this body underwent a successive change, time would be there in this movement, although in this case no measurement of it could be made by comparison with other movements. And the same applies to any movement of any being in the world: it has its *own* individual (particular, intrinsic) time by the mere fact that it is a continuous movement, irrespective of the existence or movements of other beings.

By *general* (common, extrinsic) time we mean the successive movement of one thing taken as a standard according to which we *measure* the individual (particular, intrinsic) time of another thing. This standard of measurement is a matter of selection on our part. Such a standard must, of course, be one and uniform in character and not subject to appreciable variations; otherwise it would defeat its purpose. With us, this standard of measurement is the rotation of the earth on its axis once a 'day' and around the sun once in a 'year.' This is a natural division of general time, while the division of the year into twelve months, of the day into 24 hours, and of the hour

into 60 minutes, is arbitrary. Since the rotation of the earth on its axis and in its orbit around the sun is practically always the same, general time is uniform. The individual time inherent in a being is the reason why it can be measured and also the reason why it can be used as a standard to measure other individual times.

We are now in a position to understand *Aristotle's* definition of time as the *number of movement according to before-and-after*. It is the 'number' of movement, because we measure time by numbering the parts of the movement. These parts are not actual and separated, but potential, because the movement is continuous; consequently, the number of these parts is itself not actual, but potential. It is the number of 'movement, in so far as this movement is successive and continuous in its passage from a starting point to a goal; time is found only in this kind of movement. It is the number of movement 'according to before- and-after.' This is obvious from the fact that the movement, which we call 'time,' is gradual and successive and is realized bit by bit, so that the parts of the movement follow each other in a steady flow; in other words, these parts stand to each in the relation of 'before' and 'after.' That is why *St. Augustine* says: "If nothing went by, there would be no past time, and if nothing came, there would be no future time: the present, however, if it always remained present, would not be time, but eternity.

THE REALITY OF TIME

Time, as we have proved, cannot be a real entity existing in nature, independent of the mind. Such an entity would be a contradiction. It can, therefore, exist formally, i.e., precisely as conceived, only in the mind: it is a *conceptual*, mental being. Time, however, is not a mere fiction of the mind. On the contrary, it has its ground, its *foundation*, in the reality of the movements occurring in nature. These movements and changes are real and objective, whether our mind adverts to them or not. Bodies move and change in a continuous progression and succession as actual events in the universe, independent of our observation and thought. And since our concept of 'time' is based on, and derived from, these movements and changes, time is not a purely conceptual being, but a *conceptual being with a foundation in nature*.

Time is an *abstraction* made by the mind from the concrete movements actually occurring. Time consists in its totality of past, present, and future. But the past is no more, and the future is not yet; the only part of this totality which actually exists is the present moment. To grasp this totality of past, present, and future *as to totality*, a *mind* is required which is capable of thinking of all three parts simultaneously and of forming them into the unity of this totality. Time, therefore, precisely as 'time,' is a product of the mind obtained through the process of abstraction and exists as such only in the intellect.

As was just stated, the only one of the three main parts of time which actually exists is the *present*. The present has *no parts* and *no measurable duration*: it is the *indivisible moment* which connects the past and the future. Time is

essentially a forward movement, a progressive succession. Unlike space, time has no parts which are simultaneously coexistent; the parts of time succeed each other in a before-and-after as past, present, and future. If there were parts in the present, it would be divisible into these parts. These parts, however, follow each other in a relation of before-and-after, and that excludes the simultaneity of these parts. Let us suppose, for the sake of argument, that the present has two parts; for it certainly cannot have less than two, if it has any parts at all. Since these two parts are such that one succeeds the other, we have the following result. If the first part is existent, the second cannot coexist with it, because the second part succeeds the first and will be in the future; and the future is as yet nonexistent. If the second part is existent, the first will already be gone, because it must precede the second in the flow of time; it will thus belong to the past, and the past is nonexistent. Hence, since the essence of time consists in succession and not in simultaneity, the present can have no parts; as such it is *indivisible*. The duration of the present must then also be indivisible, so far as before-and-after is concerned; but if so, this duration is not measurable. Consequently, the present is an indivisible moment, an *instantaneous now*. It would, therefore, be more in accordance with strict terminology to say that the parts of time are the past and the future, while the present is the *point of termination* for past and future, situated between the two as the end of the one and the beginning of the other.

It must be remembered, though, that the *present* is often taken in *different meanings*, when used in ordinary

conversation. In its widest sense, the 'present' may mean anything from a second to a century or more. In this sense we speak of the 'present hour,' the 'present year,' the 'present century,' the 'present era.' In a *wide* sense, the 'present' signifies a very short span of time in proximity to the instantaneous now. It is in this sense that we *usually* speak of the present. This is due to the fact that a body in motion can be perceived by us as traversing a definite field of space; its progress can be followed as it moves on its way, as when we see a hand draw a line or an airplane cross the sky. Most people estimate the present to be a matter of one or some seconds. In its *strict* and philosophic sense, the present consists of an indivisible instant connecting the past and future.

After this examination into the nature of time in its various phases, we can define time in general as the duration of a mutable being in so far as it is mutable, or *as movement considered in its succession according to before-and-after*. 'This definition applies to past, present, and future time, to intrinsic and extrinsic time, to real, possible, and absolute time. Aristotle's definition applies more to extrinsic time than to time as such.

EXISTENCE IN TIME

In order that something *exist in time*, it must be *affected by time*. It is affected by time by being a part of time or by being measurable in terms of time.

Those realities are properly said to exist in time from which the notion of time is derived. Local motion, therefore,

exists in time, because local motion manifests most clearly the successive movement peculiar to the concept of time. In all probability it was from local motion that the concept of time was abstracted by man and then generalized. All *successive changes* exist in time, even though local motion be not involved. Such are the qualitative states of things. They, too, can be measured in terms of time, because they are brought about through a process of successive development having a beginning, a transition, and an end; their movement can be measured according to a definite before-and-after. All *periods of rest* in corporeal beings exist in time, but indirectly. They are the terminations of movement; since movements belong properly to time, their terminations belong there also. They are measured indirectly by the movement of some other thing. If one thing is in a state of motion for two hours, and another thing is in a state of rest during this same period, it is in a state of rest for two hours; the same units of measurement apply to both, and both must, then, exist in time.

Movements, of course, have no independent existence of their own; they are the movements of some *thing*. There is movement, because bodies move. Hence, bodies properly exist in time, because they are the bearers of motion and change. And since the universe is the assemblage of all bodies, the *universe* properly exists in time. Time, then, is proper to the universe and to all beings which are a part of the universe. Man, too, since he is a corporeal being, exists in time.

The question has been raised whether *substances*, and especially the spiritual soul of man, can be said to exist

properly in time. Substances are permanent realities; the changes which take place in them seem to affect only their accidental states and conditions. It is true that substances are permanent realities; but this permanence is only relative, not absolute. *Inorganic* substances, when they become a part of living tissue in an organism, certainly change from nonliving to living; while in the organism, they participate in the successive progress peculiar to the function of the organism, and as such are measurable in terms of time. Even outside an organism, in their strictly inorganic field, they enter into chemical compounds in various ways, and, if modern physics is correct, are subject to many changes within their atomic structure. Such changes are gradual, successive, and belong to time. *Organic* substances, since they are generated, develop to maturity, and die, certainly undergo change and movement. Hence, they also must be adjudged as belonging properly to time. Corporeal substances are relatively permanent, when compared to the manifold accidental movements which occur in nature but they are not absolutely permanent.

The *soul of man*, being spiritual, is naturally incorruptible and unchangeable in its essence. Taken alone by itself, it is not measurable in terms of time. When we consider, however, that the soul, in this life on earth, does not exist except as one of the two substantial parts which constitute man, and when we consider that man, as man, is an organic being subject to development, change, and death, then we must say that the *total man* (and that includes the soul) exists in time.

This concludes our investigation into the *physical nature* of bodies. Science has been of considerable help to cosmology in arriving at a better understanding of the bodies which build up the universe. All bodies are characterized by matter and energy. There are about 92 elements, and these are the fundamental types of existing bodies. All elements, however, have the same structural components, namely, electrons, protons, and neutrons, etc. Contrary to previous scientific and philosophic pronouncements, elements are not immutable; some disintegrate spontaneously and most can be transmuted artificially. The structure of the elemental atom is still the subject of scientific theory and speculation; the evidence, though probable, is not conclusive. Then certain universal features of bodies were discussed, namely, extension and quantity, place and space, quality and activity, movement and time.

This first part of cosmology forms the groundwork which must serve as the foundation for an intelligent examination into the essential constitution of bodies. To determine, if possible, the essential constitution of bodies, will be our next task.

SUMMARY OF CHAPTER IX

Time is a universal condition or modality of all things in the universe.

1. *Duration* is persistence in existence. God's duration is 'eternity'; that of spiritual beings is 'aeviternity'; that of physical bodies is 'time.'

2. *The Concept of Time*. Time is conceived by all men as successive duration; as a sort of entity that extends without limit in the past and in the future, containing all shorter periods. Some philosophers view time' as an entity existing independent of the mind; others, as a purely mental being; the scholastics, as a conceptual being with a foundation in nature. According to this latter view, 'time' is an *abstraction* derived from *movement*. The time involved in actual movements in the world is real time; that in possible movements, is possible time; the sum of real and *possible* time is *absolute* time.

3. *Time is not a real being*. Time, as we conceive it, extends without limit in the past and future. If it is a real being, it possesses *positive eternity*. That, however, involves an *infinite* number of successive moments. An infinite number, however, is impossible. If it is a real being, it must be a material substance, a body which changes continually. Now, changing bodies are conceived as being 'in time.' Hence, a second 'time' is required to contain the first; a third is required for the second; and so on, in an *infinite regress*. An infinite regress, however, necessitates an infinite number; and that is a contradiction in terms.

4. *Time Is Not Purely Mental.* It has a foundation in nature, namely, in the motions and changes occurring in and around us. We experience such motions and changes in ourselves and in other bodies. *Science* testifies to the existence of such motions and changes in the physical world. Time is divided into days and years, depending on the movement of the earth. Hence, our concept of time has a foundation in the realities of nature and is not a purely mental product.

5. *Movement and Time.* Movement is *continuous change*. This may be either the quantitative change of 'local motion' or the qualitative change of states in 'alteration.' Both types of change are basic to our concept of time.

6. *The True Nature of Time.* Time involves the notion of movement, because time consists of the past, present, and future, and the future moves through the present into the past. The standards of measurement which we apply to time are taken from movement, namely, from the rotation of the earth on its axis and around the sun. Time and movement, however, are *not identical*; movements vary, while time is always uniform.

Time is movement considered *abstractly in its succession*. The one thing common to all types of movement is 'succession,' the 'before-and-after' of movement; and that, too, is the essence of time. Time must be that by means of which alone we know and measure it; but that is movement. Time is based on *continuous* movement. Individual time is manifold; general time is one and uniform.

Aristotle defines time as the 'number of movement according to before and after.'

7. *The Reality of Time*. Time is an *abstraction* made by the mind from the concrete movements actually occurring. As such, it is a mental product which exists only in the mind. Time consists of the past, present, and future, and of these only the *present actually exists*. The present has no parts and no measurable duration, it is an indivisible moment.

8. *Existence in Time*. That exists in time which is affected by time, i.e., which is either a part of time or measurable in terms of time. The things that exist properly in time are local motion, successive changes, periods of rest, all bodies in the universe.

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1 *De consolatione*, 1. 5. "*Interminabilis vitae tota simul possessio.*"

PART III

**THE ESSENTIAL CONSTITUTION
OF BODIES**

Chapter 10

THE PROBLEM OF BODILY ESSENCE

IN ORDER TO APPROACH THE PROBLEM OF THE ESSENCE AND constitution of bodies in an orderly manner, it was necessary to settle certain preliminary questions concerning the *physical constitution* and the *general properties* of bodies. Science has supplied us, and still supplies us, with a wealth of information which, though incomplete, should be very helpful to the cosmologist as a point of departure for philosophic speculation regarding their ultimate essence and constitution. Without this scientific knowledge pertinent to the problem, the cosmologist runs the serious risk of building theories which lack the proper foundation in facts. Our first step, therefore, was an investigation of matter and energy, the elements, the components of atoms, the transmutation of elements, and the structure of matter. Our next step was an examination of the general properties of bodies, namely, quantity and extension, place and space, quality and activity, movement and time.

The scientist is satisfied when he succeeds in discovering and describing the physical components of bodies, their properties and behavior; that is as far as observation and

experimentation can lead him in understanding their constitution. The philosopher, however, finds a problem which lies deeper than this scientific aspect of material substance. This is the *essence or essential constitution of bodies as such*.

THE QUESTION OF SUBSTANTIAL CHANGE

Man's knowledge of the universe and its workings is acquired piecemeal; as a consequence, this knowledge is incomplete and inadequate, because the universe is a very complex reality both in the vastness of its cosmic construction and in the minuteness of its atomic constituents. It would be presumptuous to think that all scientific knowledge of today is absolutely certain and no longer subject to revision; and it would be equally presumptuous to think that this knowledge is altogether provisional and erroneous. Many facts have been established *beyond reasonable doubt*, and it is hardly possible that future investigation will overthrow them. These facts the cosmologist must accept as true and use as the foundation of his speculations. Any other procedure would be illogical. Facts must not be denied and theories must agree with facts. This must be the supreme principle of guidance for scientist and philosopher in their quest for truth; *for truth*, not the support of pet theories, is the goal of all research and speculation.

First of all, we accept the *existence of individual bodies*. Their existence cannot be denied except under the supposition that all knowledge is illusory; and that would

mean the bankruptcy of all science and philosophy. These bodies consist of *atoms* which are the ultimate units of *elements*. The exact number of elements is a matter of minor importance; the number, however, is rather large and should be about ninety, according to all indications. Each element is a distinct *type*, with sharply defined properties and activities, enabling the elements to be recognized, distinguished, and classified. All *elements* consist of positively charged, massive *protons* and of negatively charged, relatively mass-less *electrons* in equal proportions, so that they are electrically neutral in the normal state. *Fractionation* of the mass and electric charge of the protons and electrons is unknown; hence, it is safe to say that fractionation never occurs. Neutrons also exist in atoms; but whether they are uncharged masses or closely packed protons and electrons, is a disputed question.

The elements are subject to *disintegration* and *transmutation*. This happens spontaneously in the radioactive elements and is produced artificially in most elements through bombardment with atomic and subatomic particles. New elements arise in the process in many instances. The elements, therefore, are neither altogether stable nor immutable; they can and actually do undergo radical changes in their constitution.

The atoms of the various elements combine in manifold ways to form *chemical compounds*, and their reaction in combining is accompanied by the emission, absorption, and transformation of energy. The changes effected thereby are profound; the compounds differ considerably from their component elements in properties and activities.

Atoms, whether free or in compounds, are not inert, dead portions of matter. They are endowed with active *energies* and *forces*. These are the agencies which bring about chemical, physical, and mechanical changes among bodies. While it is true that the activity of energy is always accompanied by a certain amount of mechanical motion, and while it is also true that all types of energy can eventually be transformed into mechanical motion, it is no longer admissible to consider energy merely a variant of mechanical force or motion. Energy is a quality of matter as distinct as quantity, and qualitative changes are as real as quantitative changes. Furthermore, qualitative changes play a far more important part in the evolution of the world than quantitative changes.

No one would think of denying the *existence of real change* in individual bodies and in the universe at large. The fact is too obvious. But this brings the cosmologist face to face with one of the most profound problems of philosophy and science.

Are these changes accidental or substantial? By this is meant: Do these changes affect only the quantity and quality of physical bodies, leaving their underlying substance (essence) intact, or do they affect the substance (essence) itself, so that a new substance (essence) emerges as the result of such changes? If changes are accidental and the substance remains unchanged, the problem is quite simple. But if changes are *substantial*, a very difficult problem arises. It is evident that bodies are never *annihilated* in the process of chemical changes. Something of the *old* body survives in the *new*; something passes

through the entire process of chemical change and is present in the new substance just as it was present in the old substance. And yet, if substantial change is a fact, something new *in the line substance* must have originated in the process, or it would not be a 'substantial' change with a 'new substance' as the outcome. Just what, precisely, is the old part and what is the new part in a body after such a substantial change has taken place?

Chemists frequently state that a *new substance* arises as the result of chemical reaction, when elements combine to form a compound, or when compounds are dissolved into their component elements, or when compounds react among themselves and new compounds are thereby generated. What is the meaning of the phrase 'a new substance'? Do they mean that there is nothing more than a *regrouping* of the elements, so that the component elements retain their *full identity* in the compound? In that case, it would hardly be justifiable to speak of a 'new substance' in a philosophic sense; since the elements remain essentially and substantially identical before and after the change, the change can be only an 'accidental' one. A real 'substantial' change must be the *transition of one kind of substantial entity into a different kind of substantial entity*. In that case, however, the elements, when entering into a compound, must be essentially and substantially altered, so that they lose their former identity in becoming a new substance (essence). Is this the kind of change which occurs in chemical reaction?

To illustrate, Oxygen and hydrogen combine to form water. The properties of water are decidedly different from

those of oxygen or hydrogen. Does this indicate that both oxygen and hydrogen have ceased to exist in the compound, having lost their essential and substantial identity as oxygen and hydrogen, leaving in their place a new single entity, water, which is essentially and substantially different from them? Or, does it merely indicate that the qualities of oxygen and hydrogen have 'tempered' each other in mutual reaction, so that oxygen and hydrogen, although they are qualitatively altered, are still present in their essential and substantial identity, 'water' being nothing more than oxygen and hydrogen in close combination acting as a unit? The first interpretation represents a 'substantial' change; the latter interpretation, an 'accidental' change. 'Which is the correct interpretation of the fact of this reaction?

Another illustration. Chemicals from the soil are absorbed by a plant and changed into protoplasm and cell tissue, thereby becoming an integral part of the plant. They now participate in the vital functions of metabolism, growth and development, reproduction, and adaptation. The same chemicals, when assimilated into the animal organism, participate in the vital functions of sensation. While in the organic structure, they form compounds totally different from those which they are capable of forming in the inorganic state, as can be seen in carbohydrates and proteins. In other words, these chemicals have changed from nonliving to living substances. Can one maintain that, for example, carbon and hydrogen retain their identity as carbon and hydrogen in the organic compound and are merely changed in an accidental way? Or, are the living protoplasm and tissue of an organism essentially and

substantially different from that of the inorganic elements of carbon and hydrogen, the latter having lost their identity in a higher form of existence? In the one case or in the other, there would be respectively, an 'accidental' or a 'substantial' change. Naturally, if living substance is essentially different from nonliving elements, then the change which occurs when *nonliving* elements become *living* protoplasm and tissue is a substantial change in the strict sense of the term. With regard to the formation and dissolution of chemical compounds, there is far greater uncertainty about substantial change, because chemical reactions take place entirely on a purely inorganic plane.

The question of accidental or substantial change applies with equal force to the *atoms* and *elements* themselves. They are complex structures, built up from electrons, protons, and neutrons. Do these subatomic particles *retain* or *lose* their essential and substantial *identity* when they unite to form atoms and elements? Or, are atoms and elements simply *dynamic systems* which act as *functional units*, in which electrons, protons, and neutrons remain essentially and substantially intact? Do these particles remain *discrete* and separate entities at all times, or do they coalesce into a *continuous* substance in atoms and compounds? In fact, are there any strictly continuous substances in the universe among ponderable bodies, if we except these ultimate components?

The question concerning the fact of substantial change, it will be noticed, affects our entire interpretation and understanding of bodies and their processes throughout

the physical world. We must, therefore, seek a solution of the problem of substantial change.

THE QUESTION OF BODILY ESSENCE

More profound than the problem of substantial change is the problem of the *essence of bodies*. These two problems are intimately related.

By *essence* we understand that ultimate reality in a being which makes it to be what it is and distinguishes it from other beings. In so far as the 'essence' of a thing is the ultimate reality in it, it is the *substance*, because thereby it exists in itself as an independent being and does not need another as a subject in which to inhere and exist. For the same reason the 'essence' of a thing must be the ultimate source and principle from which all properties and activities of the thing are derived; looked at from this standpoint, the essence is called the *nature* of a being.

Every individual, unitary, natural body has an essence or nature which is the ultimate explanation of all that it is, has, and does. By a *natural body* we understand a body which has a *single nature* or *essence* and is an *individual substance*, so that it is a *real unit* in the order of being and operation. A plant, for example, is a 'natural body,' because all the organs and cells, notwithstanding their variety of functions, form an organic whole and work together for the benefit of the plant as a unit. A machine, on the other hand, is not a 'natural body,' because the single parts, though arranged according to a plan, have an independent entity of

their own and act in unison only through an extraneous force.

Essences are not all the same, for the reason that the bodies themselves are not all the same. All bodies fall under one of two widely divergent classes, *living* (organic) or *nonliving* (inorganic). Living beings appear in three distinct types: plants, animals, and men. There can be no reasonable doubt that the essence of plants, animals, and men belong to entirely different *species*. Vegetancy, sentiency, and rationality are so fundamentally diverse that they can have their source only in essences which are specifically different. Even among plants and animals there exists such a diversity of types that the specific difference of their essences can be safely maintained; we are, however, not concerned at present with these details. This much is certain: every single plant, animal, and man is a 'natural body,' an individual substance and unitary essence. In our own case, this is clear from the indubitable testimony of our consciousness, which bears witness to the fact that we are a single substance and nature, with a single principle of action dominating our whole being as a unit. A moment's reflection shows that we refer all our activities to the 'Ego': *I eat, I grow, I see, I hear, I think, I will*. This proves the natural unity of our being. And since animals and plants manifest a similar unity of action and behavior, they also must be 'natural bodies,' possessing a natural unity of being. This means that every organism, no matter how complex in function and structure, must be a single essence.

The difference between *living* and *nonliving* bodies is much greater than that between plants, animals, and men. All organisms have this in common that they are characterized by 'immanent' action. Inorganic bodies, however, are on a much lower level of being, since they display only 'transients action. Left to themselves, and acting in virtue of their natural forces, the inorganic elements are incapable of forming compounds which are specifically organic. In the organism, it is true, the elements form organic compounds and participate in vital functions; but when the organism 'dies,' the elements revert to their lower level of being again and seek to dissolve into inorganic compounds characteristic of their previous state. Evidently, then, organic and inorganic substances have a totally different kind of essence. What is this *essence*?

It would seem that the *atoms* of the *various elements* are the physical units, the 'natural bodies,' of the inorganic world, each element having a specific essence, distinct from that of the others. Each represents a type with characteristic properties and activities. However, as we shall see, this opinion is fraught with weighty difficulties, especially when we consider the modern views on the structure of the atom. More so than the atom, perhaps, the electron and proton seem to be essentially different; unfortunately, however, they appear to be 'parts' of bodies rather than bodies themselves. Inorganic bodies do not show the unity of being and action, which manifests a single essence, so clearly as the organisms do. Whatever may be our final decision as to what are the 'natural bodies' in the inorganic world, there can be no question about the fact

that such 'natural bodies' exist and have an essence which is the individual, unitary, natural source of their being and operation. Somewhere they must exist, whether in the chemical compound, or in the atom of the elements, or in the electron and proton. It may be that all of these, or only the one or the other, are 'natural bodies' with a single fundamental essence. That is another of the problems which the philosopher seeks to solve.

THE QUESTION OF CORPOREAL CONSTITUTION

All this leads inevitably to the question: *What is the ultimate constitution of natural bodies?* In other words: Wherein does the essence of natural bodies consist? How is this essence constituted in its final analysis? What makes a natural body to be a natural body?

The characteristic feature of every natural body is its *unity of being and operation*, revealing a single, individual, unitary essence or substance as the ultimate source of its properties and activities. One cannot overlook the fact, however, that natural bodies are the result of *composition*. By 'composition' we understand the union of two or more parts into a whole or unit; such a being is a 'composite' being. It is in opposition to a 'simple' being, which is one that has no parts into which it can be divided. A spiritual being is simple; a material body is composite, because, at the very least, it consists of internal quantitative parts. Even an electron or proton has dimensive parts in this sense and is, therefore, composite. Atoms, since they are formed from electrons and protons, are also composite. Chemical

compounds are built up from the atoms of elements; they, too, are composite. Plants, animals, and men possess complicated structures consisting of many parts; every organism, therefore, is also composite. It follows, then, that every body is affected by composition, because it is composed of parts united into a whole or unit.

This fact presents a serious problem. How can a number of parts make a unit or whole? How can 'one' be 'many,' and 'many' be 'one'? How can diverse components form a single essence and substance, a 'natural body'? How can we explain the individual function of each cell in a living being, the function of a group of cells in an organ, and the harmonious action of all cells and organs in the unity of the organism as a whole? Is this unity of composition in bodies merely a fancy of our mind, or is it a natural fact? If a fact, what is the *principle of unity* amid all the *diversity of parts*? What is the *constitution* of this essence, making it a unit of being and operation, notwithstanding the quantitative and qualitative difference of its components?

Furthermore, there are features in every material substance which are in *apparent contradiction* to each other. All bodies consist of matter and as such have quantitative dimensions. Matter tends to *spread out* into space; it involves a side-by-side-ness of internal parts in three directions. Yet there is a definite *limitation to the diffusion* of matter through space. What is it in a body that limits the diffusion of quantity and holds the extensive parts together, so that all bodies, living and nonliving, attain a unity of mass and volume? Matter is *divisible*, though actually *undivided*. The very fact that a body consists of

internal material parts which are different in their reality means that they can be divided and separated from one another. These parts, however, are actually a unit, tend to remain together as an undivided whole, and resist division. What keeps them united into a whole, although the composition of material parts would seem to favor division and separation? Bodies possess *inertia*, in virtue of which they are indifferent to rest and motion. Nevertheless, *motion* is one of the predominant factors in the universe and is present in the electrons, atoms, molecules, and larger masses. What accounts for these opposing tendencies toward rest and motion? All material substances are characterized by *quantity* and *quality*. Quantity is inactive, static; quality is active, dynamic. Because bodies are composed of matter, they resist change; because they have energy, they effect change and are subject to change. Whence these conflicting properties? How can we harmonize the apparent contradiction which lies in the very essence of a body?

The conclusion seems inevitable that there must be a *composition in the ultimate constitution* of natural bodies. The essence of every natural body apparently demands two fundamentally distinct *principles* in its constitution. But this would introduce a dualism into the essential constitution of bodies which in its very concept would seem to destroy the unity and singleness of essence which it is supposed to explain. Natural bodies are a unit of being and operation; then how can they be constituted of two more or less opposing principles, one active and one passive? How can substantial unity arise out of an essential dualism?

On the face of it, it would seem more logical to accept a *single, fundamental principle* of essence in natural bodies. We are all familiar with the idea of matter as this principle of essence. Scientists and philosophers in general accept matter as belonging to the essence of bodies. Why, then, accept a double principle, when one seems sufficient? Many philosophers, however, maintain that matter, being by nature static and not dynamic, is inadequate as the ultimate source and principle of the activities manifested by bodies. For this an active principle of essence is required. In consequence of this, other philosophers place the ultimate principle of the essence of bodies in *force or energy*. However, while force or energy seems a good explanation of the activities of bodies, it apparently fails to account for quantity, extension, inertia, and the passive state of bodies.

How, then, are we to conceive the fundamental essence of natural bodies? As a single reality? As a double reality united into a substantial unity? As a multiple reality which is merely an aggregate and possesses no substantial unity at all? What is the ultimate constitution of bodies?

The problem has perplexed the minds of philosophers from the beginning. A short sketch of the history of the problem should be of assistance to us in appreciating its proposed solutions.

EARLIEST SOLUTIONS

From the very beginning of philosophy among the Greeks, the problem of the origin and nature of bodies occupied the mind of the thinkers. Philosophy began with this problem.

Thales (about 620—546 B.C.) taught that all things derived their origin from water! *Anaximander* (born about 610 B.C.) placed the originating principle in the 'boundless,' some sort of material base unlimited in extent, similar to our concept of space. *Anaximenes* (died about 528 B.C.) held that 'air' (mist, vapor) is the fundamental substance, infinite in quantity, from which all things are made. These early philosophers were *animists* or *hylozoists*, i.e., they considered this ultimate substance to be inherently endowed with life, thereby destroying the specific difference between living and nonliving beings. *Heraclitus* (born about 530 B.C.) maintained that 'fire' (invisible warm matter) is the primitive substance from which, through a constant process of 'quenching' and 'kindling' (condensation and rarefaction), the world and the bodies in it are made and to which they return in eternal change. It should be noted that in these primitive and groping attempts *one single uniform substance* is assumed as the basic principle of bodily essences. Then a different trend appeared in Greek philosophy. *Empedocles* (about 490—350 B.C.) postulated four 'roots' or elements as the basic substances of the world: *fire, air, earth, and water*. They are primitive, indestructible, and homogeneous. Qualitative change does not occur. The seeming generation and decay of bodies is due to a mechanical 'commingling' and 'separation.' This process is brought about through an outside *force* by means of 'love' and 'hatred' (attraction and repulsion). This is a philosophy of mechanism. According to *Anaxagoras* (about 500—430 B.C.), the world in the beginning consisted of an indeterminate mass of extremely

fine particles of various substances (gold, iron, flesh, etc.), which were finally formed into definite bodies through the action of mind. This 'mind' is more in the nature of a force, but it is simple and possesses all knowledge and power. It does not enter into the constitution of things. This doctrine of 'mind' in nature is a distinct advance in philosophic thought, because it is the first intimation that something more than matter is required in order to account for the origin and constitution of bodies.

We now come to the *Atomists*. The founder of atomism is *Leucippus*, of whom practically nothing is known. *Democritus* (born about 460 B.C.) distinguished between the 'full' and the 'void,' both of which are existing realities. The 'full' consists of an infinite number of indivisible bodies or *atoms*, differing in shape, order, position, and magnitude. Due to their difference in magnitude, they are of different *weight*. All atoms fall through the void, through the sheer mechanical agency of their weight; since they are of unequal weight, they have unequal velocities. In the course of their descent the heavier atoms strike against the lighter ones, inducing a whirling *motion*. Thereby some atoms unite and others separate, and this explains the formation and decomposition of bodies. There is no design in all this; only mechanical necessity and casual concurrence. This is a philosophy of mechanism and materialism in its crudest form.

A new school of thought came into being with *Socrates* (469—399 B.C.). He was the first to clearly recognize the fact that in all things there is something relatively permanent amid qualitative changes, and this something is

their *essence*. This unchangeable essence can be expressed in a definition or idea of the thing. It is only through the idea or concept of a thing that we arrive at a real and lasting knowledge of it. *Plato* (about 427 or 428—347 B.C.) developed the Socratic 'idea' in an extreme and ultra-realistic fashion. For every corporeal being, for every kind of being, for every essence, there exists a necessary and immutable *Idea*. These Ideas exist for themselves in a separate world. Concrete things and realities are but partial, incomplete, and inadequate manifestations of these Ideas; Ideas alone have full reality and being. Corporeal substances are configurations of the four elements (water, air, fire, earth), and these configurations are brought about by the world soul. Concrete things are *phenomena* which partake of the Idea by *imitation*; they are copies of the Ideas which are their prototypes. The universe is a living animal endowed with an intelligent soul.

ARISTOTLE'S SOLUTION

It remained for the genius of *Aristotle* (384—322 B.C.) to propound a solution of the problem of bodily essence and constitution which is truly monumental. He was without a doubt the most scientific man of his age. Rejecting Plato's noumenal 'world of Ideas' as fanciful, he sought the proper understanding of corporeal beings in these beings themselves.

Aristotle accepted the four traditional elements — fire, air, water, and earth. The sublunary or earthly bodies are composed of these. To these four he added a fifth element

or essence — aether. All celestial bodies, the stars, consist of this pure essence and are unchangeable and incorruptible; in this he was, of course, mistaken. Some Greek philosophers had maintained that change is merely apparent; everything is unchangingly permanent. Others claimed that nothing is permanent; everything is in a process of unceasing change. Both views, as Aristotle pointed out, are partly right and partly wrong. Bodies undergo *substantial change*, but there is an underlying reality in bodies which remains permanent throughout all changes. When elements combine into a compound, the compound has a *specific essence* distinct from the specific essences of the constituent elements; and when a compound is dissolved into its elements, the compound loses its specific essence, while the specific essences of the elements are revived through the change. Bodies are both potential and actual, static and dynamic, quantitative and qualitative, passive and active. Because of this double aspect of their being, they are capable of giving and receiving new actualities, of effecting change and suffering change.

Change is fourfold: local motion (*φωρά*), quantitative increase and diminution (*αὔξησις* and *φθίσις*), qualitative alteration (*ἀλλοίωσις*), and substantial generation and corruption (*γένεσις* and *φθορά*). The latter is substantial change in the strict sense, and it takes place when elements form compounds ('generation') and when compounds are decomposed into elements ('corruption'); the generation of one body always implies the corruption of another or of others, and vice versa. In the process of substantial change

bodies are not annihilated; they are *transformed* from one kind of essence (substance) to another kind of essence (substance). Something is lost by the old bodies in the process, and something is gained by the new; but something of the old passes over into the new unchanged. There are, then, two *substantial principles* which constitute a body and are its essence, and of these one is passive and one is active. The passive principle is taken into the new body unchanged, while the active principle of the old body vanishes and is replaced by another active principle in the new. The passive principle is *matter* (ύλη). It is the part which is the common substrate of all bodies, and is characterized by absolute potentiality and indeterminateness; it can become any kind of body, depending on the active principle which determines it. The active substantial principle Aristotle called the *form* (μορφή). This is the distinctive part in each body, the active and determining principle which unites with primary matter and makes a body to be this or that *specific kind* of body. It is the substantial form which is gained or lost in substantial change, while primary matter always remains. Every body, therefore, is essentially constituted of two incomplete substantial principles, matter and form, and the union of the two makes a *complete specific substance*. Neither is sufficient of itself to be a body, because each is an incomplete substance; each requires and complements the other, and it is in the union of both that the essence of the 'natural body' is constituted. Potentiality and quantity result from the material principle; actuality and quality result from the formal principle. Matter and form, therefore, are

present in all bodies, living and nonliving. In elements and compounds the form is inorganic, while in organisms it is vital; matter is the same in inorganic and organic beings.

Since, as Aristotle states, “a thread of wool will not make a saw,” or, in other words, since there is a natural law governing the transformation of bodies, Aristotle postulated a *rhythmic evolution of forms* in substantial changes. A definite finality or purposive-ness pervades and controls the processes in nature. Substantial forms do not, therefore, appear at random in new bodies, but only those which the exigency of matter demands at this particular stage of transition.

Such is the famous hylomorphic theory of Aristotle, devised by him to explain bodily constitution and substantial change.

MEDIEVAL SOLUTIONS

With the exception of *Epicurus* (about 342—270 B.C.), who revived the teachings of Democritus, no noteworthy contributions to the philosophy of physical essences were made until the Middle Ages. In consequence of the downfall of the Roman Empire and the devastations of the migrating nations from the East, the pursuit of philosophy stood at a standstill for centuries. The works of the Greek thinkers became almost unknown.

The Middle Ages witnessed the resurrection of philosophy in the Western World. The first efforts in philosophy were feeble, uncertain, groping. Lacking a traditional system of thought, the pre-scholastic

philosophers during the period from the eighth to the twelfth century borrowed their ideas from fragmentary sources of ancient Greece and propounded theories which were heterogeneous and often contradictory. Platonic ideas were quite prevalent. Aristotle's hylomorphism received little attention and was usually misunderstood. The 'form' was taken in the sense of the 'sum of the properties' in a thing. Some held the 'matter' of Aristotle to be the chaos of elements; others were atomists and maintained that matter is the aggregate of atoms; others again looked upon it as a general mass with a qualitative constitution, possessing dynamic movement. Only a few, men like *Isidore of Seville* (7th century), *Rhaban Maur* (784—856), and *Gilbert de la Porrée* (1076—1154), seem to have grasped in a confused way the fundamental concept of 'matter' as advanced by Aristotle. There were, however, two Arabian commentators on Aristotle, *Avicenna* (980—1037) in the East and *Averróes* (1126—1198) in Spain, who did much to make Aristotle known to the philosophers of the West. Through the untiring efforts of prominent scholastics, such as *Alexander of Hales* (died, 1245), *St. Albert the Great* (1193—1280), *St. Thomas Aquinas* (1224 or 1225—1274), *St. Bonaventure* (1221—1274), *Henry of Ghent* (died 1293), and *John Duns Scotus* (1266 or 1274—1308), Aristotle's theory of matter and form as the constitutive substantial principles of bodily essence was developed more fully and became the dominant cosmological doctrine of this glorious age of philosophic thought. Though these great minds disagreed on some important points, the hylomorphic theory in its main features was common to them all. For this ascendancy

of hylomorphism the brilliant genius of St. Thomas Aquinas was chiefly responsible, so that the theory is often referred to as the 'aristotelian-thomistic theory.'

The fourteenth and fifteenth centuries saw the decadence of scholasticism. The Renaissance and Reformation assisted in bringing it into complete disrepute. Finally, the rise and success of the natural sciences all but obliterated it for a time.

MODERN SOLUTIONS

The great scientific discoveries of *Copernicus* (1473—1543), *Tycho Brahe* (1546—1601), *Kepler* (1571—1631), *Galileo* (1564—1642), *Boyle* (1627—1701), *Newton* (1642—1727), and *Lavoisier* (1743—1794) revolutionized astronomy, physics, and chemistry. Scientific explanations replaced philosophic theories. Soon, however, the scientists also became philosophers, and new theories of the ultimate constitution of bodies began to make their appearance.

René Descartes (1596—1650) brought *atomism* and *mechanism* into vogue. He maintained that the essence of bodies consists in *extension*. Bodies have no real activities of their own; even the bodies of living beings, including man, are nothing more than machines, and there is no soul or animating principle present in them as a *substantial part* of the bodily essence. *Local motion* is the sole cause of all change in the corporeal world, and this motion is extrinsic to the bodies themselves. God produces and sustains all motion; the bodies merely modify it according to their difference in mass and shape. *Gassendi* (1592—1655)

advocated a mechanical atomism more along the lines of the ancient Greeks.

Gottfried W. Leibnitz (1647—1716) opposed Descartes' theory with his doctrine of monads. Bodies consist ultimately of monads, and they are simple, indivisible, unextended substances. No two monads are alike; all are endowed with *life*; and all possess the 'power of representation' or knowledge, some consciously and others unconsciously. Each monad is a universe in miniature, because each one mirrors within itself whatever happens throughout the world. Interaction between single monads is only apparent, not real; the union of monads to form bodies is purely extrinsic. Substantial change is, therefore, impossible. Monadism is *pan-psychism* and a form of *dynamism*.

The views of Descartes and Leibnitz were diametrically opposite. A variety of systems followed in their train, some atomistic, others dynamistic.

Dynamism. The monadism of Leibnitz was eventually developed by a number of philosophers into a system of *dynamism* proper. In the place of simple monadic substances they substituted *forces* as the ultimate constituents of bodies. These forces are *unextended*, but *active*; this is the characteristic feature of dynamism. According to Boscovich (1711—1787), matter consists of such unextended, indivisible force-points, placed at varying distances from one another. 'Action at a distance' is, therefore, a necessary postulate of this theory. These force-points are all homogeneous and are endowed with 'attraction' and 'repulsion.' They interact upon one another;

but this interaction is purely mechanical, being determined solely by the distance between them. These ultimate components are and remain always discrete. The continuity of bodies is only apparent, the result of the impression made on our senses by these unextended forces. This theory, with some modifications, was accepted by Carbonelli, Palmieri, Kant, Him, Leroy, Oerstedt, Gay-Lussac, Cauchy, Faraday, Seguin, Fechner, Lotze, and others.

Atomism. As a reaction against atomism and mechanism, dynamism proved unsuccessful and never had very many followers. On the other hand, *philosophic atomism* soon became the prevalent system in scientific circles. Following the lead of Descartes, scientists restricted themselves more and more to the quantitative, mathematical side of bodies and their processes. *John Dalton* (1766—1844) reintroduced the atom into modern science. According to this scientific atomic theory, the ultimate components of all material substances are atoms or very minute particles of matter. They are extended. The number of the kinds of atoms is comparatively small, and the atoms of the same kind are homogeneous, i.e., are uniform in size, weight, and other properties. Dalton proposed this theory during the years 1803—1807. Daltonian atomism became the basic assumption of all research in the natural sciences and proved to be of great value in their advancement. From scientific atomism to philosophic atomism was but a short step. The latter theory arose from the tendency of scientists to reduce all entities and processes in the universe to the simplest factors. In practice this amounted to the attempt to

reduce all matter to homogeneous atoms and all forces to a single universal force. This tendency resulted in two types of philosophic atomism, the 'mechanical' and the 'dynamic.' The distinction, however, is not always sharply defined.

Mechanical Atomism. This system endeavors to explain the constitution of bodies, their properties, and activities by means of the two concepts of *matter* and *motion*. All bodies are composed of atoms which are essentially *homogeneous*; that is to say, they possess the same kind of essence or nature, and there is only a quantitative, not a qualitative, distinction between them. Chemical affinity, cohesion, heat, electricity, magnetism, light, gravity, etc., are merely modifications of atomic motion; hence, all properties of bodies and all forms of energy can be reduced to *local motion* in varying modes. Atoms are *unchangeable* and *indestructible*. They are also devoid of any principle of activity intrinsic to the atomic substance, because atoms are essentially inert; their activity is due to local motion extrinsically communicated to them. Substantial change, in which one kind of substance would be transformed into another, is, of course, impossible. The processes of nature are the result of the operation of purely mechanical laws and are not controlled in any way by an intrinsic finality of their essence directing them toward definite ends and effects.

Mechanism or, as it is also called, mechanicism is, therefore, an excessively simple system which claims to give an adequate explanation of the universe in all its phases by admitting but two fundamental realities, namely, homogeneous matter and applied local motion. Among the

more prominent scientists whose names are associated with mechanical atomism we find Secchi, Tyndall, Tait, Helmholtz, Berthelot, Clerk-Maxwell, Du Bois-Reymond, W. Thomson, and many others. When mechanism is also applied to organisms, it is termed *materialism*; its chief defenders were Feuerbach, Blichner, Moleschott, and Haeckel.

Dynamic Atomism. Gradually, as the natural sciences progressed and the knowledge of the elements increased, scientists began to realize that mechanical atomism was incapable of explaining all the facts. Local motion could not account for all the phenomena in chemistry and physics. While they accepted the *essential homogeneity of matter* and the substantial *integrity of atoms*, they departed from mechanical atomism by explaining the manifold corporeal phenomena and processes through the agency of *purely mechanical forces*, thereby relegating 'local motion' to a secondary position. However, when it comes to the question of the exact number and nature of these forces, we find considerable divergence of opinion. Some reduce all forces to the fundamental force of *weight*; others, to the force of resistance; others, again, to the two forces of *attraction* and *repulsion*; others, finally, to three kinds of mechanical forces, namely, *attraction* and *repulsion*, *impulsion* by shock or pressure, and inertia. Most scientists have adopted this system as their general philosophy of the world.

Energism. This is a comparatively recent theory, set in opposition to the theory of atomism. Its chief exponent was *W. Ostwald*. He reduced all realities in the universe to *energy*. In physical science energy is defined as the capacity

to do work, and work is the product of a force times the displacement it produces in the direction in which the force acts. This is a mechanical concept of energy and far too narrow in meaning to fit into the theory of energism as conceived by Ostwald and his followers. For them energy is all reality; everything that occurs in the world, occurs through energy and in energy. *Energy is everything and everything is energy.* Bodies are nothing but complexes of energy; there is no substance which is the bearer or subject of energy. Even such *quantitative* factors as volume, extension, weight, and mass are merely forms of energy; they represent energies which usually are designated as 'matter.' Besides these, there are energies which are *intensive* in character, such as heat, electricity, chemical affinity, etc. Vital functions are a form of chemical energy, and rational activities are the manifestations of a 'psychic energy.' 'Things' no longer exist, but only processes, phenomena. Energism is a modernized variant of dynamism.

Electronism and Aetherism. In our own day many physicists incline to the view that matter is *electricity*. They view electrons and protons as electricity pure and simple, not as portions of matter endowed with negative and positive electricity. Witness this statement of Karl K. Darrow: "All matter is electrical; or to put it a little more vividly but not a whit too strongly, all matter is electricity."¹ And Haas says: "In the modern system of physics electricity no longer stands alongside of matter: it has taken the place of matter. The new physics can descry in electricity that unadulterated primordial something for which scientists

sought through thousands of years, and from which all things amenable to sense perception are formed.”² Matter is frequently referred to as an ‘electric wave’ or a ‘condensed electric charge.’ This theory of *electronism* thus seeks the essence of bodies in electrons or electric charges. If electronism interprets the electron as matter-particles, it is atomism; if it interprets the electron as an electric charge pure and simple, it is *dynamism*.

Aetherism, on the other hand, finds the solution of the essence and constitution of bodies in the *aether*. Electrons and protons, which are the ultimate constituents of bodies, are conceived as ‘condensations,’ ‘vortices,’ ‘knots’ of aether. As Sir Oliver Lodge says: “Ether is not electricity any more than it is matter. . . . Over great realms of space there is nothing else; but here and there is a modified portion, so modified as to be the seat and subject of what we call gravity, but exactly how modified we have still to find out. We know the unit of this portion as a localised singularity, capable of position and of locomotion. Can it be a special kind of whirl, or is it a knot or a strain or a bubble, a hollow or an extra condensation, or what? This is the question to be tackled; but as yet we cannot fully answer. In one form we call such individual unit an electron; and we know of such units, and of units akin to them, the atoms of matter are made.”³ At other times Lodge is more affirmative. He speaks of “the apprehensible modification of Ether that we call matter.”⁴ In speaking of the constitution of matter he says: “Electrons and protons are the building stones of which matter is made. The atom of matter is composed of them, and all matter is composed of atoms.

Electrons are evidently composed of Ether, because whatever mass they have is represented by the energy of their electric field, which is certainly an ethereal phenomenon: and apart from this field they seem to have no other existence; they are electric charges and nothing else. We cannot make a similar statement about the proton, because we do not know enough: for that we must wait.”⁵ Other scientists profess similar views. One sees from this that aetherism and electronism are closely related. The advocates of electronism reduce bodies to electric particles and charges; the exponents of aetherism reduce all matter to a form of aether.

Modern Hylomorphism and Hylosystemism. Although the aristotelian-scholastic philosophy, once so powerful in the Middle Ages, had suffered a lamentable decline, it had not disappeared completely. For more than half a century now it has experienced a veritable rebirth in *neo-scholasticism*. The fundamental principles of Aristotle and the schools have been retained without modification. Most of their scientific ideas, however, have been discarded as antiquated and erroneous. Neo-scholasticism accepts the established facts and laws of science and seeks to harmonize them with the principles of Aristotle and St. Thomas Aquinas, convinced that there is no essential conflict between them.

Hylomorphism is still a cardinal doctrine of the new scholasticism. The findings of physics and chemistry, modern scholastics think, are in perfect agreement with their doctrine that the elements and chemical compounds are specifically distinct as *natural bodies*, that *substantial*

changes actually take place in chemical reactions, and that these facts can be adequately explained only under the supposition that all natural bodies are composed of substantial *matter* and *form*. The system will be treated more in detail in subsequent chapters.

Hylosystemism is a recent modification of the traditional theory of hylomorphism. Traditional hylomorphism is applied with equal stringency to inorganic and organic bodies. Hylosystemism distinguishes between these general types of bodies. It admits hylomorphic composition in organic beings, but it denies this composition in the atoms, elements, and chemical compounds. It maintains that these inorganic bodies are nothing more than *dynamic systems* of subatomic particles which act as *functional units*. This system will also be treated more fully in subsequent chapters.

Such, then, are the problems confronting the cosmologist, and such are the solutions offered for these problems. Broadly speaking, the various solutions can be grouped under three main heads: *atomism*, *dynamism*, and *Aviomorphism*. Which is the true solution? It will now be our task to determine which system and theory best interprets the facts and phenomena.

One of the main problems confronting the cosmologist is that of the *essence or essential constitution of bodies*.

SUMMARY OF CHAPTER X

1. *The Question of Substantial Change.* Many scientific facts have been established beyond reasonable doubt; these we accept. The existence of *real change* is too obvious to deny. Are all changes 'accidental,' or are some 'substantial'? The latter is the transition of one kind of substantial entity into a different kind of substantial entity. When atoms combine into chemical compounds or when elements enter into living structures, do they lose their identity as atoms and elements (substantial change), or do they retain their identity and become simply dynamic systems acting as functional units (accidental change)?

2. *The Question of Bodily Essence.* Every *natural body* has an essence or nature which is the ultimate explanation of all that it is, has, and does. Essences are different. Living and non-living bodies are *specifically* different. What is their 'essence'? Are the atoms of the various elements also 'natural bodies,' and are they specifically different?

3. *The Question of Corporeal Constitution.* How is the essence of bodies constituted in its final analysis? Natural bodies have unity of being and operation; yet all are composite beings in some way. What is the *principle of unity* amid all the diversity of parts? There are features in every material substance which are in *apparent contradiction* to each other, such as indivision and divisibility, inertia and motion, quantity and quality. Does this imply a *dualism* of ultimate principles in a body? Then how account for the evident unity of being and operation? Do they consist of

only one substantial principle, matter, with nothing but qualitative differences? Many solutions have been offered.

4. *Earliest Solutions.* The earliest Greek philosophers assumed but a single uniform substance for all bodies. Empedocles introduced four 'roots' or elements. The Atomists were mechanistic and materialistic. Plato found the essence of all bodies in a noumenal world of separated Ideas.

5. *Aristotle's Solution.* Natural bodies have specific essences; they undergo *substantial change*. There are two incomplete substantial principles which constitute the body as a complete substance, namely *matter* and *form*. Matter passes through all changes intact, because it is essentially indeterminate and potential; in substantial change the form is lost and gained, because it is the determining and actualizing principle. This system is called hylomorphism.

6. *Medieval Solutions.* After a number of tentative solutions, the *hylomorphism* of Aristotle and St. Thomas Aquinas became the dominant theory.

7. *Modern Solutions.* Descartes brought atomism and mechanism into vogue: Leibnitz introduced monadism, a form of *dynamism*.

Boscovich developed *dynamism* proper: the ultimate constituents of bodies are unextended but active *forces*. Scientific atomism became *philosophic atomism*. Philosophic atomism appears in two types: mechanical, which explains everything through matter and motion; *dynamic*, which adds the concept of mechanical forces to the concepts of matter and motion.

Energism reduces all reality to energy, without a material substance as its bearer. *Electronism* conceives all matter as electricity; and *aetherism*, as variations of the aether.

Modern hylomorphism seeks to harmonize the facts of science with the hylomorphic system of Aristotle and St. Thomas Aquinas. *Hylosystemism* is a modification of hylomorphism: it admits hylomorphic composition in organic bodies, but maintains that inorganic bodies are hylomeric, i.e., dynamic systems of subatomic particles acting as functional units.

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Editorial Thought From: *The Atom in the History of Human Thought*

In light of all these data, it is clear that the fundamental and unconditional distinction Democritus had introduced between atoms and vacuum can no longer stand. Not only has vacuum invaded atoms to the point that it occupies virtually

their entire volume, and not only have atomic and subatomic particles been plunged into a veritable ocean of virtual particles with which they continually interact, but even the most intimate properties of atoms can no longer escape vacuum's dictates. Democritus's vacuum was an inert playground for atoms to frolic on. It has now been supplanted by an active vacuum participating in the making and evolution of the world. For better or worse, it even appears possible that it actually was the primordial source from which the universe sprang to life through "a gigantic original fluctuation," whatever is meant by that phrase. Thanks to quantum randomness and Einstein's equivalence of matter and energy, Democritus's two principles end up merging into a unified concept. To be sure, on closer examination, the two principles retain a certain specificity embodied for instance in the different properties of fermionic and bosonic fields, but, on a fundamental level, these are merely two facets of the same reality.

— BERNARD PULLMAN, PROF. OF QUANTUM
CHEMISTRY, SORBONNE, 1998 OXFORD

1 *The Renaissance of Physics*, (Macmillan, 1936, p.19

2 *The New Physics*, p.71. Quoted by R.P Philips in *Modern Thomistic Philosophy*, vol 1, p.46

3 *Ether and Reality* (London: Hodder and Stoughton, 1926) pp.174, 175

4 *Ibid.*, p.99

5 *Op. cit.*, p.137

Chapter 11

DYNAMISM AND ATOMISM

HAVING SPECIFIED THE PROBLEM AND HAVING GIVEN A BRIEF survey of the main systems which have attempted a solution, we must now turn our attention to an examination of these systems to see whether their explanation is rationally satisfactory.

The problem of the *ultimate constitution* of bodies cannot be solved by scientific observation and experimentation. The 'essence' of things escapes sense perception, because the senses perceive only the external phenomena. True knowledge of the essence of things is a matter of *rational inference* from their properties and activities; these flow from the essence as from their root-principle and consequently reveal the essence.

Any system which cannot account completely for all the properties and activities of bodies must be adjudged inadequate or erroneous. This does not mean that there is no truth at all in the system; as a rule, truth and error are mixed. Some systems fail through defect, others through excess. The true system must give a *complete and natural explanation* of all phenomena in question. The data of the experimental sciences must serve as the basis of discussion,

because they represent the factual evidence from which the intellect must infer the essence and constitution of natural bodies.

Dynamism and *atomism* appeal to the intellect because of their extreme simplicity. These, then, shall be examined, together with a few cognate systems of thought.

MONADISM

It is unnecessary to say much about the monadism of Leibnitz. It is a fanciful theory, based completely on gratuitous assumptions which are contrary to experience. All monads are supposed to be endowed with *life* and *knowledge* — an assumption based on no evidence.

This theory contradicts one of the most patent facts of nature, namely, the distinction between living and nonliving bodies. Whatever may be said about atoms and compounds, living bodies are certainly 'natural bodies' with a unity of structure and operation. But monads are the only units recognized by Leibnitz; hence, the *unity of the organism* remains unexplained, because there is no principle in monadism to unite the single monads into an organism.

As for the *knowledge* of monads, in virtue of which each monad mirrors all that happens to other monads throughout the universe, this is fantastic and obviously false. Man's *mind* is a monad. Consciousness, however, testifies only too clearly, that we do not know everything that happens to other monads; we are even ignorant of much that takes place in the vital functions of our own body.

Since the monads are unextended, simple substances, the fact of *extension* in bodies becomes inexplicable. No sum of unextended substances (no matter how great), can ever produce extension, because, what none of them have, their totality cannot have. Extension, however, is one of the most important facts about bodies. Hence, monadism is inadequate.

DYNAMISM PROPER

All dynamistic theories assume that bodies consist either of *pure forces* or of *unextended active substances*. Neither view is adequate as an explanation of the nature of bodies.

Neither view can explain the *extension* of bodies. This was shown in the chapter on quantity and extension (Chapter 6). Dynamists find a contradiction in the very concept of continuous extension. But extension is a fact of physical nature; even dynamists admit that we have the 'experience' of extension. But how is it possible to have an experience of something which does not exist? And if it exists, how can it exist, when the ultimate components of bodies are all unextended? That our own bodies at least are truly extended, is witnessed by the incontrovertible testimony of our *consciousness*. Consequently, the ultimate constituents of our bodies are extended, not unextended. Then dynamism must be wrong.

It is also a contention of dynamism that these unextended force-points or substances are not in contact, but are separated by *space intervals*; they are situated at some *distance* from one another. That implies 'action at a

distance.’ That, however, as was pointed out before, involves a contradiction in terms.

Dynamism destroys the *unity of organisms*. Since these force-points or simple substances are at a distance from one another, they cannot be in contact; and if they came into contact, they would coalesce into a mathematical point, because they have no extension and must coalesce with their whole being in the same point. In that case, however, how can there be anything like the *body* of a plant, animal, or man, with a *differentiated structure of cells*, organs, and tissues? After all, organisms are not mathematical points, but spatially extended structural units. This organic unity amid structural diversity is one of the characteristic features of every organism, and dynamism leaves this an unexplained enigma. Hence dynamism must be rejected.

ENERGISM

Energism, in opposition to mechanical atomism, insists on the presence of ‘qualitative’ factors in the scheme of corporeal processes; this is, of course, correct. It fails, however, in giving a comprehensive explanation of nature by going to the opposite extreme.

In reducing all reality to energy, it cannot account properly for the properties of bodies which are grouped under *quantity* and *extension*. Energy is essentially an ‘active’ agent. Many properties of bodies, however, such as extension in three dimensions, inertia, volume, mass, shape, weight, etc., are essentially ‘passive’ in character. To reduce these properties entirely to energy is an arbitrary

procedure and hardly in accordance with the facts of science.

Most advocates of energism are of the opinion that the concept of a *substance* as the bearer of energy is superfluous and nothing but a mental abstraction. This is a deplorable error. The philosophic concept of 'substance' is indispensable. Realities exist either in themselves without a subject in which to inhere or they exist in something else which is their bearer and which they modify as an accessory entity. In the first case they are 'substances' and in the latter case 'accidents' or modifications. If the various forms of energy do not exist in any kind of underlying support, they exist in and for themselves; then they are 'substances' in the philosophic sense, and it is wrong to deny the existence of substances. If they exist as modifications, they must modify something and this 'something' is then a substance. In any case, 'substances' must exist if energies exist. Then, however, not the energies themselves but the underlying substances are the ultimate realities in bodies.

Energism also rejects the concept of *matter* as a constitutive factor in bodies. This excessive exclusiveness is a defect of the theory. Energy is a 'dynamic' principle which is the source of activity in bodies, and activity is, without doubt, one of the most important features of bodies. It is, however, not the sole feature. Equally important is the inherent 'static' character of *space diffusion* and *mass*. How can such diametrically opposed properties proceed from one principle, and that a principle of activity? Matter, as a principle of passivity and diffusion in bodies, is definitely required as a factor in the constitution of bodies. We agree

that energy is not a 'substance' and not 'matter.' That, however, does not eliminate substance and matter. On the contrary, every body is a 'material substance' or 'substantial matter' endowed with energy in various forms. It is precisely the defect of the theory of energism that it lifts a mere *power of action* into the position of *substance* and *matter* instead of a 'modification' and 'qualification' of substance and matter. Bodies all contain within themselves a stable, permanent reality which remains intact, notwithstanding the constant change and transformation of energies within its being. This reality is termed 'matter' or 'material substance'; its existence is as much a fact as the existence of energy and activity, and it must be accounted for. Energism fails to do this.

Even *vital function* and *rational activity* are reduced to a form of energy in this theory. And thus the *specific difference* between plant, animal, and man, and between organic and inorganic beings, is left unexplained. There is more in organisms than the mere energies of heat, electricity, chemical affinity, mechanical motion, etc. These energies, it is true, are present in organisms, but the vital functions of nutrition, sense perception, and rational thinking are functions so vastly superior to the activities of ordinary energies, that they can be conceived only as proceeding from a totally different kind of *principle*.

Energism is thus seen to be but a variant of dynamism and labors under the same difficulties.

ELECTRONISM

We treat *electronism* here in so far as it is also a dynamistic theory. According to this theory, all reality is reduced to pure electric *charges*. Bodies consist of atoms, and atoms of electrons and protons; these are the ultimate constituents of all bodies. Dynamistic electronism does not consider these constituents as material particles or corpuscles endowed with electric charges of opposite sign (positive and negative), but it identifies them with *electric energy* itself; they are 'condensed electricity,' 'condensed electric charges,' devoid of matter as their bearer and support.

In this sense, electronism is a form of *energism*, and the reasons advanced against energism apply with equal or greater force against electronism. Energism admits the existence of various types of energy and does not attempt to reduce them all to one. Electronism knows only one form of energy, electricity, and must explain all inorganic and organic activities by means of this single energy. However, to explain all the activities of elements, plants, animals, and men as being ultimately nothing more than the action of electric charges, is a hopeless undertaking. Vegetancy, sentiency, and rationality demand a much higher principle of being than that found in an electric charge.

Electronism is based on the confusion of *phenomena* with *substantial reality*. The mere fact that electrons and protons are invariably associated with negative and positive electric phenomena does not warrant the conclusion that these particles are nothing more than pure electricity without a material support as their bearer. On the contrary, the *evidence of science* is against such a view. So far as electric *charge* is concerned, electrons and protons are

alike; both possess unit charges of electricity, equal in magnitude, so that they neutralize each other. But electrons and protons are very unequal in their respective *masses or weights*. The proton is approximately 1845 times as heavy as the electron. Due to its greater weight, the proton does not travel as fast as the electron; nor is it bent out of a straight course in a magnetic field as far as an electron. On the supposition that they are nothing but 'grains' or 'atoms' of pure electricity, this is inexplicable, because, their charge being the same, their electromagnetic mass should also be the same and their velocity in a magnetic field should be the same. Besides, science has proved beyond reasonable doubt that they are true *projectiles* which follow the mechanical laws of impact, as can be seen in the Wilson chamber, and produce mechanical effects, as can be seen in using them for bombarding elements. This shows clearly that they are *particles of matter* endowed with electric charge, not pure electricity itself. Electric energy, therefore, is attached to these material particles as an accessory entity, but does not constitute them. *Matter* is the *bearer of energy*, not energy itself. Hence, electronism cannot give an adequate explanation of the ultimate constitution of bodies.

All types of dynamism fail to explain the passivity, the *extension*, and the materiality of bodies in general and, most of all, the *specific structure* and *vital functions* of organisms in particular. Dynamism, therefore, must be rejected as an inadequate philosophic theory of the constitution of bodies.

MECHANICAL ATOMISM

The philosopher has no quarrel with *scientific atomism*. He admits the existence of 'atoms' as the smallest portions of an element which can enter into chemical combination with another element. He also agrees with the view of modern scientists that the atom is a complex entity, ultimately composed of electrons and protons, etc. The latter, and not the 'atom' in the Daltonian sense, are the ultimate physical constituents of all elements and bodies. So long, then, as physicists and chemists stay within these self-imposed limits of their science and do not claim to explain the *ultimate essence and constitution* of bodies in these terms, the philosopher is in accord with them. *Philosophical atomism*, however, is a metaphysical, not a scientific, theory of natural bodies, and as such it must be evaluated by the philosopher.

In explaining the essence and ultimate constitution of all bodies, mechanical atomism accepts two realities, and two realities only, namely *homogeneous atoms*, and *mechanical, local motion*. Everything in nature is supposed to be explained through these two factors. A theory must actually explain in a rationally satisfactory manner all that it sets out to explain; if it does not, it must be adjudged erroneous. That, we contend, is the case with mechanical atomism, because 'mass' and 'motion' alone cannot account for the most important phenomena observed in nature.

Mechanical atomism maintains that all atoms are *homogeneous*. Science has definitely proved that this is not so. If we take the 'atoms' as the minimal portions of the

various elements retaining the character of these elements, we now know that the elemental atoms are of about *ninety-two different kinds*, with different atomic weights, with different properties and activities, with a marvelous complexity of structure, and with a composition of radically different subatomic particles. Atoms, therefore, are not homogeneous; they are heterogeneous. If we substitute 'electrons' and 'protons' for the older concept of the 'atom,' we again find heterogeneity; they are radically different in mass and possess opposite electric charges.

Again, atoms are supposed to be *inert*, without any inherent principle of activity. The only motion in the world is *local motion* and it is *extrinsic* to the atoms, being communicated to them from without. This assumption has also been disproved by scientific research. The atoms of the *radioactive elements* are extremely active within their own being, independent of other atoms or bodies. No outside activity of other atoms or bodies can retard or hasten the disintegration of the radioactive atoms or modify in any way the release of the tremendous energies locked within the body of such atoms. Alpha and beta particles are ejected with enormous velocities, not through local motion communicated from without, but through the intrinsic activities within the radioactive atoms themselves. The local motion of these particles is *not the cause*, but the *effect*, of the internal disintegration taking place within the active substance of the radioactive elements. There must be, then, a principle of activity inherent in the atom, causing local motion. In other words, atoms are not inert substances; they are endowed with inherent *energies*, making them

capable to a certain extent of self-activity. In our day there is hardly a scientist worthy of the name who does not admit the existence of energy as a necessary factor in physical and chemical processes.

In the *inorganic world*, the atoms of the elements are the fundamental natural units of bodily existence. These atoms can no longer be viewed as simple entities; they are complex units, composed somehow of electrons and protons, etc. Hydrogen has one electron and one proton; uranium has 238 electrons and 238 protons. If mass and motion are the only factors responsible for the formation of these elemental atoms, why does not the addition of one electron and one proton to the number of those contained in the atom of the preceding element give rise to another element, so that there would be 238 elements? There are, however, only about 92 permanent elements. The *atomic weights* are not evenly spaced from one element to the next. Yet these elements possess *typical properties* which enable them to be recognized with ease. Mere mass does not account for these typical differences of the elements; this is proved by the frequent presence of isotopes among them, where the difference of mass does not entail a difference of properties. Neither can mere mass account for the *periodicity* observed in the elements; the mass of the elements increases progressively from hydrogen to uranium, while the properties recur in periodic cycles between one Zero element and the next. According to the tenants of mechanical atomism, there is no rational explanation for the various clearly defined types of atoms which we call 'elements' and for the obvious periodicity of

their properties and activities. There should be nothing but a homogeneous agglomeration of atoms, molecules, and larger bodies, subject solely to orderless local motion. The atoms of elements are 'typical' in the strict sense of the term, and this demands a typical structure in the internal configuration of the electrons and protons. Such a structure, however, manifests law and order, and that requires a principle of law and order intrinsic to the constitution of the atom. In passing from inorganic atoms to inorganic molecules and compounds, we find the clearest evidence of typical structure in *crystals*. The geometrical construction of crystals cannot be the result of homogeneous atoms swirling about in desultory fashion through the action of local motion impressed upon them from without. Crystals *build themselves*. There is, and must be, an *intrinsic principle* of law and order which arranges the atoms and molecules according to a definite plan and design. Mechanism is helpless in the presence of the 'types' found in inorganic nature.

In the *organic world*, the existence of typical structures is a universal feature of all organisms. The very term 'organism' implies the arrangement of various parts and organs into a harmonious whole and unit. How 'typical' these structures are, can be seen from the fact that plants and animals are classified according to *specific types*, and these 'species' run into the hundreds of thousands, each clear and distinct in its characteristic structure. There is nothing haphazard in the configuration of this structure. There are, to be sure, freaks of nature which deviate from the standard type, but they are the exceptions which prove

the universality of the rule. Not only are the structures of organisms distinctively typical in themselves, but they are the result of an *intrinsic principle of growth and development* resident in the very texture of the original germ cell. The bodies of plants, animals, and men are not the outcome of the native tendencies of the component chemical elements. On the contrary, these elements are utilized for the needs and purposes of the organism as a whole. *Organisms develop themselves* according to a definite plan into a unified structural *whole*, the integral parts and organs revealing a marvelous complexity, differentiation, and specialization. There is a purposiveness, an *internal finality*, in the development of each organism, from ovum to full maturity, which is unmistakable and undeniable. The *unity* of the organism is such that every function and every part is under the all-pervasive drive and control of some dominating principle which regulates and co-ordinates everything for the welfare of the organism as a completed unit. Any other interpretation does violence to the facts. Mechanistic atomism has no place in its theory for *purposiveness, finality*; it recognizes no principle of direction and control which could arrange atoms for definite purposes and ends. All is supposed to be explained by homogeneous atoms and indifferent local motion. No thinking mind can accept such a mechanistic interpretation as an adequate explanation of the *law and order* found in organic beings. Mechanism fails as an explanation of inorganic atoms and compounds; it fails doubly as an explanation of organic structures.

If mechanical motion is the sole *principle of activity* in atoms and bodies, then properties and activities can be nothing more than a form of *local motion*. This is an untenable theory. The natural sciences disclose many properties and activities which cannot be explained on so simple a basis. *Electromagnetic fields of force* are not forms of motion; they are states of tension in the aether which are qualitative in character. Such fields of force produce local motion in an electrified body: they are not its effects.

The kinetic theory of gases demands the existence of *elasticity* in the atoms and molecules of a gas; but this elasticity is a qualitative property, not a form of motion itself. *Cohesion* is another property of matter which cannot be described as a form of motion. Cohesion tends to hold the parts of a body together, so as to resist the dissipating force of collision and impact. Electrons, protons, neutrons, alpha particles, and other bodies are, absolutely speaking, quantitatively divisible; yet they resist divisibility to the utmost. Neither the bombarding nor the bombarded particles in artificial disintegration ever succeed in fractioning the ultimate constituents of elements, namely, electrons and protons, notwithstanding the terrific impact to which they are subjected. The cohesive force holding these particles together must, therefore, be far greater than the impact force of particles moving with enormous velocity; cohesion resists motion and dissolution by motion, and as such is a qualitative property of bodies. Even the *attraction* between electrons and protons and the *repulsion* between electrons and electrons and between protons and protons cannot be explained as mere forms of motion; they

are prerequisite qualitative properties which, through their action upon electrified particles, *produce* local motion in them so that these particles are said to be 'attracted' or 'repelled.' Similarly, *chemical affinity* is much more than local motion. This selective tendency of the elements for one another is present in them at all times and is independent of motion. It is a qualitative determination of the elements, not mechanical. Elements will unite into a compound because they are of a characteristic type, not because of any mechanical motion communicated to them. One need but glance at the *activity series* of elements, to realize the truth of this statement. For example, potassium and sodium unite with oxygen with great facility; zinc and copper are oxydized rather slowly; gold and silver do not combine at all under ordinary conditions with oxygen; magnesium will liberate hydrogen very rapidly from dilute acids, while lead does it very slowly. Other elements, such as the inert zero elements, show no tendency to make compounds. In no case are these reactions determined by any mechanical motion to which the atoms may be subjected; on the contrary, the motion and arrangement of the atoms is brought about by such qualitative factors as their 'metallic' or 'acidic' character and by other properties peculiar to the group to which they belong. The claim, therefore, that all so-called qualitative properties' can ultimately be reduced to the quantitative difference of homogeneous atoms and mechanical motion, is fallacious.

Mechanical atomism is an oversimplified system. Many fundamental and universal facts about atoms and their compounds either must be denied for the sake of theory,

and then atomism runs counter to natural science, or these facts are not accounted for in accordance with the principles expressly stipulated by the theory, and then atomism is a failure as a philosophic explanation of the essential constitution of physical bodies. Oversimplification is always a serious danger to any theory which attempts to explain nature as a whole; because nature, far from being simple in structure and operation, is exceedingly complex.

DYNAMIC ATOMISM

As the natural sciences progressed, scientists realized that mechanical, local motion could not be the all-embracing explanation of phenomena. More was needed. Hence, while retaining the tenets of philosophical atomism in its main features, atomistic philosophers sought to correct its deficiencies by introducing the *dynamic* factor of *force*. This, they felt, was sufficient to save the theory from failure.

According to this view, matter is still essentially homogeneous, and atoms remain substantially *unaltered* throughout their existence, whether in the free state or in compounds. There is no such thing as a real 'substantial change' in atoms or bodies; atoms never lose their original substantial identity. Whatever changes take place, are minor and accidental and do not affect the fundamental reality of the atoms. These changes are physical or chemical and are produced through the agency of *purely mechanical forces*. As was mentioned in the foregoing chapter, some dynamic atomists reduce these forces to weight; others, to resistance; others, to attraction and repulsion; others, to

attraction and repulsion, impulsions, and inertia. This theory, though an improvement on pure mechanism, still falls short of being an adequate philosophy of nature.

The explanation of the *function and structure of elemental atoms* on the basis of purely mechanical forces leaves much to be desired. We accept, in this connection, the *nuclear atom* of modern science. It is true that much of our knowledge of the nuclear atom with its planetary electrons is speculative and theoretical, not positively demonstrated in a scientific sense; hence, it is subject to revision and correction. Scientists in general, however, subscribe to the view of the 'nuclear atom' as a fairly accurate description of its structure, and the dynamic atomists are mostly scientists. We are, therefore, justified in using this theory as the premises of our argument.

Now, if the nuclear theory is a substantially correct interpretation of the structure of the elemental atom, dynamic atomism cannot give an adequate explanation of the facts. No explanation can be given for the fact that *all protons* and only *some electrons* form the *nucleus*. Protons, possessing a like electric charge, repel one another. Since there is an excess of protons in the nucleus, why do they not repel one another there? What holds them together? Why are not all protons united with electrons? Why are some electrons in the nucleus and others in planetary orbits? If some electrons can enter the nuclear region, why not all? And if some cannot enter this region, why can others? Why a nucleus at all? Why should not each proton simply attract an electron and, thus neutralized, go off on an independent course of its own? Why the various orbits and energy levels

for the different planetary electrons? Why the specified number of electrons in these orbits and levels? Why do some electrons revolve in orbits around the nucleus and others not? Why should the nuclei range from one proton in hydrogen to 238 protons in uranium? Why does the build-up of nuclei stop at uranium and not continue indefinitely beyond that point? Why are some nuclei unstable, as in the radioactive elements, while others remain stable? Why is the rate and succession of disintegration so different in different radioactive elements, and yet so fixed and unalterable in each element? Why does all radioactivity stop with lead? Why the tendency to form enormous quantities of one element (for example, carbon, oxygen, hydrogen) and very limited quantities of others (for example, gold, platinum, radium)? If *mechanical forces* are the only agencies at work in nature, these and similar questions cannot be answered. Such forces can produce only mechanical motion of a definite velocity and direction, but they cannot account for the complicated structures revealed in the nuclear atoms of the elements.

Dynamic atomism has no intelligent explanation for the various *types of properties* found in elements and chemical compounds. This theory claims that all atoms are homogeneous in their substance. But the substance of a thing is the root principle of all its properties. The same kind of substance, therefore, must have the same kind of properties. In that case, there should be no difference of properties in the elements and their compounds. But this is manifestly not so. Compare one element or compound with another from the standpoint of fusion point and boiling

point, solubility, specific gravity, color, odor, savor, magnetism, and many other properties, and they will be found to vary greatly. If all are composed of homogeneous, substantially identical matter, their properties should also be identical. Whence, then, the difference?

Dynamic atomism can give no account of the difference between inorganic and organic bodies. Both types of bodies consist of the same elements and elementary atoms. But all atoms are supposed to be substantially identical, and the only forces active in these atoms are purely mechanical. Hence, there can be, in this view, no essential difference between inorganic and organic bodies. But this does violence to reason and fact. The difference between them is fundamental and *essential*. In inorganic nature the elementary atom is an individual unit with a particular activity of its own; in the organism it loses its individual unity and becomes an integral, subordinate part of the higher unity of the structural whole. In inorganic nature the elementary atom combines with other atoms strictly according to the exigencies of chemical affinity; in the organism it is forced to make compounds which are greatly at variance with its natural inorganic tendencies. In inorganic nature the elementary atom manifests nothing but 'transient' activity; in the organism it participates in the 'immanent' activity of vital function, so that its activity is elevated to a far superior plane. In inorganic nature the elementary atoms will unite with other atoms in any quantity, provided they are present in the proper proportions, so that, for example, oxygen and hydrogen will unite into a drop or into an ocean of water; in the organism

the quantity of any element or compound is restricted by the needs of the organism as an individual. In inorganic nature the elementary atom and compound has an independent existence and larger bodies are mere aggregates of single atoms and compounds; in the organism the single atoms and compounds are welded into a complex system of cells and organs under the directive control of a unifying, centralizing principle which makes all individual units subserve the common welfare of the organism as a whole. This difference between the same atom and compound in the organic and inorganic state is not superficial but fundamental, not accidental but essential: living and nonliving beings simply belong to an entirely *different order of being*.

Furthermore, it is repugnant to sound reason to maintain that there is only an accidental difference between the three main types of organic *life, plants, animals, and men*. Vegetative life, sentient life, and rational life are so radically diverse in operation, that it is preposterous to group them in the same general class. Now, function reveals essence, because the essence manifests itself in function. But when functions are of an entirely different order, so that one type of function is found exclusively in one type of organism and never found in the other, it is a plain indication that the essences underlying these functions are *substantially distinct*. Only *crass materialists* are bold enough to deny the essential distinction between plants, animals, and men, and between living and nonliving bodies. The distinction is there and must be accounted for by any philosophic theory which claims to be capable of

explaining the essence and constitution of all bodies which comprise the physical universe. Dynamic atomism, with its meager principles of homogeneous atoms and purely mechanical forces, lacks the necessary philosophic equipment to explain the agencies at work in every organic body.

Dynamic atomism denies all *substantial change* in bodies; atoms remain substantially identical at all times and in all circumstances. This, however, as has been seen, is contradicted by indisputable facts. Whether the elements entering into a chemical compound undergo substantial change, is a mooted question. But when *nonliving* elements and compounds become *living substance*, they certainly undergo substantial change, because in that case there is a transition from one kind of substance into another kind of substance; that is what is meant by 'substantial change.' A corpse is, without doubt, essentially different from the same body when living; but then the elements and compounds, as present in the living and dead body, must also be essentially different. Hence, whenever atoms enter into, or pass out of, an organism's *cycle of life*, they must undergo substantial change. And thus it is seen that one of the fundamental tenets of atomism, both mechanical and dynamic, falls to the ground.

Finally, according to dynamic atomism, the only powers in operation in the physical universe are *purely mechanical forces*, such as weight, attraction and repulsion, resistance, impulsion and inertia. In consequence of this condition of the theory, all natural processes are mechanical in character; they are forms of mechanical motion. However,

in what intelligible sense can psychic functions be interpreted in mechanical terms? True, *psychic functions* are accompanied by mechanical processes; but that is by no means the complete picture of psychic functions. The sensation of sight, for example, involves forms of motion in the aether, in the retinal layer, in the optic nerve, and in the brain. Vision, however, is none of these motions. Vision leads to the *perception of things*, and that is something far superior to the mechanical processes which mediate the perceived object to the perceiving mind. The same applies to all types of perceptive activities: they are forms of *knowledge*, and knowledge is nothing mechanical. Again, consider the *emotional, intellectual, and volitional states* — pleasure, pain, love, hatred, grief, joy, judgment, rational inference, desire, abhorrence, anger, complaisance, admiration, ambition, and the host of other acts which fill the psychic life of man. These cannot be explained by the agencies of mechanical forces and mechanical motion. Powers and faculties of a nature higher than those of mechanical forces are required as the causes of such processes and states. Mental life is beyond the competence of any kind of physical, chemical, or mechanical force. A *new principle* must be introduced in bodies in order to account for such activities. We call this principle the soul.

Inasmuch as dynamic atomism admits the existence of ‘force’ as a causal agent for mechanical motion, it is an improvement on pure or mechanical atomism. Neither system, however, fulfills the purpose for which it is intended, namely, an adequate philosophic explanation of the essence and constitution of bodies. They fail, because

they are restricted too much to the mechanical inorganic side of the universe and overlook almost completely the fact that organisms are also bodies which must be adequately explained according to the principle of the theory.

AETHERISM

The *aetherism* of some modern scientists deserves no more than a passing comment. To state that all ponderable matter is ultimately reducible to aether, is no answer to the problem of the essence and constitution of bodies. Aether itself is a *body* and needs explaining. The problem is now pushed back into the aether, but it is not solved thereby. What is the essence and constitution of aether? Science knows too little about the aether to venture an intelligent answer. The theory has its points of merit, but it rests more on pure assumption and guesswork than on plausible fact. In its present stage of development, science finds great difficulty in even proving the existence of aether in the universe. The theory, therefore, is based on very flimsy grounds. And even if it were eventually proved that all ponderable matter is ultimately derived from imponderable aether, that would not argue the presence of inorganic and organic bodies, as we know and observe them, out of existence. Ponderable bodies would still remain in the visible universe, and the problem of their essence and constitution would remain with them. Hence aetherism is no adequate solution.

HYLOZOISM

Hylozoism is the philosophic system which maintains that all matter (Gr. *ύλη*, matter) is endowed with life (Gr. *ζωός*, living). It was prevalent among the earliest Greek philosophers and is defended by some modern philosophers. This theory obliterates the essential distinction between living and non-living bodies. A complete vindication of this distinction has not been attempted here, because that belongs to the department of psychology; however, enough has been said to show that the essential distinction between living and nonliving bodies is a natural fact. That being the case, the hylozoistic identification of inorganic and organic matter is unjustifiable and contrary to sound reason. That condemns it as a philosophical system of nature.

In general we may say: The *dynamic* systems uphold the 'qualitative' features of bodies, but neglect the 'quantitative,' material features; the *atomistic* systems stress the 'quantitative,' material features of bodies, but fail to do justice to the 'qualitative' features. Bodies are unitary beings which are neither exclusively quantitative and material nor qualitative and dynamic; they are both, and both aspects of bodies must be adequately accounted for. Philosophical dynamism and atomism err through oversimplicity, the one by excess, the other by defect. The true philosophy of nature must combine the good points of each and thus give an adequate explanation of bodily constitution as a whole.

SUMMARY OF CHAPTER XI

In this chapter dynamism, atomism and a few cognate systems of thought are examined.

1. *Monadism*. It is based on gratuitous assumptions; it cannot account for the unity of organisms; the supposed knowledge of all monads is not a fact; extension in bodies is inexplicable.

2. *Dynamism Proper*. It cannot explain the extension of bodies. It involves 'action at a distance.' It destroys the unity of organisms and leaves the differentiated structures of organisms unexplained.

3. *Energism*. It cannot explain the 'passive' properties grouped under quantity and extension. It errs, when it denies the existence of 'substance.' In rejecting 'matter,' it cannot account for space diffusion and mass. It obliterates the specific distinction between plant, animal, and man, and between inorganic and organic being.

4. *Electronism*. As a dynamistic system, it is a form of energism. It cannot give an adequate explanation of the activities of organic life. It confuses phenomena with substantial reality. It cannot account for the difference in mass between electrons and protons or for the fact that these particles are real projectiles.

5. *Mechanical Atomism*. 'Atoms' as elementary minimal units are not homogeneous. The substance of atoms is *not inert*, as can be seen in the radioactive elements. Since mechanical atomism recognizes *no principle of law and order*, it cannot account for the typical structures observed

in the specific types of organisms; these structures reveal *finality* and demand an intrinsic principle of law and order in natural bodies. Mechanical *motion* cannot explain *the electromagnetic fields of force, elasticity, cohesion, attraction and repulsion, and chemical affinity*.

6. *Dynamic Atomism*. It leaves unexplained the *function and structure of the nuclear atom*; the *types of properties* found in elements and compounds. It cannot explain the *essential difference* between *inorganic* and organic beings, *substantial change*, and *psychic functions*.

7. *Aetherism*. It does not solve the problem of the constitution of bodies, because aether is also a body. It is based on grounds which are too problematical and speculative.

8. *Hylozoism*. It obliterates the essential distinction between living and nonliving beings and as such denies one of the most important features of bodies.

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Chapter 12

HYLOMORPHISM

HYLOMORPHISM IS THE THEORY WHICH EXPLAINS THE constitution of 'natural bodies' by means of the *dualistic composition of matter and form*. The theory was devised by Aristotle and subsequently adopted and developed by the scholastics of medieval and modern times. The fundamental tenets of the theory are these: All natural bodies are composed of two incomplete substantial principles; one is the general principle common to all natural bodies, indeterminate but determinable, called *matter*, while the other is the specifying principle distinctive of each type of natural body, actualizing and determining the matter, called the *form*; the union of both principles gives rise to the 'natural body' as a *unitary composite substance*. These few ideas will suffice for the present as an approach to the proper understanding of the theory; a deeper understanding will follow as the theory is evolved in its details.

The primitive chemistry, physics, and astronomy of the ancient and medieval philosophers naturally contained many opinions which were erroneous. Neo-scholastics, in accord with the findings of modern science, have discarded

these antiquated views. They see nothing in science, however, which contradicts the fundamental tenets of hylomorphism. The basic ideas, they contend, are still valid. Some of the more outstanding facts and arguments in support of the theory will now be given.

THE PASSIVE, MATERIAL PRINCIPLE

The universe consists of a *multiplicity* of discrete bodies, not of a single, universal substance. Any being which is the complete subject of activity, exists for itself and is, therefore, a 'substance.' We are certain that many beings in the world are such complete subjects of activity. In our own case, as human organisms, this is perfectly clear. Through self-consciousness, each of us is aware of the indubitable fact that he is the subject, and the *sole subject*, of the activity and changes which occur in his being; none of us refers these activities and changes to any other being outside himself, human or otherwise. Each human being can test this truth for himself. Hence, human organisms are *individual substances* and discrete bodies. Through external observation, we observe a perfect parallel between our own bodies and activities and the bodies and activities of animals and plants; hence, they, too, must be discrete bodies. Inorganic beings are oftentimes 'aggregates,' but in their ultimate constituents (atoms, electrons, protons, etc.) they also reveal themselves as complete subjects of activity; consequently we must assert that they also are individual substances and discrete bodies. The universe, therefore, consists of a multiplicity of discrete substances or bodies.

These discrete bodies do not consist of ultimately indivisible and unextended substantial parts or force-points. This was brought out in our discussion of quantitative extension and in our examination of dynamism. The *activity* of bodies is *diffused in space*. Action at a distance being impossible, bodies can act upon one another only through immediate or mediate contact; but only extended beings have the necessary 'surface' to contact one another, and it follows that only 'surfaced' or 'extended' beings can have an activity which is diffused in space. Since activity is of the same character as the being from which it proceeds (*agere sequitur esse*), it is obvious that the activity of a body cannot be diffused in space, unless the being or substance of the body is also diffused in space. The substance of bodies, therefore, is entitatively *diffused in space*.

Man has a direct proof of this fact in his own body. We are not only conscious of activity in our body, but also conscious of the extension or side-by-sideness of the parts of our body in its activity. Through the experience of double contact, when our hand moves over different portions of our body, we perceive its *diffusion in space* and can measure this diffusion or extension in the three dimensions of length, width, and depth. By the same method, we also perceive and experience the extension of other bodies with which we come in contact. This extension, however, is not merely a 'perception'; it is an *objective feature* of our own body and of other bodies. Hence, all bodies are *entitatively extended*.

Extension, or diffusion in space, is not, however, an activity. The activities of bodies come and go, and there are

many kinds of activities which successively affect bodies, while the extension of bodies remains the same. If, then, we leave the activities of bodies out of consideration and focus our attention solely on the extension of bodies, we find that this extension of bodies consists in their 'being-diffused-in-space' and 'being-spread-out-in-three-dimensions.' This is a *universal feature of all bodies*, no matter what their type of being or activity. And it is a *static, passive* determination of all bodies, because it is nothing active in the sense of 'doing something.' That this is an 'entitative' determination, is clear, because it is the very being or entity of bodies which is thus diffused or extended in space. Such an entitative determination, however, demands an *entitative principle* in the very essence and substance of bodies, in order to account for its presence and existence. It follows, then, that in all bodies without exception there is a *static, passive, entitative principle* which is the foundation and source of the universal determination of extension present in every body. And since that is 'material' which occupies space, this static, passive principle is a *material principle*. We also call it simply *matter*.

All this is in agreement with the findings of science. Bodies are 'acted on' by various forces; they are, therefore, 'passive' and 'potential' to a great extent. Bodies are endowed with 'inertia,' in virtue of which they are indifferent to rest and motion; inertia is also a form of passivity and potentiality. Bodies have 'extensions in three dimensions which can be measured by rule and compass; that, too, is a static, passive factor in bodies. The concept of 'matter' in bodies is common to all the sciences. The

material character of bodies is taken for granted by the natural sciences; there is no dispute on this score. The existence of a 'material principle' in bodies is, therefore, common to science and to hylomorphism.

THE ACTIVE, FORMAL PRINCIPLE

Besides this static, passive, material principle in bodies, there must exist in them also a *dynamic active, formal principle*. This is proved from a number of facts.

For one thing, all bodies are *extended* and *active*. Now, extension of itself does not imply activity. Extension gives to a body merely the side-by-sideness of its internal parts; it diffuses a body in space, so that it occupies space in three dimensions. This, however, is a 'static' and 'passive' determination of bodies and as such does not enable them to be active and do something.

Nor does activity as such imply extension. There are beings which are principles of activity, yet are not extended or material; God, for example, is such a being, and so are spiritual substances. Hence, it seems fairly obvious that the activities of bodies must proceed in them from a principle which is active and dynamic, and this active principle must be entitatively different from the passive principle of extension. This active principle is called the *formal principle* or simply the *form*. It should be carefully noted that 'form,' in the sense used here, does not mean anything like 'shape' or 'figure'; the latter terms pertain to an accidental modification of bodies as regards their external quantity, while the 'form' here means the essential and substantial

principle of bodies which is the source of their activities and properties.

Furthermore, the *specific difference* among bodies proves conclusively that a *formal* principle, distinct from that of matter, is required. While discussing atomism, we have repeatedly referred to the fact that many bodies represent a *real type*, a distinct *species*. This is noticeably true in plants, animals, and man. Each is an individual unit with specific properties and activities restricted to the type to which it belongs. Plants are characterized mainly by metabolic and reproductive functions, animals by sensory functions, and man by intellectual functions. Structurally, they differ in a radical manner from one another. All without exception consist of the *common elements* found in nature. These elements, however, no longer behave in the organisms as they do in the inorganic state. They lose their distinctive individuality, both as regards their properties and activities, and are forced to combine into compounds alien to their native tendencies. They form vital protoplasmic material, cells, tissues, and organs, and thus are elevated into a new state of being with immanent, vital function. An entirely *new principle of activity and corporate unity* is evident in organisms.

This principle is far *superior* to anything found in inorganic beings and cannot have its source in the native, inherent forces of the chemical atoms and elements. Elements and compounds are controlled solely by the laws of affinity and arrange themselves into aggregates of *indifferent amounts*, depending on nothing but the quantity and proportion of the materials at hand. Quartz and

limestone, for example, are formed in layers of any thickness and may cover a continent. Not so in organisms. The amount and type of elements are strictly limited, no matter how large the quantity present at the disposal of the organism. The use of these materials is not determined by the elements, but by the *exigencies of the organism* as a unit; the selection is made according to some purpose inherent in the organism and by a *principle characteristic of the species* of which the individual organism is a specimen. This principle cannot be anything merely 'accidental' to the elements found in the organism. If it were, the elements would not be controlled by this principle, but the principle by the elements; since the elements are indifferent to the quantitative aggregates which they form, the *specific type* so characteristic of every plant, animal, and of man could never originate. A plant derives its origin from a plant, an animal from an animal, and man from man; nowhere in inorganic nature do we observe that organisms originate directly through the compounding of inorganic elements. Hence, the *vital principle* responsible for the origin and development of organisms must be a *substantial* and *essential principle* entirely distinct from any principle present in the chemical elements as such.

The *unity* and *solidarity* of an organism forces itself irresistibly on our attention. In *plants* the activities of the various elements are subordinated in every way to the processes of nutrition, metabolic change, growth, adaptation, and reproduction of the individual plant, and these vegetative functions, notwithstanding their diversity,

all conspire to the well-being of the plant as a whole. In *animals* both the activities of the elements and the vegetative functions are subordinated to the higher functions of sensory life, namely, sight, hearing, taste, smell, touch, central sense, imagination, memory, instinct, emotional states, etc.; and these diverse sensory functions, on their part, are again all directed toward the one goal of the conservation and reproduction of the individual animal. In *man*, finally, all chemical, vegetative, and sensory processes are harmonized in the service of the higher functions of intellection and volition. This unity and solidarity is the result of an *intrinsic purposiveness* or *finality* which dominates the individual plant, animal, and man completely from the first moment of life until death. Since it is not within the natural scope of the powers of the inorganic elements to strive for the purposes which so evidently dominate organic beings, the conclusion is inevitable that the *principle of life* which maintains and develops the organism is *essentially and substantially* different from any principle active in inorganic elements. This means that organisms possess a *specific constitution* composed essentially of matter and a vital principle. In common parlance this principle is called the 'soul'; in hylomorphism it is called the 'form.' Matter and form, therefore, are the constitutive principles which account for the materiality common to all bodies and the specific difference between living and non-living bodies.

Most hylomorphists also defend the hylomorphic composition of *elemental atoms and chemical compounds*. They maintain that the elements are characterized by

specific properties and activities, so that each element represents a distinct type of inorganic body. The *nuclear* atom, as envisioned by modern science, bears out this view in many respects. The planetary orbits, with their definite number of electrons, the energy levels, the classification of elements according to series and groups, the periodicity of properties, in short, the remarkable unity and harmonious arrangement of the structure and activity of each element seems to point to a controlling *inherent principle* working according to a distinct *plan* and for a distinct *purpose*. This, they claim, demands a special constitution, consisting of matter and a formal principle. The same line of reasoning is applied to chemical compounds, for they reveal themselves as specific types of bodies, with properties and activities radically different from those of their component elements. If this is the correct interpretation of the facts, then all material bodies, whether organic or inorganic, are hylomorphically constituted. Other scholastics feel that this argument for the hylomorphic constitution of all inorganic bodies is not cogent; since all elements and compounds consist of electrons and protons, and since these latter seem to retain their essential identity in the elements and compounds, it might be that the difference between the various elements and between the types of compounds is not an 'essential' difference in the strict sense. On the other hand, most scholastics are willing to admit that at least the *electrons* and *protons*, being so radically different in properties and activities, are essentially different and consist ultimately of a material and formal principle.

This much, though, is certain: All specific types of *organisms*, of plants, animals, and man, have a hylomorphic composition; they consist of a static, passive principle (matter) and of a dynamic, formal principle (the form, the 'soul') as the two essential factors in their constitution.

REAL DISTINCTION OF PRINCIPLES

Natural bodies, at least organic bodies, consist of two principles, one material (matter) and one formal (form). Are we to consider these two principles as merely two aspects of one and the same fundamental reality, so that they are logically distinct but identical in entity? Or are we to consider them as two realities, really distinct in their entity? So far as organic bodies are concerned, all hylomorphists agree that there is a *real distinction between matter and form*, so that they are entitatively two different things. They base their contention on the fact of 'unity' in organic bodies and on the fact of 'substantial change.'

It is from the unity of natural bodies, as we have just seen, that hylomorphists draw the conclusion that bodies consist of matter and form. And it is in this same *unity of natural bodies* that they find conclusive proof that matter and form are really distinct as entities in the physical order. This is a most important point in hylomorphism and deserves careful consideration.

The *unity of organisms* is a patent fact. From the standpoint of their material components, however, they consist of a multiplicity of parts. Every single plant, animal, and man is composed of many billions of elemental atoms,

electrons, and protons, etc. Left to themselves, each is an independent unit in its own right. If the unity of an organism were to be derived solely from these component parts, there would be no unity at all in an organism. In most plants we find cells, roots, stem or trunk, branches, leaves, spores or seeds; these are distinct parts with specialized functions. In animals we notice separate cells structuralized into manifold tissues and organs, designed for various kinds of vegetative and sensory functions. This also holds true of the human body. Now, *diversity and multiplicity* are the very opposites of unity. Nonetheless, every plant, animal, and man is characterized by *unity of essence*; they are 'one' thing, not 'many' things. This unity of essence in organisms obviously cannot be derived from the diversity and multiplicity of its material components and parts. Yet the unity of essence is there and must be accounted for. It is the formal principle, the principle of life, of course, which is the principle of this unity of essence. The vital principle pervades the whole organism from end to end, even down to the single cells and atoms, vitalizes and animates them, controls and directs their functions, builds and structuralizes them from a single cell into a most amazing complexity of tissues and organs, and co-ordinates all parts and functions into the supreme unity of *one, single essence*. If the material and formal principles (matter and form) were only logically, and not really, distinct in their being, then, so far as their entity is concerned, the matter would have to be reduced to the form, or the form to the matter. No one doubts that *matter is real* in organisms. Hence, if the form were not really distinct from the matter, there

would be diversity and multiplicity, but *no unity*. But the unity of essence is a fact which cannot be denied; the essential unity of organisms is as real as the diversity and multiplicity of its material parts. Consequently, if matter is real, the form must also be real. And from this it follows that the very nature of an organism as an essential unit composed of a diversity and multiplicity of parts is such, that both matter and form are *really distinct in their entity*: they are not one, but two, entities.

To view this 'unity of essence' from a different angle, consider the *act of sensory perception*. Action reveals entity; hence, as the action, so the entity. In order that an animal actually 'perceive' something, certain organs of perception are necessary. These are structures consisting of many corporeal parts, and they must be connected by means of nerves to the central organ of the brain. The various organs, namely, the eye, the ear, etc., have specific functions leading to definite types of sensation. Here again, viewing the various organs from the standpoint of their materiality, we meet a diversity and multiplicity of parts and functions. Yet the *act of perception is essentially one*. Thus, in the sensation of sight, the light makes a pattern on the retina, and this pattern is spread over many thousands of nerve filaments and over millions of atoms; a nerve tremor is set in motion which travels along the optic nerve to the visual center of the brain, and in this process innumerable cells become active. However, the act of *perception* is not such that one particle sees a fraction of the image and another particle another fraction, so that the final result would be a mosaic of separate perceptive acts; on the

contrary, notwithstanding the diversity and multiplicity of the material parts involved in the process of sensation, the perceptive act is a *unitary act* giving a *single perception* of the object as a *whole*. This is true, not only of the perception negotiated by a single organ, but of all the perceptions of all the organs as a *sensory system*: the organism acts as a unit, an individual of *essential* solidarity, so that the same single individual has the manifold perceptions of sight, hearing, taste, smell, touch, etc. This unity of perception cannot be accounted for in the animal body, if the vital principle or form is not entitatively distinct from the matter, because in that case the diverse and multiple material parts would be the only reality present, and the unity of the organism in its perceptive acts would be destroyed. The form, therefore, must be really distinct from the matter, because it is the *sole principle of unity* in the organism for perceptive acts.

The second main argument for the real distinction between matter and form is based on the fact of *substantial change* in natural bodies. Inorganic bodies have 'transient' action; organic bodies, 'immanent' action. The actions are essentially different; and, since the type of action reveals the type of substance of which the action is the natural expression, inorganic and organic substances are essentially different. If, then, nonliving, inorganic substance becomes living, or if living, organic substance becomes nonliving, this involves a 'substantial change.' And that is what happens. Consider the *fact of nutrition* in plants, animals, and in man. Every living organism is a *single individual*, a single substance and essence. The chemical

elements are the material components of the organic substance, while the vital principle or soul is the formal component. Organisms nourish and develop themselves by selecting certain chemical elements and compounds, rearranging them into organic compounds, assimilating them through the process of digestion, and finally incorporating them as *integral parts* of protoplasm and tissue, cell and organ; they are now animated, vitalized, *living*, and they now participate integrally in the immanent action of specific *vital functions* of which they were totally incapable in their previous chemical state. Furthermore, in the process of vital functioning the organic compounds are broken down, energy is released, and the used elements are eliminated from the organic system; these elements have now ceased to be living and revert to their former nonliving, inorganic condition. We thus see that nonliving elements become living when they enter the organism, and again become non-living when they leave the organism. But while *substantial change* takes place in the elements, the *organism* as such remains *essentially the same*; this is due to the fact that the formal principle (form, soul) has remained intact in the process and has undergone no change in itself. However, if the material principle (the matter) undergoes a substantial change, while at the same time the formal principle (form, soul) does not undergo a substantial change, then it is evident that matter and form are not entitatively identical, but *really distinct*.

This follows also from the *generation and death* of the organisms. Two things are really distinct, when they can be separated from each other. Each of us human beings, for

example, knows that we were not always in existence, but that we began to exist not so very long ago. We have no consciousness of having existed forever in the past, nor of having had previous existence in any other body; hence, we must conclude that our existence as human beings had a definite beginning not so many years back. This consciousness, however, belongs to the formal principle of our being, to our *form* or *soul*. On the other hand, we know that the elements, which belong to the material side of our being, have been in existence in the universe for an indefinite period in the past, long before our own being as a human organism came into existence. Similarly, we know that death will put an end to our existence as a human organism. When death overtakes us, the elements do not leave the body; they remain in the corpse. What leaves the body is the *form* or *soul*. Consequently, it is the form which comes into existence at generation and leaves at death, while the elements existed before generation and remain in existence after death. Death, of course, produces a substantial change in our organism, because the corpse is substantially different from the living body. Since, then, the material and formal principles in man's body can be separated from each other, they must be *really distinct in their entity*. And this is true also of every other type of organism, whether plant or animal. What originates in generation and disappears in death is the formal principle, not the material elements. Hence, in every organism the form must be really distinct from the matter, because the one is separable from the other, and death actually separates them.

Most hylomorphists contend that a parallel exists between organic natural bodies and *inorganic natural bodies*. The natural inorganic bodies are the elements and chemical compounds. They also reveal the presence of a material principle of passivity and indetermination and of a formal principle of activity and determination. When elements combine into a chemical compound, a chemically *new substance* originates through the process of a *real substantial change*; this is proved by the radically different properties found in the compound. This is clear from a comparison of the properties of the compound and of the elements which enter into the compound. Compare, for example, iron oxide with iron and oxygen, or hydrochloric acid with hydrogen and chlorine, water with hydrogen and oxygen, iron sulphide with iron and sulphur, sodium chloride with sodium and chlorine, and so forth.

Chemical compounds, in a sense, manifest properties as specific and typical as those of the organic compounds found in organisms, and the change affecting the original elements is so profound that there seems to be no solid reason why it should not be considered a *substantial change*. Here again, though, the matter of the elements passes over into the compound without loss; the new entity, therefore, which distinguishes the compound from the elements, must be ascribed to the *new form* of the compound as a *single essence*. Hence, even in inorganic bodies matter and form should be considered as *really distinct in entity*. Due to the parallel between organisms and chemical compounds, this argument, without doubt, carries great probability. There is, however, a *formidable*

objection against this view. When elements enter into a chemical compound, a change certainly occurs. The difficult question here to decide is: Is this change really *substantial*? When shall we adjudge a change to be 'substantial' and when merely profoundly 'accidental'? We have no criterion to guide our judgment except the change in properties and activities; they alone give us a clue to the underlying substance and essence. We know that living activities, being 'immanent,' are essentially different from the 'transient' activities of inorganic bodies; hence, the change of elements from 'nonliving' to 'living' is a substantial change. But in the case of chemical compounds the change takes place on a purely chemical, inorganic, nonliving plane. This being so, it is far more difficult to pass a judgment on the nature of the change which occurs when elements unite into compounds. Most hylomorphists are convinced that the difference of properties in the elements and the compounds clearly indicates a 'substantial' change. Recent trends in hylomorphic philosophy incline more to the view that such changes are not demonstrated to be truly 'substantial' and are perhaps only profoundly 'accidental'; they are not so sure that the inorganic form is really distinct from the matter, and some deny the real distinction between them.

We may say, therefore, that in all organisms the distinction between the material and formal principles (matter and form) is real, so that they are entitatively two distinct realities; as regards the real distinction between these principles in inorganic bodies, there is no complete unanimity of doctrine.

SUBSTANTIALITY OF PRINCIPLES

We have shown that, so far at least as organisms are concerned, natural bodies have a hylomorphic composition, and matter and form are entitatively distinct as things. We must now seek to determine whether these two principles are *substantial* or *accidental* principles and, if substantial, whether they are complete or incomplete substances.

A 'substance,' as has been mentioned before, is a being which exists in itself and needs no other subject in which to inhere in order to exist; an 'accident' is a being which cannot exist in itself, but needs another being (substance) as a subject in which to inhere in order to exist. For example, gold is a substance, but its shape or color is an accident inherent in the gold; a dog is a substance, but its act of running is an accident inherent in the dog; man is a substance, but his thinking is an accident inherent in man. An accident is essentially a modification of a substance; as such, it cannot exist independent of the substance which it modifies. All *properties, powers, forces, energies, and activities* are accidents in this technical, philosophical sense, because they are modifications of the substance of bodies and cannot exist except as such modifications.

The question, then, arises: Are matter and form, the material and formal principle in bodies, 'substantial' or 'accidental'? Do they partake of the character of a substance or of an accident? The substance is the *ultimate irreducible reality* in any being, the root and source of everything it is, has, and does. Anything, therefore, that is a reality which is ultimate and irreducible in a body, is

substantial and not accidental. Both matter and form, we claim, are ultimate and irreducible factors in the constitutional composition of natural bodies and as such are 'substantial.'

Take *matter*. That matter is something substantial in all bodies, no one doubts except the thorough-going dynamist who believes in nothing but forces. If matter is not substantial in bodies, what is? For the great majority of scientists and philosophers matter is the ultimate and irreducible reality in all bodies; and for most scientists there is no other ultimate reality in the universe. Matter is the substantial base for quantity and extension and the bearer of energy, force, local motion, and for every activity which occurs in the three dimensions of space. There is nothing beyond matter, of which matter would be a modification in the sense of an accidental determination. Hence, the matter of bodies is *substantial*.

Is the *form* substantial? The forms or souls of organisms certainly must be. We have already proved that vital function cannot have its origin in matter, because the diversity and multiplicity of the material particles constituting the organism cannot give rise to the essential unity of vital function and to the individuality of the living body; the root-cause of life lies in the form or soul. We have also proved that in organisms matter and form (soul) are two really and entitatively distinct realities; they are irreducible to each other. Just as matter is the ultimate and irreducible reality for the material features of organisms, so the form (soul) is the ultimate and irreducible reality for the living features of organisms. But life is the essential

characteristic of organisms. Hence, if matter is substantial, the form or soul of organisms must also be substantial. It follows, then, *that both matter and form are substantial* and not accidental.

The substantiality of matter and form, however, immediately involves us in difficulties. If both are 'substantial' principles, the conclusion seems inevitable that both are substances. But if both are substances, does not every organism consist of two substances? And if every organism consists of *two substances*, we have a dualism of substance, and then what becomes of the *essential unity* of the organism? Does this not bring a contradiction into the very nature of the organism? How can two be one, or one be two?

The *essential unity* of the organism is beyond reasonable dispute. Every plant, animal, and man is an individual, a unit of vital action. Since the substance is the ultimate and irreducible reality of any body, and since the ultimate and irreducible reality in organisms is a single, unitary principle of activity, it is obvious that the organism is a *single, unitary substance*. The organism, therefore, cannot be two substances, but only one substance.

The *duality of substantial principles* in organisms, i.e., matter and form, is an equally clear fact. The matter accounts for the diversity and multiplicity of the corporeal parts in the organic body, but it cannot account for the essential unity of its structure and vital function. The form accounts for the essential unity of the organism's structure and vital function, but it cannot account for the diversity and multiplicity of its corporeal parts. Both matter and form

are required for an adequate explanation of the organism's being. Both are, as just shown, ultimate and irreducible realities in their own line of being in the organism. Consequently, *both must be substantial principles*. And yet, they cannot be two 'substances' in the sense that the organism itself is a 'substance,' otherwise the organism would be two substances and a single, unitary substance at the same time; that would be a contradiction in terms, and such a being would be impossible. How resolve this apparent antinomy?

To resolve this antinomy, hylomorphists distinguish between *complete and incomplete substances*. A 'complete' substance is one which exists in such a manner that its nature demands no further union with a substantial co-principle. Such a substance possesses everything that its constitution and essence require for its existence and for the proper functioning of its natural activities. An 'incomplete' substance is one whose nature demands that it be conjoined with some other substantial co-principle, so as to constitute a complete substance. Each substantial part or principle, taken alone, would be insufficient to exist, or, at least, would be insufficient for all the functions of an individual of that particular species. Thus, man's soul alone, without matter, could not perform the functions of vegetancy and sentiency (for example, digestion and sight), which functions are natural operations for man; man needs matter for them. Neither could the matter alone in man, without the soul, perform the functions of thinking and willing; man needs an intellectual soul for them. Hence matter and form, or 'body' and 'soul' in ordinary language,

are incomplete substances,' each considered alone and for itself; they are substantial parts or co-principles which must be united into a single whole, in order to make a *compound nature* capable of all the functions proper to it. What has been said here of man's nature, also applies to the plant and animal organisms; they, too, are unitary substances consisting of the two substantial principles, matter and form.

While, then, it is true that matter and form are substantial principles, they are not 'complete' substances. They are indeed *substantial co-principles*, but they are *incomplete substances*. Each needs the other to such an extent that each alone is insufficient to constitute the complete organism; it is only in their union as part-substances that the complete and unitary substance of the organism originates, exists, and has its being. And so the antinomy is solved by the fact that matter and form are 'incomplete substances.'

THE COMPOSITE SUBSTANCE

All complete substances are either *simple* or *composite* in their nature. They are 'simple,' when they do not consist of entitatively distinct substantial parts. These are pure spirits; for example, angels or God. A 'composite' complete substance is one consisting of incomplete substantial parts, entitatively distinct among themselves, in such a manner that their union results in a single, *unitary nature*. In a composite substance neither of the incomplete part-substances inheres in the other as in a subject of inhesion;

they complement each other, making a single subject of natural functions through their union. The result of this union is a *substantial unit* (*un urn per se*), not an accidental unit (*unum per accidens*). A thing is said to be an 'accidental unit,' when it consists of two or more complete substances made to collaborate in a unified combination and action, while each component retains its independent substantial entity in the arrangement of the whole. That natural bodies are *composite complete substances* should be obvious. The facts are clear enough and need little elucidation.

A *plant* is a unitary, complete substance. It is not an aggregate of two or more substances forming an accidental unit, but one nature, one substance, a complete individual; for every plant has a unified action, inasmuch as all the parts are present really only as parts, each of which is active in dependence on, and for the benefit of, the whole. Where there is unified action of the whole as a whole, there is also a unified substance, a *single* substance, as the ultimate bearer of this unified action. Thus, the action of nutrition, growth, adaptation, and reproduction in a plant is its own internal action and is essentially one, having as its bearer neither the matter nor the form alone, but the whole plant as a unit. Hence, matter and form in it are united into a single, complete, *composite* substance.

As the plant, so also the *animal* is a unitary, complete substance. Sensation is an immanent action, and as such it must remain in the substance which elicits it. Sense perception, being a material and extended act, demands matter; but, being a living and immanent act, it also

demands the form or soul. If both matter and form were complete substances, each would have its own act, and there could be no unitary act. Hence, it is neither the matter alone nor the form alone which is the subject and bearer of sense perception, but a *composite unit* made up of both. Consequently, the animal is a composite substance consisting of two incomplete substantial parts. This becomes still clearer, when we consider that, besides sensory functions, the animal also has vegetative functions. The *two types of functions*, however, do not belong to two separate substances in the animal. On the contrary, both types of functions belong to the self same animal: it is the self same animal which digests, grows, sees, hears, feels, runs, and so on, as a single unit of action. Hence, matter and form unite in the animal, not as complete substances, but as part- substances which together make the animal to be a complete, *composite* substance.

Above all, *man* reveals himself as a unitary, complete substance. He possesses the vegetative functions of the plant, the sensory functions of the animal, and the rational functions peculiar to himself. Similarly, he is an extended being consisting of many material parts and bodily members. Now, all these distinct functions and parts do not belong to two or more substances, but to a *single, unitary substance*. Our self-consciousness is witness to this fact. Everything in man is referred to one and the same *Ego* as the ultimate subject and bearer of all. This is evident from the experience of our entire conscious life. Thus, we say: *I* digest, *I* see, *I* walk, *I* imagine, *I* remember, *I* think, *I* judge, *I* desire, *I* love, etc. We perceive ourselves to be, not two or

more things, but one thing. We perceive both body and soul, matter and form, to belong to *one Ego*; we perceive both body and soul, matter and form, to be a single unit of action, a single nature, and therefore a *single substance*. This is a positive and incontrovertible proof that man must be a single, complete, and *composite* substance consisting of 'body' and 'soul' as two incomplete substantial parts or co-principles.

Most hylomorphists also consider the *elemental atoms* and *chemical compounds* to be composite substances, composed of matter and form as two incomplete part-substances. In this respect they would be of the same nature as organisms. Whether this conviction is justified, depends on whether these bodies have a *unitary action* of a type perfectly analogous to that of vital action in organisms. If so, then the elemental atoms and chemical compounds are also composite substances in the sense defined. In this case, the *hylomorphic composition* of bodies would be a *universal fact* of the material world. The defenders of universal hylomorphism point out that the elements and compounds are essentially distinct types and species with essentially distinct properties and activities; this, they say, demands an essentially distinct nature and substance for each element and compound. Their common factor is matter; their distinctive factor is the form. Consequently, also the elements and chemical compounds are in the strict meaning of the term *composite substances*. The hylosystemists, on the other hand, do not consider the elements and compounds to be essentially distinct types and species in the sense that they are genuinely 'unitary

substances.' Their viewpoint will be examined in a subsequent chapter.

To sum up our investigations: Every natural body, at least every organism, contains a passive, material principle and an active, formal principle; these two principles are really, entitatively distinct, and they are called 'matter' and 'form'; matter and form are not accidental, but substantial, principles, and they are incomplete substances; the union of these two incomplete substances (substantial co-principles, part-substances) results in a single, unitary, complete substance which is the subject and bearer of all properties and activities and as such is a composite substance. Hence, every inorganic and organic natural body (or at least every organism) is a *hylomorphic compound*, i.e., a complete substance composed of matter and form. Hylomorphism alone does justice to all the facts and is, therefore, the only true interpretation of the constitution and essence of natural bodies.

SUMMARY OF CHAPTER XII

Hylomorphism is the theory which explains the constitution of 'natural bodies' by means of the dualistic composition of matter and form.

1. The Passive, *Material Principle*. The substance of bodies is entitatively diffused in space. This *diffusion* in space, or extension, is a static, passive, entitative determination of all bodies and presupposes a static, passive, entitative principle which is its foundation and source. And since that is 'material' which occupies space, this principle is a material principle; we call it matter.

2. *The Active, Formal Principle*. Bodies are both 'extended' and 'active.' Extension of itself does not imply activity. Hence, the *activity* of bodies must proceed from an active, dynamic principle; it is called the formal principle, or *form*. Every plant, animal, and man is an *individual unit* with specific properties and activities restricted to the type and species to which it belongs. Since the chemical elements are common to them all, this *specific difference* in organisms cannot be derived from the material elements, but must be derived from a different principle. Similarly, the *unity* and *solidarity*, and also the *purposiveness* of activity in organisms, demand a principle distinct from that of common matter. This is the form. Most hylomorphists defend the hylomorphic composition of elemental atoms and chemical compounds on similar grounds.

3. *Real Distinction of Principles*. The unity of natural bodies proves that matter and form are really distinct, so

that they are different realities and entities. Due to their matter, organisms have a *diversity* and *multiplicity* of parts; nonetheless, organisms are characterized by *unity of essence*, and this unity must, therefore, be due to the form. These being opposite characteristics, they cannot proceed from the same ultimate principle. Consequently, these principles must be really distinct. Notwithstanding the multiplicity of parts in a sensory organ, the *act of perception* is a unitary act. This demands a unitary principle of activity, which is not found in the matter but in the form. Matter and form, therefore, must be really distinct.

The fact of *substantial change* also proves the real distinction. When the elements are incorporated in the structure of an organism through *nutrition*, they change from nonliving to living; and when they leave the organism, they change from living to nonliving; here the elements were changed, while the form or soul of the organism remained the same. In the *death* of an organism, the elements remain in the corpse, but the form has left. Matter and form, therefore, are separable and actually *separated*. Realities, however, which can be separated are really distinct in their entity.

4. *Substantiality of Principles.* The *ultimate reality* in a body is the 'substance.' Matter is universally recognized as being an ultimate and irreducible reality in bodies; hence, it is a substantial principle. The form, too, as the fundamental principle of activity and life, is an ultimate and irreducible reality; hence, it also is a substantial principle.

Organisms, however, possess *essential unity*; they are not two substances, but one substance. It follows, that the

matter and form (soul) of organisms cannot be two complete substances, or the organisms would not be essential units. Matter and form must, then, be *incomplete substances*, substantial co-principles, part-substances.

5. *The Composite Substance.* Every natural body is a *composite* complete substance, consisting of two incomplete substances, namely, matter and form. In the plant, the actions of vegetancy have as the bearer neither the matter nor the form alone, but the whole plant (matter and form) as a *unit*. Hence, it is a composite substance. This is also true of the vital functions of vegetancy and sentiency in *animals*, and of the functions of vegetancy, sentiency, and rationality in *man*; each acts as a single, unitary substance. Hence, matter and form' must unite in every organism, making it a *composite substance*.

Most hylomorphists defend the hylomorphic composition of bodies as a universal fact of the material world, so that elemental atoms and chemical compounds are also considered to be composite substances. The hylosystemists disagree with this view.

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Chapter 13

THE HYLOMORPHIC THEORY

HAVING ESTABLISHED THE TRUTH OF THE HYLOMORPHIC composition of natural bodies, at least so far as organisms are concerned, it will be advantageous to scrutinize the *traditional hyломorphic theory* somewhat more in detail. The theory is traditional with practically all scholastics, and as such its main features should be well understood. As here explained, it applies also to chemical elements and compounds, so that no distinction is made in the hyломorphic composition of organic and inorganic bodies, except that the 'form' of organisms is a 'vital' principle while that of inorganic bodies is a 'non-vital' principle; both types of bodies are alike in this, that they are substantially composed of matter and form.

The student is warned not to rely in any way on his imagination. If he attempts to visualize 'matter' and 'form' in images, he will most assuredly fail. It is only by means of *rational concepts* that he may hope to arrive at a correct understanding of the theory of matter and form.

MATTER

All bodies, we know, consist of 'matter.' When we speak, therefore, of the 'matter' of an actual, concrete body, as it exists before our eyes, we speak of matter as it is already actualized by a form; it is *informed matter*. We can, however, *think* of this same matter as something prior to the reception of a form, as something isolated and separated from any form, as something for itself independent of any form. Taken in this latter meaning it is called *first or primary matter (materia prima)*; matter in the former meaning is termed *secondary matter (materia secunda)*. We are here concerned with 'primary matter,' not with secondary or informed matter.

Primary or primordial matter is an incomplete corporeal substance, undetermined but determinable, capable of receiving any kind of substantial form. Primary matter, being one of the two essential and substantial constituent co-principles of which every body is composed, is said to be *incomplete*; by this is meant that matter, of and by itself, is insufficient to constitute a body and must be united with its other incomplete co-principle (the form), so that the complete substance is the result of the union of both co-principles. It is *corporeal* and not spiritual; as such it must have the aptitude to furnish the substrate for the three dimensions of length, depth, and breadth, since these dimensions are the characteristic features of every material substance or 'body.' It is said to be a *substance*, inasmuch as it belongs to the category of 'substance' and not to any of the categories of 'accident,' even though it is an 'incomplete' and not a 'complete' substance; primary matter, therefore, must not be confounded with quantity,

quality, action, or any other modification of bodies. It is *undetermined*. As such, primary matter possesses neither essence, nor quality, nor quantity (*nec quid, nec quale, nec quantum*); these are determinations and actualizations which come from the form, not from matter directly. Primary matter, considered for itself, has no perfection or act whatever; it is *pure potentiality*, devoid of all actuality, in the line of substance. While it is the factor of indetermination in the constitution of bodies, it is an undetermined substantial reality which is *determinable* to any kind of bodily species by means of the form. It is completely indifferent and therefore potential toward all forms; under the influence of the proper efficient causes, it is receptive toward any form which may be demanded by the conditions. Primary matter, therefore, is *capable of receiving any kind of substantial form*, organic or inorganic; it is the common ground or base or substrate for all substantial changes, passing through them all from one kind.

Since it is an incomplete substance, pure substantial potentiality, without determination of any sort, it *cannot exist alone*; it exists only in conjunction with the substantial form in the composite, complete substance or body. What really exists, is the complete substance or body; primary matter has existence only because it is an essential and substantial co-principle, together with the form, of the existing body as a whole. For the same reason, primary matter is not an object of direct creation; the real object of creation is the complete, composite substance, and primary matter is *concreated* with the form in the complete,

composite substance. If primary matter were deprived of the form altogether, it would at that very moment sink back into nothingness. It is never subject to generation or corruption, because that which is generated and corrupted in substantial change is the compound or complete substance.

FORM

The term 'form' has a number of meanings. In its original meaning, it stands for the *shape* of material things. The same material or matter may assume, or be made to assume, almost any shape or 'form'; a piece of clay, for example, may have the form of a cube, a disk, a cylinder, or of the image of a man. The material or matter is indeterminate, while the form or shape determines it to be this or that. This original and common meaning has been taken over into philosophy, so that 'form' means any determination of an indeterminate but determinable reality. In this philosophical meaning, we distinguish between 'accidental' and 'substantial' forms. An *accidental form* is any reality which determines and modifies a complete substance, such as quantity, quality, activity, and so on; it makes this substance to be so or so, for example, hot, hard, colored, magnetic, etc. A *substantial form* is that reality which determines a being in the line of substance and constitutes either the whole or a part of its essence. In spirits (angels) it is the whole of their essential being, so that they are said to be pure forms' without the admixture of corporeal matter; in material substances or bodies the

substantial form is that part-substance which determines primary matter and which, combined with primary matter, gives to a body its specific nature. Since cosmology treats of bodily being, the term 'substantial form' is taken in the latter meaning, and it is in this meaning that the term must be understood in this discussion. The substantial forms of bodies are of two kinds, *subsistent* and *non-subsistent*; subsistent forms survive the dissolution of the organism, because they are spiritual, while non-subsistent forms perish with the dissolution of the organism, because they depend on the union with matter for their own existence. Man's soul, as will be proved in psychology, is spiritual and therefore subsistent; the forms of all animals, plants, and chemicals are material and therefore non-subsistent. Our present examination centers mainly on the 'non-subsistent' forms, as the context will show.

The substantial form is an incomplete, physically simple substance which is the ultimate intrinsic principle of all determination in a body. It is an incomplete substance, inasmuch as the form, like primary matter, is only a part-substance. The form has the natural aptitude and exigency to be united intrinsically with primary matter, and it is from the union of these two part-substances or substantial co-principles that the complete substance or body originates. Neither matter nor form is a complete substance for itself. It is physically simple in the sense that it is not composed of internal or external parts; it is the principle of physical unity in a body and as such must itself be physically one. That, however, presupposes that it is not composite, but physically simple. The substantial form is an ultimate

intrinsic principle, because it is a constitutive part of the bodily essence and substance and not merely an accidental modification of the substance, and because it is, together with primary matter, the last or ultimate ground and source of its being. It is the ultimate intrinsic principle of all determination in a body, because all properties and activities, which differentiate one body from another, are derived from the form. Primary matter is the undetermined, undifferentiated substrate which is the same in all bodies; the form determines and differentiates this common matter, giving rise thereby to specifically different types of bodies. Matter is passive, potential; the form is active, actualizing. Matter has the capacity to be molded into any kind of specific body; the form gives all actuality and molds primary matter into a specific nature. While primary matter is the same fundamental stuff in all bodies, it is the form which makes a body to be this kind of body rather than that, for example, gold to be gold, an orange tree to be an orange tree, a dog to be a dog, and a man to be a man.

The substantial form may be defined in different ways. One definition has been given and elucidated in the preceding paragraph. It is also defined as the 'ultimate principle determining a subject in the line of substance.' Again, it may be defined as 'the primary act of matter.' The meaning in both these definitions is, that the substantial form is the determining and differentiating principle which gives to primary matter its individualized substantial being, i.e., it makes it to be a body and a definite kind of body; it is not an accidental determination which merely modifies in a

secondary manner an already complete and existing substance.

The substantial form *does three things* to a complete material substance or body. It gives to a body its *specific essence*, making it to be 'this' kind of bodily essence rather than another; whatever differentiates one body from another, is due to the different type of substantial form. It makes the body to be a *nature*. By 'nature' we understand the ultimate principle of activity in a being; and since all activity is ultimately derived from the differentiating form, it must be the form which makes the body to be a 'nature' or principle of activity. The form also gives to the body its *essential unity*. Primary matter is the principle of diffusion and multiplicity; if, then, the natural body is essentially a unit, this must be due to the form.

Such is our philosophical concept of 'matter' and 'form' as the two substantial constitutive principles of every natural body.

THE PHYSICAL COMPOUND

In the union of primary matter and substantial form the *natural body*, as a composite and essentially complete *corporeal substance*, has its origin. One must not imagine this union as some sort of mixture of matter and form; or as if they existed side by side, contacting each other. Such a union would be purely external and accidental. It is rather a complete and most intimate intrinsic compenetration (if we may use the term), in which matter and form complement each other and communicate to each other their own

innermost being. The form, through its own being, is the intrinsic determination of the undetermined matter; matter, on its part, receives this intrinsic determination from the form and becomes determined thereby. The imagination is helpless in picturing this sort of union of two incomplete substantial principles into a single complete substance. An analogy might be found in the impression of a seal upon wax, where the impressed image becomes a part of the wax; it must be remembered, however, that this is only an accidental modification of the wax which does not affect its substance, while the substantial form of the wax affects its innermost being, making the common primary matter to be precisely 'wax' and not some other kind of substance.

The natural body is a single, unitary substance and is brought into being through the union of matter and form. One must not overlook the fact, however, that matter and form are entitatively distinct, even in the natural body as it actually exists. Primary matter and substantial form are *physical co-principles*, and the natural body, which results from their physical union, is a *physical compound*. According to the aristotelian-scholastic conception of the natural body, matter and form are not merely two metaphysical aspects of one and the same fundamental reality; they are distinguished from each other as physical realities, so that the natural body is the result of a physical composition of both. Since, however, the product of their union is a single, unitary substance, the real distinction between primary matter and substantial form is not such that each is a subsisting reality for itself.

Matter cannot *subsist* without its corresponding form, nor can the form (except the human soul) subsist without matter. Without any form, matter would cease to exist altogether, and the same is true of the form. They are natural correlatives. It is *the physical compound which exists and subsists*, in the strict sense of the word; matter and form cannot be said to exist and subsist except in and with the physical compound of which they are the constitutive substantial co-principles.

This brings us to the question of the distinction which exists between the natural body as a *physical whole* and its *two constitutive parts*. The answer is: the physical whole is not merely a collection or sum of two entities (matter and form), but a *third reality*, resulting from them. The physical compound is a true 'whole,' a true unit of activity, and the properties of this whole are quite different from the properties of the parts. Since, however, activities and properties flow from the entity of a thing, the compound must, strictly speaking, be an entity distinct from its parts. This does not mean that the physical whole is distinct from its parts in such a manner, that it adds a new entity to the entity of these parts; it means simply that the physical whole is a *new reality* which *includes* these parts in its being; the physical compound 'consists' of its parts, and the parts 'constitute' the compound. The natural body, therefore, does not contain three distinct entities, matter, form, and the compound; rather, the natural body is one complete entity, the physical compound or whole, which results from the union of these two incomplete constitutive parts. The whole is, of course, more than any of its parts

taken singly and separately, and as such it is really distinct from them; the whole is entitatively identical with all the parts taken together, but the whole as a whole is identified only partly with each part as such. This kind of distinction is termed an *inadequate real distinction*.

THE GENESIS OF BODIES

A body can be considered *in fieri* and *in facto esse*; in the first case it is considered in its state of 'becoming,' in the process of its genesis, and in the second case it is considered as the completed product of this process of substantial change. When one body is being changed into another, the new body is said to be *in fieri* during the entire time of the change, from the inception of this change until its completion; once this change is completed, so that the new body actually exists, the new body is said to be *in facto esse*.

What really happens in the genesis of a new body? Three principles are involved in the process: *matter, form, and privation*. By a 'principle' we understand that from which something else proceeds in any manner whatever. According to the hylomorphic theory, these three factors are the principles which account for the genesis of a new body in substantial change. The primary matter passes from the old body over into the new; nothing is lost or gained here. The new body reveals properties and activities specifically different from those of the old: since properties and activities flow from the substantial form, the form of the old body must give way to a new form, thereby resulting in

a specifically different kind of body. This is the purpose of the substantial change, namely, to generate a new body consisting of primary matter and a new substantial form. 'Privation,' as a principle in this genesis, is the lack of a substantial form in primary matter, in so far as primary matter is in a state of *proximate aptitude* for the reception of the new form. Due to the process of change going on in the old body, the circumstances of the body are such that its primary matter now demands the accession of a new form to meet the changed conditions; the body is 'disposed' for the new form as the next step in the genetic process. The primary matter of the old body 'lacks' the presence of the new form which the conditions demand, and it is in proximate aptitude for receiving it; this immediate 'lack' of a required new form is what is meant by the philosophic term of 'privation.'

It must be borne in mind, however, that the form in question here is the *final form* of this particular genetic process. There may be *intermediate forms* which appear in the course of the substantial change of one body into another; in that case, the intermediate forms are transitory and transitional in character, leading to one final form at the end of the whole process. These transitional or intermediate forms merely 'dispose' the primary matter for the final form, at the accession of which the prolonged change comes to a definite rest as completely terminated. Take food, for example. When food is taken into the system, it is mixed with various secretive fluids. These fluids break down the organic compounds of the food, change them into new compounds, and prepare them generally, so that they

are in a suitable condition to be absorbed by the tissues. This complicated process of preparation involves a chain of substantial changes; these changes, in turn, involve the accession of new substantial forms. However, these new forms are not destined to stay and thus end the process; they are intermediate forms which prepare the foodstuffs and dispose their primary matter proximately for the reception of the 'vital form' of the organism. The *ultimate change* takes place when this vital form, which is the *final* one in the series, informs and vitalizes the primary matter of the food. It is the lack of this final form, not the vanishing of any of the intermediate forms, which is termed 'privation.' The absence or lack of 'life' in that portion of primary matter properly and proximately disposed for 'life' is a prerequisite preparation, so that the vital principle of the organism can animate it and change it from food to living tissue; as such, this 'privation' is a true principle of change, because the vitalization of the food proceeds from it in due course.

It will be noted, that *privation is not a cause*. A 'cause' is something which assists in the production of another through a *positive influence* of its own. Privation, being something negative (a 'lack' of form), cannot exert a positive influence in the production of a new body; hence, it cannot be a true cause. Matter and form are true causes in a body. Both contribute in a positive way toward the production of a new body; matter is its positive and determinable substrate, and the form is its positive and determining actuality. Every 'cause' is a 'principle,' because it is something from which something (the new body)

proceeds; it is a positive principle of production. Not every 'principle,' however, is a 'cause,' because it may not exert a positive, but only a negative, influence on the production of something. It follows, then, that matter, privation, and the new form are the three principles which account for the genesis of a new body; two of these three principles, matter and form, are true 'causes' of its production, while 'privation' is only a contributing principle but no true cause.

Matter and form are *intrinsic causes* of a body. They are termed such, because they are constitutive parts of the very essence and substance of the body; without them the body would cease to be a body. The constitutive parts of a body are, quite evidently, 'intrinsic' and not 'extrinsic' to it. *Extrinsic causes* are causes which are external to the constitution of something and change it through their positive agency from without. Most substantial changes are inaugurated and sustained through extrinsic causes acting on bodies. Heat and electricity, for example, are powerful agencies in the production of chemical changes. It was advisedly stated that 'most' (not 'all') substantial changes are inaugurated through the action of extrinsic causes. In the case of the radioactive elements, the substantial change resulting in new elements is entirely spontaneous and not the result of any outside agency; the exact cause of this disintegration and transmutation is unknown.

As these extrinsic causes influence other bodies, they bring about a substantial change. They do this, not directly, but *indirectly*. No substance acts upon another substance directly; it does this through its *properties* and *activities*. These alter the properties and activities of the other body

to such an extent, that a new substantial form is demanded, the old form being no longer capable and fit for the altered properties and activities. Hence, the properties and activities which a body uses to bring about a substantial change in another are *instrumental causes*; that is to say, they act under the direction and control of their own substantial form in producing a result consonant with the character of this particular form, and this form will always tend to produce a result similar to itself. Wheat, for example, produces wheat, and an oak acorns.

Whence the *origin* of the new form? Is it created? Was it present somewhere in the universe, before this new body was generated? How does it come into being? And what happens to the old form after the new form has taken its place? This is one of the most difficult problems in connection with the hylomorphic theory. The hylomorphist answers that new forms are educed out of the potentiality of matter.

THE EDUCTION OF FORMS

There is a natural tendency on the part of the philosopher, due to his imagination, to picture the form as some sort of subsistent entity independent of matter. While this is true of the human form, it is not true of the material forms of chemicals, plants, and animals. This natural tendency is deceptive and misleading, and it has led some thinkers into erroneous views on this subject.

One theory maintains that all substantial forms were *created* by God in the beginning and have actually and

formally *always been* in existence since then. When new bodies are formed in the course of events, one form after the other is taken or drawn out successively from bodies and matter in which they are precontained. Every seed of a plant and animal, for example, contains innumerable precontained forms; one becomes actively united with matter in the plant or animal which develops from a particular seed, and the rest are again passed on in the seeds of this plant or animal.

The same applies, of course, to the substantial forms of chemical elements and compounds. All forms do not unite with matter to produce a compound, because not all possible chemical compounds are actually made and many seeds never give rise to a plant or animal; hence, many forms are frustrated in their purpose. This theory is called *panspermism*, or the theory of involution, or also the preformation theory. Defenders of this theory were *Leibnitz, Malebranche, C. Bonnet, A. Hailer, L. Spalancani, Linné*, and others.

This theory is now obsolete. It must be *rejected* for various reasons. If all substantial forms were actually present in matter from the beginning, a number of unacceptable consequences inevitably follow from the theory. Leaving the human soul out of consideration, material substantial forms cannot exist except in and with primary matter; in that case they must *inform* or actualize the primary matter in which they are present, and thereby a genuine physical compound (chemical, plant, or animal) must result. The consequences are disastrous to the theory. Since any portion of matter may eventually enter in any

kind of chemical compound, plant, or animal, these respective kinds of forms must all be precontained and present in matter. Since a body is placed in a definite species by its form, it would follow that all bodies are at one and the same time a nonliving *inorganic compound* and also a living *plant* and an *animal*; the inorganic forms would make the compound to be a chemical, the plant forms would make it to be different kinds of plants, and the animal forms would make it to be different kinds of animals. That, of course, is absurd, because contradictory; if a compound is living, it cannot be nonliving, and if it is a plant, it cannot be an animal, and vice versa. Furthermore, if this theory were correct, no real *generation* and *substantial change* could ever occur in nature. All that could happen would be that a pre-existing form becomes revealed or hidden; a new body could never be generated and come into existence, because the form was always present in and with a distinct portion of matter. But this is contrary to all experience; new plants, animals, men, and even chemical compounds come into existence through generation and pass out of existence through dissolution. To deny generation and substantial change is to deny the most obvious facts of nature, and any theory which cannot account for such facts is inadequate. Again, if the forms of *living beings* are actually and formally pre-existent in matter, it is unintelligible why they should not be able to *manifest their presence* through vital functions. They must 'inform' the matter in which they are present, or they could not exist at all; but in that case, the compound would be a real plant or animal, and the organism possesses everything necessary to manifest itself

as a living being with vital function. Finally, the theory encounters insurmountable difficulties with regard to *bisexual plants and animals*. Such plants originate through the union of pollen and ovules, and the animals through the union of spermatozoa and ova; each type of germinal particle is of equal importance for generation. Does the male or female particle carry the form of the new plant or animal? Both cannot carry a form or the new plant or animal would have two forms, and its essential unity would be destroyed. If the female particle carries it, why are the male particles so much more numerous? And if the male particle carries it, why are the female particles so relatively few in number? Since both are of equal importance, no assignable reason can be advanced, why the one rather than the other should carry the form of the new body. The theory simply does not explain the facts and must be rejected.

There is another theory which is similar to the involution theory. It maintains that all forms are *inchoatively* present in all matter; these forms are conceived as being, so to say, *germinally* in existence, but not in a state of complete evolution. This modified involution theory cannot solve the difficulties mentioned in criticism of the involution theory itself. After all, these forms, though 'germinal' and 'inchoative,' are *actual forms*; that is the very point of the theory. But if they are actual forms, they must actualize the matter in which they are present. That, however, is essentially the standpoint of the involution theory and involves the same difficulties.

A more plausible theory of the origin of substantial forms is the theory of *creation*. The defenders of this view consider the origin of the form in a new body as an entity entirely new and original, as the production of something completely out of nothing; and that is creation. Reversely, the form of the old body passes out of existence through an act of annihilation on the part of God. This theory solves all difficulties by its appeal to divine power. However, this theory, though plausible, must be *rejected* as inadequate. The fact must not be overlooked that the *generation* of new bodies is a *natural process*. As long as an effect can be explained by the action of an agent from which it manifestly appears to proceed by means of a natural connection of causality, then its production and generation must be ascribed to the action of this *natural cause*, not to creation. God created beings with natural powers and activities; consequently, they must be able to produce natural effects through these agencies, and such effects must be attributed to them, and not directly to God. Now, it is an obvious fact that created beings do actually influence others by means of their powers and activities; in other words, bodies act upon one another and thereby produce effects in one another. New chemical compounds and new organisms originate as the result of such actions; such is the verdict of common sense, science, and philosophy. We must, therefore, assume that the production of new bodies, of new chemical compounds and organisms, is the result of the natural causality of bodies. In the course of this production, new substantial forms originate and old forms disappear. Consequently, the origin and disappearance of

forms must be attributed as a natural process to the agency of created causes, not to a direct creative intervention of God.

Since neither the theory of involution nor of creation is satisfactory, we must look for a different theory to explain the origin of forms. The aristotelian-scholastic philosophers propose as an explanation the theory of the *eduction of the form out of the potentiality of matter*. This theory is also, though infrequently, called *epigenesis*. Every cause precontains its effect within itself, not in the sense that the effect exists in its own proper reality within the entity of the cause, but in the sense that the cause is a principle which has the power within itself to bring the effect from nonexistence to existence by means of a positive influence in the production of the effect. In this sense, different kinds of causes precontain their effects in different ways, depending on the type and nature of their causality. A material cause, such as primary matter, is a cause of production, in so far as it can, due to its potentiality, be changed into the actuality of some form through the agency of an efficient cause. A form, which can come into being through the transmutation of matter, is precontained in the potentiality of matter before it actually 'becomes'; its actual 'becoming' is thus correctly designated as an 'eduction' out of the potentiality of matter,' in order to distinguish this type of production from that of creation where no material cause concurs in the effect.¹ The phrase 'contained in the potentiality' means that something is precontained in another, not according to its actual entity, but according to its *possibility*, inasmuch as it can be brought into being by

this other. The *eduction* (Lat., *ex*, out of, and *ducere*, draw, 'draw out') of the form, therefore, is nothing more than the production of the substantial form as an actuality or 'act' in the subjectively concurring primary matter according to the potentiality or 'potency' which enables matter to receive it in the natural process of change through the agency of efficient causes.

To illustrate eduction, we may point, as an analogy, to the production of the shape of a statue. A block of marble 'precontains' the shape of the statue according to its potentiality, because the marble can be changed into the statue through the agency of the sculptor, although nothing of the 'actual statue' is present in the block of marble before the sculptor begins to carve it. In a similar manner, the substantial form can be said to be 'precontained' in the potentiality of primary matter, because the form can be brought into being in matter under the influence of efficient causes. From the standpoint of actual being, neither the statue nor the substantial form has any existence whatever before production begins; both, however, 'become' or are 'educated from the potentiality' of their respective matter, the one as an accidental modification of marble and the other as a substantial transmutation of primary matter. Just as the chisel of the sculptor can change the marble into the shape of a statue, so the activities of efficient causes in nature can produce the substantial form in primary matter. The statue is a new actuality, but there is no necessity of invoking any creative act on the part of God, because the marble is a concurrent cause of the change which takes place in it; just so, too, there is no creation involved in the production of

the substantial form in the new body, because here primary matter is a concurrent material cause assisting in the production. Creation is the production of a being in its *totality* from a state of complete nonexistence to existence, so that the new being passes from a state of absolute 'not-being' into 'being.' When a new body is produced out of another or others, it is merely the change of 'this-kind-of-being' into 'that-kind-of-being'; since the primary matter passes from one body into the other, receiving in the change a new *substantial determination* (the form), we cannot speak of creation. Hence, wherever a new body is generated, the new form is educed out of the potentiality of matter. Matter is transmuted, and in this natural process it is changed from potency (potentiality) into act (actuality).²

When scholastics deny that the origin of new substantial forms is the result of creation, they have no intention of denying the concurrence of God's activity with creatural activity. They admit this concurrence. But they insist, and rightly so, that the *fieri* or 'becoming' of a new body, and with it the appearance of a new form, is the result of a *natural process through natural means*. When bodies act upon one another, they produce alterations, new qualities, and new conditions, until the old form can no longer sustain its existence under the influence of the producing causes. Thus, for example, when hydrogen and oxygen approach each other through the attraction of their affinity, they act upon each other to such a degree that their qualities are mutually 'toned down,' reduced to a state of relative neutralization, tempered to a certain *equilibrium*; the result corresponds neither to oxygen nor to hydrogen, but to a

compound of both, water. In virtue of this 'disposition,' the old forms of oxygen and hydrogen are unfit for the new situation and must give way to one substantial form combining both elements into a new single substance.

Opponents find a very grave difficulty in this theory of the eduction of forms. They contend that *accidental* realities, such as properties and activities, are supposed to produce *substantial* results. That would mean, however, that the effect is greater than the cause, and that is impossible. In answer to this objection, the advocates of eduction stress the point that properties and activities are only *instrumental* causes acting under the direction and control of their respective substances; these substances are the *primary* causes, so that substances really act upon substances through the intermediation of instrumental causes. The effect, therefore, must be attributed to the substances themselves, and not to the properties and activities as such. The point is well taken. It is a common occurrence in nature, that instrumental causes produce effects greater than themselves, but not greater than the primary causes using the instruments. A statue, for example, is greater than the chisel and hammer which produce it; but it is not greater than the sculptor who wields these instruments: the statue must be ascribed to the sculptor, not to the chisel and hammer. So, too, substantial changes are the product of the *substances* as *primary* causes, not of the accidental properties and activities used as instrumental causes. The objection is invalid.

The *fundamental idea* underneath the theory of eduction is this: Just as an incomplete, nonsubsistent form can *be* with an intrinsic dependence on matter, so it must also be able to become with an intrinsic dependence on matter, because both 'being' and 'becoming' pertain to the same natural order. Since the actual pre-existence and the creation of substantial forms is excluded, the only correct explanation of the origin of forms is their 'eduction' out of the potentiality of matter.

What happens, then, to the *old forms* when the new forms take their place? When the new body originates with its new form, the old form simply disappears, vanishes, perishes, ceases to be, sinks into nothingness. Just as the present new form, before the production of the new body, was actually nothing and then 'became' by being educed out of the potentiality of matter, so the old form is now actually nothing by having been reduced to the potentiality of matter. This is not, strictly speaking, an annihilation of the old form, any more than the eduction of the new form is a creation. The origin and disappearance of material forms are on a par. What is really generated and corrupted is the *complete substance*, the body as a whole; since the form is an incomplete substance, it cannot remain in existence after the dissolution of the body as a whole and ceases to be.

THE UNICITY OF THE FORM

We now come to an interesting and perplexing problem. Can more than one substantial form be present at the same

time in the same matter? All hylomorphists admit as a basic supposition that every natural body consists of primary matter and the substantial form and that the substantial form is the ultimate determination which places the natural body in a definite species.

John Duns Scotus and the scotists maintained a double substantial form in a living organism. One form makes it to be a plant or animal, that is to say, a *living* being; and this form is the *soul*. The other form makes this particular living being to be *this body*; and this form is the *form of corporeity* (*forma corporeitatis*). By 'body' he understands here the 'organized matter' of the living being, inasmuch as it is distinct from the soul as the life-giving principle. Thus, in this view, every living material being consists of a soul and of matter made to an organism by the form of corporeity.

Most scholastics oppose the doctrine of this type of duality or plurality of forms as an *impossibility* in a natural body. The form of corporeity makes matter to be an *organized* body and, since an organized body 'in general' cannot exist, also to be this particular and *individualized* body. On the other hand, the soul makes matter to be a living' body and, since organized matter is necessary for living function, also to be an *individualized* and *organized* body. Both forms, therefore, place the organism in the genus of 'body' and fulfill the same purpose; both also inform the same matter completely. But then every plant and animal would be *two individuals*. It is, however, the view of some neo-scholastics that Scotus' doctrine is the

only one which can furnish a rational basis for the reconciliation of unity with multiplicity.

The problem of the *plurality of forms* in chemical and organic compounds is still acute.

Organisms (plants, animals, men) are without doubt natural bodies, i.e., natural units of action based on a natural unity of substantial being. According to the traditional scholastic view, chemical elements and true chemical compounds are also natural bodies. Whether compounds are inorganic or organic, they are composed ultimately of the ordinary chemical elements. Scientific experimentation proves, that the weights of the elements remain intact in the compounds; that many of the qualities of the elements are retained in the compounds, though in a tempered and rather neutralized condition; and that the compounds, upon dissolution, always revert to the original component elements and to no other.

Hence, in view of the facts just mentioned, the question arises: Do the elements in the physical compounds keep or lose their individual forms? Since they retain so much of their former identity, do they preserve their individuality in the compound? If so, how can we harmonize this with the evident natural and substantial unity present in the compound? How must we consider the many elements to exist in the compound without depriving the physical compound of its *substantial unity*?

This is a difficult and obscure problem. *Three solutions* have been offered. According to one theory, the elements retain their *complete individuality* in the compound. The compound as a whole has its own substantial form, and

each individual element has its own form while in the compound. This theory was proposed by *Ibn Sina* (Avicenna) and *Ibn Roschd* (Averróes), two medieval Arabian philosophers. St. Thomas and St. Albert the Great opposed this doctrine vigorously, on the ground that thereby the substantial unity of the compound is destroyed and the form of the compound as a whole is reduced to a mere accidental modification; if each element is a complete individual in its own right, the compound can be no more than an 'aggregate' united by an accidental bond.

The two remaining solutions are more important. In diametrical opposition to the doctrine of Avicenna and Averróes, *St. Thomas Aquinas* and the great majority of the schoolmen teach that the substantial unity of the chemical compound and organism can be preserved only if and when the forms of the elements *perish entirely*, so that there is but primary matter and *one substantial form* present. Of the substance of the elements nothing remains but primary matter; this alone passes over in its numerical identity into the new body. The new form preserves the general character of the elements as subordinate parts of the whole. The qualities in the compound are *specifically* those of the component elements, but they are *numerically* different from them; the original qualities of the elements have *perished* with the form from which they sprang and do not as such pass over into the compound. The qualities of the new body are entitatively new qualities, and they come into being with the new form.

St. Albert the Great, the teacher of St. Thomas, and other schoolmen take a middle course between these two

theories. They find it incomprehensible how primary matter can exist even for an *instant* without a form, and that would seem to be a necessary assumption, if the elements must first be deprived of their forms before the new form steps in to take their place. In the view of St. Thomas, a plurality or even a duality of forms can never coexist in any manner in a compound. It follows, it would seem, that there must be a moment of time, no matter how small, between the disappearance of the old elemental forms and the new form of the compound, because they cannot exist simultaneously in primary matter; there must be a moment, then, when primary matter belongs neither to the elemental forms nor to the new form, but is alone for itself. Primary matter, however, is a nonsubsistent, incomplete substance and cannot exist except in conjunction with a form at all times; then how can it pass over into the new body without taking the elementary form with it? To assert that the qualities of the new body are 'numerically' different from those of the elements, seems unwarranted; this postulates a *complete gap* in the process of change, and there is nothing to indicate this. The facts rather indicate that they are numerically the same. If it is possible, however, for the elements to retain their old forms in the new compound, then one can understand why the qualities of the compound are similar to those of the tempered elements and also why these elements should reappear after the dissolution of the compound.³ The elements, of course, would not retain their *complete individuality* in the compound, otherwise the latter would not possess substantial unity; they would be reduced in efficiency, their whole entity now being

subservient to the needs of the compound as a whole. Formerly they were individualized units; now they are but integral parts. They have lost their *individuality*, but have retained their reality. An analogy can be observed in the different letters of the alphabet, or in a number of separate lines, or in a set of triangles. Taken singly, each is an individual unit. But if the letters are combined into a word, or the lines into a single longer line, or the triangles into a polygon, they become parts of a higher unity, retaining their reality but losing their individuality; and that is what happens to the elements in a compound. Or, to put it in a different way, the relation between the elements and the compound and between the elemental forms and the form of the whole is like that of a federation of states under a central, federal government: the single states are integral parts of the federation and are under the control of the central government for the benefit of all, but they still have a limited autonomy and a certain amount of self-government within the framework of the federation. This theory of the plurality of forms in a composite body therefore resembles a federated democracy, while the theory of the unicity of the form is more like an absolute monarchy.

The defenders of the plurality of forms realize the difficulty of reconciling their view with the *substantial unity* of the organisms and chemical compounds. But they argue as follows. The form is that through which (*quo*) a being is constituted complete in its substantial and specific being (*esse*). Hence, we cannot assert that the elementary forms remain in the compound *precisely as forms*. Through their

union with the higher form of the compound the elements are elevated to a higher type of unity of being, and their elemental forms no longer determine them in their complete and ultimate being; consequently, these forms lose their character as *ultimate* determinations (forms) and become subordinate determinations, capable of being determined by a higher form. These forms, then, retain their 'reality,' but lose their character as 'ultimate determinations of matter.' It would be a very difficult thing to prove that the same matter cannot be determined by different determinations, at least in part, without begging the very question at issue. If this interpretation of the compound is correct, there is no need for assuming that the elemental forms must vanish and be reduced to nothingness.

The opponents consider this argument fallacious. They cannot understand how the elemental forms can be present in the elements of the compound in any way except *precisely as forms*. A physical compound, whether organic or inorganic, possesses a specific nature. What determines this *specific nature*? The substantial form. It is the precise purpose and function of the form to determine a definite portion of primary matter to its specific nature, e.g., to hydrogen, carbon, oxygen, chlorine, gold, etc. If hydrogen combines with oxygen into water, and if the hydrogen form remains in the compound, can this hydrogen form exist in that portion of matter at all without determining it to the specific nature of hydrogen? Is not 'informing' its very essence? Must it not be present *precisely as a form* and as nothing else? But then this portion of matter is still

hydrogen and not water, or it is both hydrogen and water at the same time, due to being determined by both forms; in the first instance there is no substantial change and no true compound, and in the second instance the same portion of matter belongs to two distinct species of being. The difficulty increases, when we consider the presence of non-living elementary forms present in a living compound; since the whole organism 'lives,' how can the elements constitute living tissue, if the elemental forms remain?

On their part, the defenders of the *unicity of forms* base their main argument on the *substantial unity* of organisms and chemical compounds. Natural bodies are unitary beings of action and possess a single specific nature. This unity of substantial being is due to the form, because the form is the source of all determination in a body. The form actualizes primary matter. Hence, the unity of being presupposes *one form*. Since matter and form are the essential constitutive principles of a natural body, a duality or plurality of forms would necessarily destroy the essential unity of the natural body. Consequently, this unity postulates the *unicity of the form*, so that only one substantial form can be present in any single natural body. With regard to the *tempered qualities* of the original elements, as manifested by the compounds, their presence is easily explained without the necessity of admitting the permanence of the elemental forms in the compound. The superior form contains the perfections of the lower form *virtually*; it is, therefore, natural that the qualities of the compound should be 'specifically' the same as those of the elements. Plants, for example, have a vegetant soul, animals

a sentient soul, and men a rational soul. The animal soul, however, though specifically sentient, also performs the functions of a vegetant soul; and the human soul, though specifically rational, also performs the functions of both the vegetant and sentient soul. Animals do not have two souls, nor man three; but the higher soul contains virtually the powers of the lower soul and performs its functions. On similar grounds, then, every compound must have a single form, while the elemental forms themselves have passed out of existence; the latter are contained 'virtually' in the form of the compound.

The opponents are not satisfied with this explanation of the 'single form.' They offer a most serious *objection*. Imperfections, defects, malformations, and other *abnormalities* occur quite frequently in living beings in the course of their development, which cannot be attributed to external agencies. What is their cause? St. Thomas ascribed such things to the *matter*⁴ which in some way resists the influence of the form or soul. But this seems impossible under the supposition of a 'single form.' How should matter be able to offer any resistance? Matter as such is perfectly indeterminate. Whatever determination it has in the organism it has from the form or soul. Matter, if determined by a single form, can do nothing except in conjunction with this form and only what this form wants it to do. Whatever activities occur in the organism are due to the form, not to matter as such. Primary matter can be molded into anything by the form; it can offer no resistance, because it is supposed to be *pure potentiality*. Under the supposition of a 'single form,' then, these abnormalities must be

ascribed to the form or soul. But that, too, seems incomprehensible, because that would mean that the form, the *sole determinant of the organism*, would *militate against itself*. If, however, we assume that the elemental forms remain in the compound with a certain amount of reduced autonomy, it is conceivable that, under particular conditions, a disproportion might occur which would give rise to such abnormalities.

What are we to think of these two solutions? Do the elemental forms remain in the compound in a reduced state, so that the elements receive their ultimate determination from the superior single form of the compound? Or does the substantial unity of the new body demand the complete disappearance of the elemental form, leaving but a single form in the compound? Both theories possess *probability*.

While hylomorphism is only a *theory*, it must be admitted that it is an ingenious explanation which gives a very good account of the facts in question. It steers a middle course between mechanical atomism and dynamism, harmonizing their true features, while avoiding their defects and exaggerations. It accounts for the passive, quantitative phase of bodies by means of its doctrine of *primary matter*, and for the dynamic, qualitative phase of bodies by means of its doctrine of *substantial form*. There are, of course, obscure points in the theory; that, however, is to be expected, because nature is obscure.

SUMMARY OF CHAPTER XIII

This is an explanation of the traditional hylomorphic theory, as generally accepted by scholastics.

1. *Matter. Primary matter* is an incomplete corporeal substance, undetermined but determinable, capable of receiving any kind of substantial form. It is pure substantial potentiality, possessing neither essence, nor quality, nor quantity.

2. *The Form.* The *substantial form* is an incomplete, physically simple substance which is the ultimate intrinsic principle of determination in a body. It gives to a body its specific essence, its nature, and its essential unity.

3. *The Physical Compound.* Primary matter and substantial form are physical co-principles, and the natural body, which results from their physical union, is a *physical compound*. It is this compound which exists and subsists; matter and form, as such (excepting the human soul), are nonsubsistent, and they exist and subsist only in the compound.

4. *The Genesis of Bodies.* Three principles are involved in the genesis of bodies in the process of substantial change: *matter, form, and privation*. By 'privation' we mean the lack of a substantial form in primary matter, in so far as primary matter is in a state of 'proximate aptitude' for the reception of the new form. Matter and form are intrinsic causes of a body. The properties and activities which bring about substantial changes are *instrumental causes*.

5. *The Eduction of Forms.* Some philosophers maintained that all forms are actually precontained in matter from the beginning of creation. This is the theory of *panspermism, involution, preformation*. If this were true, the same body would belong to different species at the same time, because a form cannot exist without 'informing' matter.

Others maintained the theory of *creation*, in the sense that each new form is the effect of a direct creative act. This theory contradicts the fact that substantial change is a natural process brought about by natural agencies.

The *aristotelian-scholastic* theory is that of *epigenesis*, or the eduction of forms out of the potentiality of matter. A form, which can come into being through the transmutation of matter, is precontained in the potentiality of matter before it actually 'becomes'; its actual 'becoming' is designated as an 'eduction,' so as to distinguish this process from 'creation.' As a thing *is*, so it *becomes*; since the form exists in dependence on matter, so it must also 'become,' and that is 'eduction out of the potentiality of matter.' The old forms simply perish, return into the potentiality of matter.

6. *The Unicity of the Form.* Scotus and the scotists advocate, besides the soul proper as the life-giving principle, a form of corporeity as the principle of 'organized matter' in a living being. Since vital functions demand organized matter, the soul must be able to perform this function, and the form of corporeity seems superfluous; the organism would be two individuals in this theory.

The question, whether the *forms of the elements* remain in the compound, is a perplexing problem. Three solutions have been offered. *Avicenna* and *Averroes* maintained that the elements retain their complete individuality in the compound; but in that case the compound would be a mere aggregate.

St. Thomas and most scholastics defend the *unicity* of the form in the compound. The elemental forms are contained virtually in the form of the compound. *St. Albert* and his followers defend the *plurality* of forms; in this view the elemental forms are present in the compound, but in a reduced state, losing their character as ultimate determinations.

READINGS

The same as in the two foregoing chapters.

1 “*Actum extrahi de potentia nihil aliud est quam aliquid fieri in actu quod prius erat in potentia.*” St. Thomas, *Summa Th.*, I p., q. 90, a. 2 ad 2.

2 See St. Thomas, *Contra Gent.*, s. 2, c. 86; *Opusc. Den nat, mat.*, c. 8; *Quaest. disp.*, q. 3 de pot., a. 8 154

3 See St. Albert, *De coda et mundo*, lib. 3, tract. 2, c. et 8.

4 *Summa Th.*, I p., q. 91, a.

Chapter 14

HYLOSYSTEMISM

OUR EXPOSITION OF ARISTOTELIAN-SCHOLASTIC hylomorphism shows that it is, in its fundamental concepts, a complete and balanced theory which gives a remarkably good account of the chief features of natural bodies. There can hardly be a doubt that hylomorphism is far superior to philosophical dynamism and atomism.

It is well to remember, however, that hylomorphism is but a *theory* and, as a theory, it has value only in so far as the progressive findings of science bear it out. Cosmology is the philosophy of physical nature. The attitude, that cosmology is pure metaphysics and may ignore the conclusions of trained and reputable scientists, is an improper approach to the problem and is contrary to the spirit of Aristotle and St. Thomas. These geniuses based their hylomorphic theory on the best knowledge of their age, and they propounded the theory precisely as an explanation of the scientific data as they knew them. In the face of contradicting facts, they were, as their works prove, the first to abandon a prevailing theory.

Many scholastic philosophers in our day find themselves in this predicament with regard to the traditional

hylomorphic theory as applied to *inorganic bodies*. They admit the correctness of a hylomorphic composition in organism. They claim, however, that the researches of science in the fields of chemistry and physics, instead of confirming hylomorphism, definitely indicate its inability to give an adequate explanation of the constitution of elements and their compounds. They have abandoned hylomorphism in inorganic bodies and substituted for it what *Albert Mitterer* has called *hylosystemism*.

The name is of little importance; but it is convenient to use it here as a designation of these trends of thought among a group of modern scholastics. Their ideas deserve an impartial hearing.

PRELIMINARY OBSERVATIONS

In order to avoid a confusion of ideas, it will be necessary to clarify certain concepts and terms which play a dominant part in this problem of the constitution of inorganic bodies.

The theory that material things are composed of matter and form originated from a consideration of *artefacts*. Bronze, for example, is molded into a statue; wood is fashioned into a bed; brick, mortar, wood, etc., are made into a house. These raw materials (stuff, matter) receive a definite shape or arrangement (form). All manufactured articles and works of art (artefacts) are thus seen to consist of two distinct factors, one indeterminate (stuff, raw material, matter) and the other determinate (shape, form). All artefacts, therefore, consist of matter and form. This is *technical hylomorphism*.

A similar condition is observed to be present in the *sensible appearance of natural bodies*. There are quantitative and qualitative properties which affect bodies and can be perceived by the senses; such are magnitude, volume, configuration, temperature, color, savor, odor, electrification, magnetization, and others. These properties are subject to considerable change. Supporting them, however, is the fundamental reality or substance of the body itself, which remains unchanged and permanent. The substance, as such, is something which cannot be perceived directly by the senses; it is imperceptible, 'metaphenomenal.' These properties are accidents which actualize and determine the substance; they are, therefore, accidental *forms* which inhere in the substance as in their subject. The substance is the supporting substrate of the accidents and as such partakes of the nature of a determinable *matter*. The relation, therefore, between the imperceptible, metaphenomenal substance of a body and its sensible phenomenal accidents is that of 'matter' and 'form.' This is *substance-and-accident hylomorphism*.

Penetrating still deeper into the nature of bodies, Aristotle and St. Thomas centered their attention upon the *ultimate constitution* of natural bodies. They maintained, as was noted in the foregoing chapters, that all natural bodies, organic as well as inorganic, have a hylomorphic composition in their very essence and substance; they are the result of a union of *two substantial, essential principles*, namely, of primary matter and substantial form. 'Matter' is the common factor of which all bodies consist, while 'form' is the distinctive determinant which makes them specimens

of certain types and species. Neither matter nor form is directly perceptible by the senses; they are 'metaphenomenal.' These are the ultimate constituents of every 'natural body.' By 'natural bodies' in the inorganic world aristotelian-scholastic philosophers understand the elements and chemical compounds, the latter resulting from the former by means of a substantial change in their union. For example, iron, gold, water, air, etc., are natural bodies. They agree in this that substantial matter is common to them all; but they differ in this that each possesses a distinctive substantial form, namely, an iron-form, a gold-form, a water-form, an air-form, etc., the 'type' or 'species' of each being determined by the form. This is *substantial hylomorphism*.

While Aristotle, St. Thomas, and their followers were mistaken as to the number of elements and their exact nature in a scientific sense, their *concept of the element* is correct and agrees in the main with that of modern physics and chemistry. The elements are conceived as the fundamental units as to *type* and *species* of bodies. The amount or quantity of a particular element has no bearing on its nature or essence as such. A minimal amount, for example, of gold is just as certainly the element gold as a pound or more of gold; it is the qualitative or, as they would say, formal factor (gold-form) which determines the nature of the element, and that is independent of its amount or quantity. The thinkers of their day had no way of knowing the exact weight or size of the minimal parts into which an element, such as gold or iron, could be fractionated; we call these minimal parts of elements 'atoms,' and modern

scientific methods give us a fair estimate of their absolute weight and size. To these philosophers an element is the *ultimate* constituent of bodies which can retain its *typical, specific identity*. Elements can, of course, unite into compounds, but that is a secondary feature. Hence, an element is an ultimate body; it does not consist of other bodies, but other bodies (compounds) consist ultimately of elements and originate from them. This is also the concept of an element in the science of today, so that the philosophical concept of Aristotle and St. Thomas and the physical concept of modern scientists are in accord.

These concepts, however, *differ* in secondary respects. The older exponents of hylomorphism held the view that the elements are not composed of ulterior particles, but solely of primary matter and substantial form; this is their ultimate mode of composition, and nothing in the elements is prior in existence to these two substantial principles. Scientific research in our day has proved that this view is erroneous; elements are composed of heterogeneous sub-elemental and subatomic particles of matter, namely, electrons, protons, neutrons, and possibly positrons. Mitterer calls these particles *hylons* ($\acute{\upsilon}\lambda\eta$, matter, $\acute{o}\nu$, being; matter-particles). These particles are not 'elements' in any real sense of the term, because they enter into the composition of all elements; the elements represent distinct *types* and *species* of natural bodies, while these particles do not. Quite consistently, St. Thomas taught that a division in an element is a division into primary matter and substantial form and, since matter and form in inorganic beings cannot exist separately, such a division would of necessity destroy

the element entirely, without a vestige of it remaining after the division. This, we now know, is not the case. The disintegration of the radioactive elements (uranium, thorium, actinium, and many of their derivatives) and also the sundering of elements through bombardment prove conclusively that a division of the elements does actually occur without a complete destruction of the entire material of the element. The element does indeed cease to exist as this particular kind of element, but it either changes into a different element or it dissolves into sub-elemental hylons (electrons, protons, etc.).

St. Thomas considered the elements to be the *ultimate bodies*. According to his view, a body is a 'material substance,' a 'corporeal substance.' In other words, every 'material substance' is a true 'body,' and every 'body' is a 'material substance.' Both are objectively identical, though conceptually diverse, things. Inasmuch as he had no knowledge of the ulterior hylonic composition of the element, it was natural for him to identify 'body' and 'material substance.' He was right in stating that the elements are the ultimate 'bodies,' because they are individual beings with a complete identity of their own. On the other hand, protons, electrons, and similar particles cannot be said to be true 'bodies,' because they are really *components of bodies*; they have no full independence of being, because they always tend to unite in order to form the elemental body rather than preserve their own identity in a separated existence. From this it follows that the elements are indeed true 'bodies' and also 'material substances'; the hylons, however, are 'material substances,'

but not true 'bodies.' Hence, a 'body' is always a 'material substance,' but a 'material substance' is not always a 'body.' Consequently, 'body' and 'material substance' are not always objectively identical things.

It is the difference between this old and new knowledge of physical nature which gives rise to the difference in theory which exists between hylomorphism and hylosystemism.

THE CRUCIAL PROBLEM

In order not to argue beside the point, it is imperative to specify with exactness the particular point at issue in which the controversy between hylomorphism and hylosystemism centers.

The single point at issue and the common subject of discussion is the *essence of inorganic bodies*, the *ultimate constitution of inorganic bodily substance*. That, and nothing else, is at stake as the crucial problem to be solved. To be more explicit, the *elements and chemical compounds* are 'natural bodies' in a scientific and philosophical sense, and it is their essence or ultimate constitution which both theories attempt to explain in a rationally satisfactory manner.

The *object* of investigation has remained constant from the time of Aristotle to our own day. It is the ordinary *body* which in its whole concreteness is perceived by the senses of man in his daily observation and experience. Such is every element and compound; for example, carbon, iron, lead, gold, mercury, glass, quartz, water, ammonia. Science

has discovered many more elements and compounds than were known to the ancients; but that does not alter the fundamental situation. Aristotle, St. Thomas, and their followers were greatly mistaken in their classification of elements and compounds; but that, too, is only incidental to the question. The important thing for ancient and modern science is the fact that they agree in the existence of elements and compounds as 'natural bodies.' It is not a question of which particular bodies should be designated 'elements' and which 'compounds'; that is not a philosophic problem. Rather, the problem revolves around the question: What is the essential constitution of any natural Inorganic body, whether it be an element or a chemical compound? Beyond the sensible appearances or phenomena of all natural inorganic bodies lies the imperceptible, metaphenomenal bodily *substance*; and that has not changed in the course of the centuries. Iron, gold, water, glass, etc., reveal the same properties at all times, and their physical description is identical in the past and in the present. There is no reason to assume that the types of bodies themselves have undergone any fundamental change in the course of the earth's development. Hence, it is logical to assume that they have retained their essence and substantial being intact. The problem, therefore, of the modern philosopher is the problem which confronted Aristotle and St. Thomas.

There is, quite naturally, a difference in the *approach* to the problem. The knowledge of the older cosmologists was pre-scientific and depended entirely on the observation of the unaided senses. Modern cosmologists are more fortunate. With the assistance of the microscope,

spectroscope, Wilson chamber, cyclotron, and other appliances, bodies have been forced to manifest their properties more accurately and fully, so that cosmologists are in a better position to infer the ultimate constitution of the corporeal substance underlying these properties. One result of improved scientific method is the knowledge that stars and other heavenly bodies are composed of the same elements as earthly bodies; it is, therefore, no longer permissible to accept the view of Aristotle and St. Thomas that heavenly bodies consist of a special element (aether) and are unchangeable. The entire universe, excepting organisms, is composed of the same types of bodies possessing the same substantial constitution.

We are, then, not concerned with the ultimate, substantial constitution of this or that particular element or of this or that particular chemical compound. Nor are we interested primarily in the nature and constitution of such sub-elemental particles as electrons, protons, neutrons, and so forth. The standpoint of the problem would be unjustifiably shifted, were we to focus our investigation on these realities. It cannot be stressed enough that the point at issue between hylomorphism and hylosystemism is entirely and solely the question of the ultimate constitution of any and every natural inorganic *body in general*, no matter of what kind, and of the *elements and compounds as such*, no matter what their type and species. Hence, it makes no difference whether there be five elements, as Aristotle and St. Thomas taught, or 92 elements, as present scientists teach; nor does it make any difference whether an element be mistaken for a compound or a compound for

an element: the problem is still the same. The natural inorganic bodies are simply *elements* and *chemical compounds*, and it is the correct theoretical and philosophical explanation of their essence which is at stake. Both theories must accept the data of science concerning the physical nature of inorganic bodies and, with the aid of these data, seek to penetrate the veil of phenomena and discover the underlying constitution of the corporeal substance which is the source of the properties we perceive in bodies.

THE TWO THEORIES

Both theories seek to determine the essential constitution of corporeal substance. Both admit that corporeal substance (body) is not a simple substance, but composite; that the natural body originates from a union of its component parts; that the result of this composition is the individual substance of the body; and that this inner constitution of the corporeal substance is its *essential* and *ultimate constitution*, namely, the final and innermost ground of all its properties and activities. They differ, however, most radically in their explanation of this ultimate constitution.

We are already familiar with the basic ideas underlying *hylomorphism*. It explains the composite substance of the natural body by means of *primary matter* and *substantial form*. In this it takes as its technical model the 'statue,' where the raw material of bronze receives some definite shape or form. *Hylosystemism*, on the other hand, explains the constitution of the natural body as an *atomary energy*

system, in the sense that the atom of an element and the molecule of a compound are composed of subatomic particles (protons, electrons, etc.) united into a *dynamic system* working as a *functional unit*. The differences between the two theories should be carefully noted.

The *first* difference lies in the *essential parts* which make up the substance of the body. In the aristotelian-thomistic philosophy, elements and compounds consist of but incomplete substantial parts, namely, primary matter and the form. In hylosystemism, which follows modern science closely, chemical compounds consist of individual molecules, molecules of individual elemental atoms, atoms of nuclei (protons, neutrons, positrons, electrons) and planetary electrons, and finally of energy particles (quanta, photons). The old theory is, therefore, hylomorphic, while the new theory is hylomeric (Gr., ὕλη matter, μέρος portion, part, particle; matter-particles).

The *second* difference. Hylomorphism rests upon a *dualistic* or *binary* conception, inasmuch as matter and form are the only constituents of any body, be it element or compound. Neither primary matter nor the substantial form consists of any ulterior parts. Hylosystemism is based on a *pluralistic* conception of the body, both for the element and the compound. The number of constituent particles varies considerably, increasing progressively in the elements from hydrogen to uranium and mounting into many hundreds in the more complicated compounds.

The *third* difference. In hylomorphism the essential parts, matter and form, are not complete substances, but *incomplete substantial principles*. Matter is undetermined

potentiality, and the form is determining actuality; the 'complete substance' is the result of their union. In hylosystemism the essential parts are *complete substances*. The chemical compound 'water,' for example, consists of atoms of oxygen and hydrogen, and they are complete corporeal substances; these atoms, on their part, consist of hylons (protons, electrons, etc.) which are complete material substances.

The *fourth* difference. The hylomorphic composition of a natural body, since it consists of nothing but matter and a single form, brings about a complete *homogeneity* throughout the entire extent of its substance; gold is gold throughout, bone is bone throughout, water is water throughout. The hylomeric composition induces a *heterogeneity* of parts in varying degrees of co-ordination and subordination, inasmuch as elements are composed of numerous hylonic particles and compounds are composed of distinct elemental atoms.

The *fifth* difference. The hylomorphic substantial parts of a body, matter and form, do not exist in a spatial side-by-side-ness within the body; they *interpenetrate* each other as potency and act in a most intimate union, so that they constitute a single reality and substance. The hylomeric parts, on the contrary, never commingle but stand apart from one another with *space between them*. It is possible that the protons and electrons of the nucleus are in contact, but the planetary electrons are stationed at a relatively great distance from the nucleus. Hence, the hylomorphic body is a *unitary substance*, while the hylomeric body is a *system* of corporeal and material substances. The technical

model for the unity of the hylomorphic body is the 'statue'; the technical model for the unity of the hylomeric body is the 'house.'

HYLOMERIC CONSTITUTION

The problem before us is the problem of the *essential constitution* of physical bodies. It will, therefore, be necessary to investigate the requirements of such a constitution. All agree that the main requirements are as follows.

It must really be a *constitution*. That is to say, there must be parts, and these parts must be united into a whole which is something more than the mere numerical sum of the parts. For example, one hundred cents, placed side by side, are a dollar, but they do not coalesce into any sort of higher unity as a whole; on the other hand, two atoms of hydrogen and one of oxygen unite into water, and water is a whole which is something different from mere hydrogen and mere oxygen in juxtaposition.

This constitution must be *natural*. The parts must unite into a whole as a result of natural tendencies, and not through extraneous constraint. Such a constitution is a natural product, not an artificial construct. A chemical compound is a 'natural' whole; a toy is an 'artificial' whole.

This constitution must be such that the whole is brought about and sustained by the *intrinsic powers* of the parts themselves (*per se*), not by outside agencies (*per accidens*); otherwise the physical body would not be a natural, individual unit.

Since it is the question of the essential constitution of physical substance, the component parts must be *substantial parts*, either complete or incomplete. The union of a substance with its accidents is not the point at issue.

This constitution must be the ultimate ground for the *species* of the physical body. It must, therefore, account for the fact that gold is gold, that helium is helium, that water is water, that sodium carbonate is sodium carbonate, etc.; it must explain in a satisfactory manner the common and distinctive properties of the elements, the periodic recurrence of similar properties among the elements, their gradual increase in weight, their valence, their stability, their typical character, etc.

The advocates of hylosystemism are emphatic in their claim that a hylomeric constitution is a *real essential constitution* in the sense specified and fulfills all the requirements demanded by an essential constitution.

The hylonic parts (electrons, protons, neutrons) are real parts which combine to form a *whole* (the atom, molecule), and this whole is certainly more than the mere numerical sum of its constituent parts. Their union effects a real energy system which acts as a functional unit. Just as a house is more than the sum of all the bricks and strips of wood, so the atom is more than the sum of the electrons, protons, and neutrons.

This hylomeric constitution is *natural*, because it is brought about by the natural tendencies of the subatomic particles and not through extraneous compulsion. The parts of a house have no tendency to combine, so that their union would produce a definite structure; that is why a house is

an artefact. The atom, however, is a natural structure, produced by the natural forces inherent in the particles.

The hylomeric parts are the *intrinsic cause* of the whole, so that the whole is constituted through the agency of these very parts (*per se*, not *per accidens*). Because of this fact, the atom is a natural individual unit of action, and not a mere aggregate of separate substances drawn together by an outside agency.

The parts which constitute the bodily substance must be *substantial* parts. The hylonic particles (electrons, etc.) are certainly substantial, just as substantial as primary matter and substantial form in the hyломorphic theory. No valid reason can be advanced why it should be impossible for a substance to be the resultant of a combination of other actual substances.

There is no contradiction in the idea that the *specific essence* of a bodily substance could be the result of a hylomeric constitution, so that the latter is really the ultimate ground of the species of the body and of its specific properties. On the basis of such a hylomeric constitution there is a rational explanation for the specific properties so noticeable in the elements, such as atomic number, atomic weight, valence, the series and group arrangement, the periodic recurrence of similar properties from Zero element to Zero element, the existence of transitional elements, the disintegration of elements, the absorption and emission of definite energy quanta, ionization, spectral lines, and so forth. Because atoms are systems of particles, it is understandable why elements are relatively stable and typical, why there are isotopes and isobars, why chemical

compounds always revert to their original elements, and why all elements can be broken down into homogeneous electrons, protons, and neutrons, why an increase or reduction of the unit electronic charge and mass never occurs, why the nucleus has practically all the mass of the atom, why the atom occupies a much larger space than the actual matter contained in the atom demands, and so on. The system or structure of the atom and molecule accounts in an admirable manner for all these phenomena revealed by modern physics and chemistry.

HYLOSYSTEMISM VS. HYLOMORPHISM

The decision between hylosystemism and hylomorphism depends upon which of the two theories can give the most logical and rational explanation of the physical facts manifested by natural bodies (elements and compounds). This was, and still is, the purpose for which they were devised. Every hypothesis rests upon some *fundamental assumptions*. These assumptions will be either verified or refuted by subsequent discoveries. If these discoveries bear out more and more (as they should) the primary assumptions, then the hypothesis is strengthened and gradually nears verification. If, however, these discoveries, as they increase in number and accuracy, tend to show that the primary assumptions are incorrect, then the hypothesis is weakened and may finally be discredited entirely. If the primary hypothesis or theory, following increased and perfected knowledge, must be bolstered by an auxiliary

hypothesis or theory, it is usually a sign that the original assumptions were inaccurate or untrue.

The defenders of hylosystemism contend that the fuller knowledge of inorganic bodies, as revealed by modern physical science, shows that *hylosystemism* and not hylomorphism, gives a better and more rational explanation of bodies. The facts do not favor hylomorphism. In other words, the data of the empirical sciences demand a *hylomeric constitution* in elements and compounds, not a hylomorphic constitution.

Consider the question of *minimal parts*. Both theories admit that bodies are, as a matter of fact, not capable of infinite physical division. Through division one must ultimately arrive at *minimal parts*. Science has proved this beyond reasonable doubt: chemical compounds cannot be divided beyond molecules, nor elements beyond atoms, without losing their individual identity. This fundamental assumption of 'minimal parts,' however, receives a valid theoretical explanation only on the basis of a *hylomeric constitution* of bodies.

We must bear in mind, that there is a very *definite limit* to such a division and that the minimal parts (atoms and molecules) have a *determinate size and mass*. There is nothing in the theory of hylomorphism to account for this. Water, for example, is a totally homogeneous substance, according to the aristotelian-thomistic conception, consisting of nothing but a certain quantity of matter and a single water-form. No valid reason can be assigned, why this water substance, in itself, should have a definite limit of division and should have minimal parts of definite size and

mass. Since water is a totally homogeneous substance, there should be no intrinsic limit to the division of this substance; the only limit would be the extrinsic one of the lack of proper technical instruments. Actually, however, such a definite limit exists, and the minimal parts have a definite size and mass. The necessity of this is readily explained by the hylomeric constitution of elements and compounds. The atoms of hydrogen and oxygen consist of a definite number of protons, neutrons, and electrons, and the molecules of water consist of a definite number of atoms of hydrogen and oxygen. It is impossible to divide water beyond the definite limit of the molecules, each of which naturally has a definite size and mass; a division beyond this limit would break up the water molecule into the atoms of hydrogen and oxygen. Similarly, a division of the atoms would result in nuclei and electrons. The hylomeric constitution of elements and compounds thus contains a logical and adequate ground in itself for the existence of definite minimal parts.

Science has proved empirically that the minimal parts of various types of bodily substances *differ* considerably in their *size* and *weight*. Osmosis, for example, shows that the molecules of sugar and water are not of the same size. The periodic table brings out the fact that atoms of elements increase progressively in weight from hydrogen to uranium. The hylomorphic theory can give no theoretical constitutional reason for this. According to the principles of this theory, the minimal parts consist of nothing but primary matter and substantial form. No intrinsic reason is given, why a particular form should demand more matter in one

minimal part (atom) than in another. The reason in a hylomeric constitution is plain. An atom is not a homogeneous substance. It is a system of hylonic particles, and this system contains progressively more particles from element to element. It follows as a matter of course that the atoms of elements and the molecules of compounds must differ both in weight and size; their constitution, being hylomeric and not hylomorphic, demands this difference as a result of the variation in the number of the component particles. It will thus be seen, the hylosystemists claim, that a hylomeric constitution alone, on the basis of the theory as such, gives a rational explanation of the existence of minimal parts in bodies. Hylomorphism merely 'assumes' that bodies have minimal parts, but there is nothing in the theory itself to explain *why* there should be minimal parts of definite and differing size and weight.

Then there is the question of *substantial change*.

The bodies in the universe are all *individual* bodies, each having an individual existence. Each body possesses a *generic* feature and a *specific* feature. Inasmuch as all bodies are material, corporeal substances (or simply 'bodies'), they are generically alike. Inasmuch, however, as they vary according to definite type (for example, carbon, oxygen, gold, radium, etc.), they are specifically different and belong to various species. Now, it is universally recognized that individual bodies do not remain permanently in the same species. Though they retain their generic character as 'bodies,' they change their 'species' by passing from one type into another type. From one kind of substance they become a different kind of substance. This is

a matter of 'substantial,' or 'specific,' change. For instance, radon changes to helium, hydrogen and oxygen become water, wine turns into vinegar. How explain the fact?

Obviously, since each such substantial or specific change means a *constitutional change* on the part of the changing bodies, the explanation must be sought in the *essential constitution* of the bodies themselves. Aristotle was convinced that he had found the solution of the problem of substantial change in the theory of primary matter and substantial form. Changing bodies retain their 'generic' character, but lose their 'specific' character; they retain 'primary matter,' which is common to all bodies, and lose the 'form,' which is specific for them. The constitution of inorganic bodies, therefore, is such that they consist of these two essential co-principles and of no more. They are the ultimate realities of all bodies. St. Thomas followed Aristotle in this theory of hylomorphism. Both based the theory on what seemed to them, in their limited observational knowledge, to be indubitable facts.

The hylosystemists, however, are convinced that a deeper knowledge of the facts militates against the theory. The theory, they claim, fails to explain the very facts for which it was devised, and no greater calamity can happen to any theory. In *substantial change* Aristotle and St. Thomas saw one of the most potent arguments in favor of the matter-and-form constitution of bodies; and if it fails to give a satisfactory account of substantial change, the theory is ruined in its very foundation.

Substantial change, as envisioned by the hylomorphism of Aristotle and St. Thomas, was a relatively simple process.

An individual bodily substance, for instance, this wine, changes substantially by turning to vinegar. Through the efficient causality of external agencies this body becomes unfit for the wine-form, which is the specific constitutional factor in the substance of the wine. The wine-form leaves the primary matter, which is the generic constitutional factor in the substance of the wine, and gives way to the vinegar-form, the new specific factor. The body has changed from the substance wine' to the substance 'vinegar.' The process involved nothing more than the loss of the old form and the acquisition of the new form. This accounts for the fact that the body retains its generic character (material, corporeal substance), but changes its specific character (wine to vinegar).

According to the *hylosystemistic theory*, much more remains than primary matter and much more changes than the substantial form. The structure of the elemental atom is a complex system of hylonic particles. This was pointed out before. The atom and molecule, from all the evidence accumulated by science, is a *hylomeric structure* of heterogeneous material, not a homogeneous, uniform substance. This is something very different from the binary constitution (matter and form) of Aristotle and St. Thomas. There is nothing to indicate that electrons and protons coalesce into a solid mass. On the contrary, the facts indicate plainly that electrons, protons, and neutrons retain their identity in the atom, that the atom consists of a nucleus and orbital electrons, with considerable intervals of space between them. When, therefore, atoms break down, either partially or totally, they resolve themselves into

material particles which have an existence of their own outside the structure of the elemental atom. This is at variance with the suppositions of hylomorphism, because more remains after this substantial change than mere primary matter. Similarly, in chemical displacements we notice groups of atoms, called radicals, which react as if they were a single atom; as such they have valence and go in and out of compounds as a unit. Hylomorphism cannot explain such a phenomenon, because, according to this theory, there can be nothing present in a compound but primary matter and a single form. Hylosystemism, with its hylomeric constitution of bodies, alone is capable of explaining such and similar phenomena. When the hylonic particles remain intact in the structure of the atom, and when atoms preserve their individual and group identity in the structure of the molecule of the compound, it is possible to understand the processes of ionization, isotopism, displacement, isomerism, and polymerism.

Furthermore, more changes in substantial change than the form. Substantial change is a change of *system, matter, and energy*. Hylomorphism, of course, also maintains that accidental forms change with the substance. This change of accidents, however, is not an integral part of the substantial change within the substance itself nothing changes but the substantial form. The theory could not take cognizance of the concomitant change in structure, matter, and energy as integral factors, because these things were unknown at the time. It is the change in structure, in the amount and arrangement of the material particles of the atomic and molecular system, and in the energy content of the system,

which brings about the change of one type of body into another. This presupposes a hylomeric, not a hylomorphic, constitution. It is not the technical hylomorphic model of the 'statue' with its intimately united matter and shape which fits the facts of physics and chemistry, but the technical hylomeric model of a 'house' as a system composed of many heterogeneous materials. One set of materials can be replaced by another; the materials may be removed, exchanged, or rearranged, so that the result will be a different type of house. Or to take a different simile, the letters of the alphabet, though each preserves its individual identity, can be arranged in various ways, resulting in words of entirely different meaning. Thus, the letters 'o,' 'p,' 's,' 't,' can be made into 'post,' 'pots,' 'spot,' 'stop,' and 'tops.' In a similar manner, a change in system, material particles, and energy content will give rise to a new bodily substance. Hylomorphism and hylosystemism are opposing theories, each attempting to render an adequate account of substantial, specific changes in bodies. Of the two, hylosystemism seems to give a better theoretical constitutional explanation of the facts.

Again, according to the principles of hylomorphism, no substantial change can occur in a body in consequence of the forces inherently present in the changing body itself. Since primary matter, being 'pure potentiality,' has no powers and activities of its own independent of the actuating form to which it is united, no opposition to the existing form can originate from primary matter. Nor can any change originate from the form, because the form is physically simple in being and cannot oppose itself. Hence,

it is but logical for hylomorphism to state that *only forces extraneous to the body itself can inaugurate a substantial change in a body*. In this manner hylomorphists link the fact of bodily change with the axiomatic principle of movement in general: 'Whatever is changed, is changed by another (*quid quid movetur, ab alio movetur*).' But this is contrary to fact. The *radioactive* elements change *spontaneously*. No extraneous agencies, physical or chemical, are capable of starting, hindering, retarding, or accelerating the spontaneous substantial change which occurs within these elements. The hylomorphic theory fails completely, on the basis of its own fundamental principles, to account for the fact; if hylomorphism were correct, such a phenomenon would be impossible.

There is another fact in connection with the radioactive elements which deserves special consideration. Such elements unite with others to form compounds. Thus, radium, for example, combines with chlorine (radium chloride) and with sulphur (radium sulphate). While in such a compound, a portion of the radium simultaneously decomposes into radon. Here a *partial* substantial change occurs in the very substance of the compound. It is a cardinal principle of hylomorphism, that in a chemical compound there is nothing but primary matter and a single form; the elements lose their identity and are only virtually, not actually, present. Hence, radium and chlorine have disappeared completely as radium and chlorine, having been replaced by a single substance, the compound radium chloride. In that case, however, it is incomprehensible how this remarkable phenomenon should occur. It is only on the

supposition that radium and chlorine *retain their identity in the compound* that one can understand how radium can be transmuted into radon, while it is a part of the compound. And this is impossible, if the constitution of radium chloride is hylomorphic.

Granted, on the other hand, that the constitution of the atoms of elements is *hylomeric*, so that the atom of radium is a system of particles which always retains its essential identity, even in a compound, the facts are readily explained. The nuclei of radioactive elements are of an extremely complex character, containing a large number of protons and neutrons. It would be quite natural that they are unstable and capable of emitting alpha and beta particles, thereby changing from one type of substance to another. Similarly, since the molecule of the compound, for example, radium chloride, is a system of atoms, in which both the radium and chlorine atoms retain their essential identity as systems, it is clear that the transmuting process of radium into radon would continue without interference in the compound. Without a hylomeric constitution such substantial changes are not only inexplicable but impossible.

Hylosystemism, therefore, and not hylomorphism, gives a more rational theoretical explanation of the facts of substantial change in inorganic bodies, as given by the data of scientific research. The findings of science have not confirmed the theory of hylomorphism; on the contrary, they have persistently increased the difficulties to such an extent for hylomorphism, that the theory cannot be said to

fit the facts. The facts overwhelmingly favor the hylomeric constitution of bodies.

These are a few arguments — there are many more — which hylosystemists urge against hylomorphism.

MODERN SCHOLASTICISM

Although present-day scholastics, as a rule, defend the hylomorphic constitution of bodies in principle, many no longer advocate it in the complete manner proposed by Aristotle and St. Thomas. The facts of science have forced them to modify their views; but very many are reluctant to discard completely the time-honored theory.

Many, accepting the structural atom and molecule of physicists and chemists as a fundamentally correct interpretation of facts, find grave difficulty in reconciling such an atom or molecule with the aristotelian-thomistic *single form*. The difficulty lies in this. The atom is the ultimate natural body among the elements, and the molecule is the ultimate natural body among the chemical compounds. As such, each can possess but a single substantial form, if traditional hylomorphism is correct. But how is this possible? The material form is non subsistent in itself and cannot exist except in conjunction with primary matter; similarly, primary matter is non-subsistent in itself and cannot exist except in conjunction with the form. Only the individual body, which is *informed matter*, can have existence. Hence, each particle of matter, which has a separate existence for itself, must possess a separate form. Now, the atom consists of electrons, protons, and neutrons

(nucleus and orbital electrons) which are spaced from one another by relatively large distances and possess a separate existence of their own within the confines of the atom as a whole. Each particle, then, should have a distinct substantial form. That being so, how can there be a single form actuating all particles as a unit? Traditional hylomorphism admits but a single form for a single natural body, and the atom, as all agree, is such a natural body. If the space-separated particles (electrons, etc.) have no special form of their own, but only the single form of the whole atom, how can this single form traverse the intervening gaps of space? Since it cannot exist outside matter, and there being no matter (in the accepted sense) between the nucleus and the orbital electrons, there seems to be no possibility for the one form to inform all the parts of the atom at once. In that case, however, it fails in its essential function.

A number of theories have been advanced as a solution of this difficulty. *One theory* places the form in the nucleus. This hardly solves the problem. The nucleus itself, to all indications, is not a continuous substance, but consists of distinct particles (protons and neutrons), as can be seen in the ejection of alpha particles in radioactive transmutation; so the difficulty remains. Besides, in this view the orbital electrons would not be an integral part of the body of the atom; but that they really are. *Another theory* postulates that the single form bridges the gap between all particles of the atom by also informing the intervening aether, so that the electrons, protons, neutrons, and the intervening aether, enclosing all these particles, are welded together

into a continuous substance which is the entire body of the atom. In this manner a single form is capable of informing all at once. This is an ingenious theory. There is, however, one bad feature about it. In order to save the primary theory of hylomorphism, this auxiliary theory had to be invented. This in itself reveals the desperate straits into which the primary theory has fallen. And now a new difficulty arises. There is no evidence for the auxiliary theory in the data of science; the auxiliary theory is a pure assumption, devised solely for the purpose of being able to maintain the original theory in the face of adverse facts. Besides, if it is true that the orbital electrons whirl around the nucleus at enormous speeds, it is hard to grasp how they and the surrounding aether can unite into a continuous substance. The theory is weak. *A third theory* admits that the data of science make a single form for the whole structural atom impossible and relinquishes the idea of a single form for the whole atom entirely. In its stead it postulates that the *single electrons and protons* possess substantial forms, while the atom and molecule as such are merely *aggregates*, accidental units, of electrons and protons united into a system. In this manner it attempts to do justice to all the facts. However, in doing this, it abandons the fundamental position and purpose of aristotelian-thomistic hylomorphism. Traditional hylomorphism was devised expressly for the purpose of explaining the typical character of natural bodies and of substantial change in a *constitutional* manner. According to this modified hylomorphism, atoms and molecules are no longer natural bodies, and all changes are merely

accidental, not substantial, changes. But this deprives hylomorphism of its very reason of existence and destroys its foundation completely.

On their part, the hylomorphists among the scholastics find hylosystemism unacceptable. In their view, a hylomeric constitution of natural bodies is impossible, because *it has no essential principle of unity* for the system of the atom and molecule. All particles (electrons, protons, etc.) being complete substances in their own right, their combination into a unitary system cannot be adequately explained. To make a new unitary substance of these diverse particles, a substantial principle is needed which has a dominating *dirigitive* influence over all, in order to weld them into the stable, typical body which is the atom or molecule. The system of hylomeric particles, as given in the theory of hylosystemism, is but an *accidental aggregate*, not a natural body. To this the hylosystemists reply that nature provides us with examples of such natural systems through the agency of natural forces, without the necessity of appealing to any separate substantial principle which would be required to effect the unity of the system. An instance is found in the solar system. The sun acts like the nucleus of the atom; the planets, moons, comets, and asteroids congregate around the sun in a system just as the electrons, etc., cluster around the nucleus. There is this difference, however, and the difference is to the advantage of the atom. The solar system is brought about by gravitational force alone; besides this force, the particles of the atom are brought into mutual co-ordination and subordination by the added influences of electromagnetic

forces and energy quanta. Surely, if heavenly bodies can arrange themselves into a system through the causality of gravitational force, there can be no serious objection against hylonic particles forming the system of the atom through a balancing of their own inherent forces. And as for the charge that such a system is only an accidental unit, that is a matter of definition. When complete substances combine into a system in virtue of their own *intrinsic powers* and in virtue of their own *intrinsic tendencies*, such a unity is *natural* and cannot be said to be 'accidental' in the sense that it is foreign to the nature of the parts and extraneously imposed.

Even so, hylomorphists say, hylosystemism offers no explanation of the *essential difference* which exists *between electrons and protons*, the ultimate components of all bodies. Why are they so radically diverse as to mass and charge? This can be explained in no other way than by a hylomorphic constitution; matter is their common component, substantial from their specific factor. Hylosystemists answer that one may accept, if one so desires, a hylomorphic composition in the subatomic particles. The point at issue, though, is the essential constitution of the *natural, individual bodies* as exemplified in the elemental *atom* and the chemical *compound* which are involved in substantial change. Hylomorphism has been pushed from one defensive position to another, from gross bodies to molecules, from molecules to atoms, from atoms to hylonic particles; if it was inadequate to explain the former, it will in all probability be found wanting in the latter. And besides, why should it be impossible for these

hylonic particles to be simply different particles of matter endowed by the Creator with different quantitative and qualitative properties? After all, the hylomorphists must also appeal to the Creator to explain the different types of substantial forms and their particular properties.

Again, hylomorphists assert, why overthrow hylomorphism for the sake of *scientific speculations*, when it is a well-known fact that scientists have reversed their opinions time and time again? This is true enough, answer the hylosystemists. But, was not hylomorphism devised for the purpose of explaining supposedly scientific facts? Aristotle's hylomorphism superseded the primitive cosmological theories of his predecessors, because his theory seemed to give a better explanation of the physical facts as then known. We can do no better than apply the same principle and method to the findings of the science of today. Science advances incessantly. If we waited until science has reached the end of its researches, we would be compelled to wait until doomsday, and cosmology would be impossible. And in that case, Aristotle and St. Thomas were wrong in formulating their theory of hylomorphism.

Accepting, then, hylomorphists might say, the available data of science, many eminent physicists now hold the theory that subatomic particles are rather 'diffused masses' than 'discrete particles.' According to this latest view, the atom does not contain any empty space between the nucleus and the orbital electrons; the entire atom consists of continuous matter, and the protons, neutrons, and electrons are nothing more than 'condensations' of this *continuous matter*. This is a formidable argument, if the

facts are as stated, because this view of the atom agrees to a very large extent with the aristotelian-thomistic concept of ultimate bodies. On the other hand, hylosystemists might answer, the theory of 'wave-matter' is still in a highly speculative stage and labors under serious difficulties (see *The Atom and Wave Mechanics*). The experiments with vacuum tubes, the Wilson chamber, X rays, etc., seem to establish definitely that subatomic particles possess bullet-like properties and must, therefore, be discrete and solid particles of matter.

Finally, hylomorphists contend, if the constitution of bodies is hylomeric, there can be *no real substantial change*. If atoms and molecules are mere systems in which the component parts retain their identity throughout, what is called 'substantial change' is nothing but the grouping, regrouping, and degrouping of these parts; that is not substantial change in any real sense of the term. Hylosystemists answer this serious charge as follows. The 'substantial change' which must be explained, is the change which actually occurs *in nature* and which occasioned the rise of the two theories as an explanation. Hydrogen and oxygen, in a chemical and philosophical sense, are different substances; their combination results in water, which is, also in a chemical and philosophical sense, a new substance. This is the 'substantial change' which occurs in nature, and it is the only kind of change that must be explained. If, then, hylosystemism can explain this kind of change on the basis of a hylomeric constitution of bodies, it actually explains substantial change. All the objective evidence of science favors the hylomeric concept of change,

not the hylomorphic. Consequently, hylosystemism, not hylomorphism, must be accepted as the best explanation of the constitution and essence of inorganic bodies.

The battle between traditional hylomorphism and hylosystemism is on and will continue with increasing severity for a long time to come. Both theories have strong and weak points. It would be neither wise nor fair to treat either theory lightly.

A number of fundamental systems of thought have now passed in review; monadism, dynamism proper, energism, electronism; mechanical atomism, dynamic atomism, aetherism, hylozoism; hylomorphism; and hylosystemism. Of all these systems of thought, which attempt to give an adequate interpretation of the essential constitution of natural bodies, two stand out as having the greatest claim to truth: hylomorphism and hylosystemism.

This closes our investigation into the nature of individual bodies. We now turn our attention to the universe of bodies.

SUMMARY OF CHAPTER XIV

As an explanation of the essential constitution of inorganic bodies, hylosystemism stands in opposition to hylomorphism.

1. *Preliminary Observations.* There is a technical, a substance-and-accident, and a substantial hylomorphism. While the aristotelian-thomistic and the modern scientific concepts of the elements differ in secondary respects, they agree in fundamentals.

2. *The Crucial Problem.* The single point at issue and the common subject of discussion between hylomorphism and hylosystemism is the essence of inorganic bodies, the *ultimate constitution of inorganic bodily substances*, namely, of the elements and chemical compounds as such.

3. *The two theories.* Hylomorphism views the body as a composite substance consisting of primary matter and a substantial form. Hylosystemism views it as an atomary energy system working as a functional unit. *First difference.* In hylomorphism, elements and compounds consist of two incomplete substantial parts, matter and form. In hylosystemism, the constitution of bodies is hylomeric, i.e., it consists of heterogeneous matter-particles. *Second difference.* Hylomorphism rests upon a dualistic or binary conception of the body; hylosystemism, upon a pluralistic conception. *Third difference.* In hylomorphism the essential parts are incomplete substances; in hylosystemism these parts are complete corporeal or material substances. *Fourth difference.* Hylomorphic composition brings about

complete homogeneity in the substance; hylomeric composition, a heterogeneity of parts in varying degrees of coordination and subordination. *Fifth difference.* Matter and form interpenetrate; the hylomeric particles are spaced at a distance from another. Hence, the hylomorphic body is a unitary substance, while the hylomeric body is a system of corporeal or material substances.

4. *Hylomeric Constitution.* Hylosystemists claim that a hylomeric constitution is a *real essential constitution*. The parts form a whole which is more than the mere sum of the parts. It is natural, because brought about by natural tendencies. The parts are the intrinsic cause of the whole. These parts are substantial parts. They give to a body its specific essence.

5. *Hylosystemism Versus Hylomorphism.* The hylosystemists claim that the data of science demand a hylomeric constitution.

Concerning *minimal parts*. There is a definite limit to the division of bodies, and the minimal parts have a determinate size and mass; they also differ in size and weight. There is no principle in hylomorphism which can account for this, because a hylomorphic body is homogeneous throughout. The hylomeric constitution, which maintains a system of heterogeneous hylonic particles, readily explains all this.

Concerning *substantial change*. According to Aristotelian-thomistic hylomorphism, when a body undergoes substantial change, nothing changes but the specific form. According to hylosystemism, more remains in substantial change than primary matter and more changes

than the substantial form. When atoms break down, the hylonic particles remain. When compounds are formed or destroyed, there is always a change of system, matter, and energy. Again, according to hylomorphism, only forces extraneous to the body itself can inaugurate a substantial change. This is contrary to fact: the radioactive elements change spontaneously, and no outside force can influence the change. This is due to the complexity of the many hylomeric particles present in these elements.

6. *Modern Scholastics*. Many modern scholastics find a grave difficulty in reconciling the nuclear atom with the aristotelian-thomistic single form. Electrons and protons are space-separated individual particles, and the material form cannot exist except in matter. Hence, it seems impossible for one form to inform all the parts of the atom at once.

The advocates of hylomorphism, on their part, are convinced that the very unity of the atomic system demands a dirigitive principle of unity; otherwise the atom is but an *accidental aggregate*. This demands the form. Hylosystemists refer to the solar system as an example of such a unity through physical force, without the necessity of a form.

The essential difference between *electrons and protons*, hylomorphists claim, demands a hylomorphic constitution. Hylosystemists answer that this may be so, but it is here a question of the constitution of atoms and molecules as natural bodies, not of sub-corporeal particles.

Hylomorphists contend that no real *substantial change* can occur in a hylomeric constitution. Hylosystemists assert

that the change to be explained is the sort of change that occurs in nature, when elements unite into compounds and compounds are resolved into elements; and this sort of change, according to the evidence of science, is hylomeric, not hylomorphic.

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PART IV

THE UNIVERSE OF BODIES

Chapter 15

HEAVEN AND EARTH

THERE ARE, AS WE HAVE SEEN, VARIOUS *LEVELS OF MATTER* among bodies. On the *subatomic* level we find, so far as our knowledge goes, electrons, protons, and neutrons, etc., as the ultimate components of bodies. They influence one another through their inherent forces of electricity and magnetism. On the *atomic* level the subatomic particles combine into a system, a structural unit, in which the electric and magnetic forces are neutralized. Each single system is an atom, and there are about 92 fundamentally distinct types of such systems, the elements. Each atomic system is a reservoir of powerful chemical energies. Then we have the *molecular* level, in which atoms of the same kind or of different kinds combine into a higher unit of matter and energy. The manifold types of chemical compounds have their origin in these combinations. The next step is the *mass* level. Molecules form masses or molar bodies — gases, liquids, or solids. These are the bodies we perceive by means of our senses, and they are usually termed ‘physical’ bodies. The final level is the *cosmic* level. Masses of physical bodies unite to form the earth, the stars,

the nebulae, and the interstellar matter scattered throughout the universe.

Ultimately, therefore, the entire universe of ponderable matter consists of neutrons, protons, and electrons. It is the *universe of bodies* which we must now submit to an examination. This includes the earth, the solar system, and the stars.

THE EARTH

The earth is a huge globular mass of bodies. Its equatorial radius is 3963.34 miles, while its polar radius is 3949.99 miles.

The earth weighs approximately six billion trillion tons. Since an ounce of matter contains about a billion billion billion (10^{27}) electrons, we can, if we possess a vivid imagination, obtain a very faint picture of the immense number of particles required to build the earth. At the equator the circumference is about 25,000 miles, so that the earth's rotational speed at the equator is more than 1000 miles per hour. The speed of the earth in its orbit around the sun is 18.5 miles per second, or one ten thousandth that of light.

The earth has had a long and varied history. This is evident from the *physiography* and *geology* of its surface. The earth's crust consists of many layers of sedimentary rocks resting upon a foundation of igneous rocks. The superposition of such layers determines their origin and age. The entire formation can be studied by traveling from Bryce Canyon in Utah to the Grand Canyon in Colorado, or

from Minnesota to Mississippi. The maximum thickness for the sedimentary rocks in North America is about 259,000 ft., nearly 50 miles. Only a rough estimate of the time required for the deposition of such enormous quantities of rock material can be given, because of the variable factors which enter into the representative rate of deposition. The time estimated is at least 100,000,000 years. The same figure was given by Joly for the age of the ocean. He estimated the total amount of sodium in solution in the ocean as quadrillion tons. Sodium is dissolved from rocks and carried to the ocean by the streams. From the present rate of such carriage it would take that much time to produce the percentage of sodium found in the ocean. These are minimum figures, due to the fact that in the past ages cataclysmic upheavals on land and sea have lifted submerged regions above sea level, so that for long periods of time no sedimentation was possible.

Physicists have discovered an age calculator in the *radioactive disintegration time* of actinium, thorium, and uranium. It will be remembered that the disintegration time of these elements is always constant, unaffected by external agencies such as heat, cold, or pressure. The end product of these elements is stable lead. From their lead ratio and disintegration rate, physicists attempt to calculate the age of the rock in which these minerals are present. According to the estimate based on this method, the geologic age of the earth must be well over two billion years.

CHART SHOWING ERAS AND PERIODS AND DEVELOPMENT OF LIFE*

ERA	PERIODS	LIFE	BEGAN	LASTED	KNOWN MAXIMUM THICKNESS OF SEDIMENTARY ROCK IN N. AMERICA
CENOZOIC (recent life)	Quaternary } Recent Pleistocene	Age of Man	1 million years ago	still continues	61,400 ft.
	Tertiary } Pliocene Miocene Oligocene Eocene	Age of Mammals	60 million years ago	59 million years	
MESOZOIC (intermediate life)	ROCKY MOUNTAIN CONSTRUCTION		EROSION INTERVAL		86,600 ft.
	Cretaceous Comanchian Jurassic Triassic	Age of Reptiles	170 million years ago	110 million years	
PALEOZOIC (ancient life)	APPALACHIAN MT. CONSTRUCTION		EROSION INTERVAL		111,000 ft.
	Permian Pennsylvanian Mississippian	Age of Amphibians	500 million years ago	330 million years	
	Devonian Silurian	Age of Fishes			
	Ordovician Cambrian	Age of Invertebrates			
PROTEROZOIC (early life)	GRAND CANYON-KILLARNEY REVOLUTION		EROSION INTERVAL		Total 259,000 ft. (about 50 miles) since beginning of Cambrian period
		Age of Primitive Forms of Life	1,000 million years ago	500 million years	
ARCHEOZOIC (beginning life)	WORLD-WIDE MT. CONSTRUCTION		EROSION INTERVAL		
			1,850 + million years ago	850 + million years	

*Taken from *This Earth of Ours*, by Victor Allen (Bruce, 1939), p. 210.

The conclusion seems inevitable that the earth was at one time a *hot globe* of more or less igneous matter. After a long period of cooling, the hot vapors in the atmosphere were precipitated, oceans formed, and sedimentation occurred. *Life* began on earth at a relatively recent period of its astronomical development. In all probability some forms of primitive flora and fauna existed in the archeozoic era. Definite proof of their existence is found in the fossils of the proterozoic era. From that point on, plants and animals appear in a continuous line of increasing complexity of structural development, until life reached its highest form in man. Man himself appeared in the quaternary period, and the beginning of his history probably coincides with the second interglacial stage. A study of the rate of recession of

Niagara Falls places the retreat of the last ice sheet at about 25,000 years. If this is a true estimate, man's existence on the earth is of a considerably longer duration. One must remember, however, that such calculations are based to a great extent on present-day conditions and are, therefore, nothing more than approximations of a speculative character.

The earth, of course, is not an isolated astronomical body. It is a part of the solar system and must be considered in that relation.

THE SOLAR SYSTEM

The solar system consists of the Sun and of nine planets. The planets, in the order of their distance from the Sun, are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. To these must be added the moons of the planets, planetoids, comets, and meteors.

The *Sun* is the controlling center of the system. It has a diameter 109 times, a volume 1,300,000 times, and a mass 332,000 times, that of the Earth. In fact, its mass is about 700 times the mass of all the planets combined. A few statistics concerning the Sun may not be amiss.

Mean diameter.....	864,000 miles
Mass.....	1.32×10^{25} pounds
Rotation period.....	25—34 days
Velocity at equator.....	2.5 miles per second
Average density.....	0.25 that of Earth
Temperature at surface...	6,0000 C.

Energy radiated..... 9.07×10^{25} cal./sec.
Gravity at surface.....28 times that of Earth

Most of the Sun's energy is radiated from the *photosphere*, the gaseous disk visible to the senses. Enormous quantities of gases, chiefly hydrogen, calcium, and helium, rise into space from the disk for hundreds of thousands of miles. Some of these *prominences* are quiescent, others eruptive; the former remain relatively unaltered for days and even months, while the latter shoot up from the surface with explosive suddenness at a rate of 100—200 miles per second. The *chromosphere*, consisting mainly of helium and hydrogen, is a scarlet-colored envelope or layer which surrounds the Sun to a depth of several thousand miles. Below the chromosphere is a *reversing layer* of denser gases. Above the chromosphere we can observe the *corona*, visible during a total eclipse, which extends from the surface to a distance of approximately 300,000 miles. Scientists have not been able to penetrate this atmosphere with their instruments. The interior of the Sun is closed to observation. No doubt, the heavier atoms are concentrated in this core. Inasmuch as 60 per cent of the terrestrial elements have been identified in the solar atmosphere by means of the spectroscope, it is fair to conclude that all elements are present in the Sun.

The *heat* generated by the Sun is enormous. Although the Earth receives less than one two-thousand-millionth part of the solar energy radiated into space, the energy flowing continuously to the Earth furnishes the staggering total of 126,000,000,000,000 horsepower to our globe. It is

estimated that the interior temperature of the Sun is something like 10,000,000° C. The source of this energy cannot be ordinary combustion; it must be the liberation of atomic energy.

The *planets* gyrate around the Sun in elliptical orbits in a counterclockwise motion. Generally speaking, they occupy positions in the same plane.

Mercury. It is closest to the Sun. Its mean distance from the Sun is 36,000,000 miles. Of all the planets, Mercury has the greatest velocity, ranging from 23 to 36 miles per second, and it completes its revolution around the Sun in 0.24 years. Due to its proximity to the Sun, this planet is difficult to observe. Lacking definite markings, the period of rotation on its axis, if any exists, cannot be definitely determined; but it is estimated by some astronomers to be about 88 days. Its diameter is 3000 miles. No atmosphere has been observed, and the temperature must be excessively high.

Venus. More than any other planet, Venus resembles Earth. Its mean distance from the Sun is 67,000,000 miles. It completes its revolution around the Sun in 0.615 years, i.e, in 225 days with an average velocity of 21.7 miles per second. Like Mercury, its position between Earth and the Sun makes observation difficult. This, however, is certain: Venus is completely en-shrouded by a dense layer of white clouds. Oxygen and water vapor seem to be absent in the upper levels of this atmosphere. The temperature difference between the bright and dark side of Venus ranges from 50° C to -30° C. In size, this planet is as large as Earth, its diameter being only about 200 miles less. Its

period of rotation is unknown, due to its uniform atmosphere which shows no markings.

The Earth. Our globe is situated at a mean distance of almost 93,000,000 miles from the Sun. Its period of rotation is 23 hours and 56 minutes. Earth has a satellite, the Moon. Its mean distance is 237,500 miles; its diameter is 2160 miles; its volume is one fiftieth, and its mass one eightieth, that of Earth. The Moon has no atmosphere. The difference between the maximum and minimum temperature is approximately 250° C.

Mars. The mean distance of Mars from the Sun is 141,000,000 miles. It completes its revolution 1.88 years, traveling at an average speed of 15 miles per second. Its diameter is 4200 miles, and it rotates on its axis once in 24 hours, 37 minutes, and 22.6 seconds. The angle between its equator and the ecliptic is the same as that of Earth (23 ½°). Hence, the climatic zones of Mars must be similar to our own; the seasons, however, are nearly twice as long on Mars. This planet has an atmosphere, but it is very thin; this plainly implies a mean temperature which is well below freezing point. Two satellites revolve around Mars: Phobos and Deimos. The former is about 10 to 15 miles in diameter, and is situated less than 4000 miles from the planet; the latter is about half the size of Phobos and is approximately 10,000 miles distant. Both satellites travel in an eastward direction.

Jupiter. Jupiter is by all odds the most majestic of the planets. Situated at a mean distance of 489,000,000 miles from the Sun, it consumes 11.86 years to complete its orbit. Though it has a diameter of 87,000 miles, it has a rotational

period of only 9 hours and 50—55 minutes. Its average velocity is 8.1 miles per second. Its mass is more than 300 times, while its volume is 1300 times, that of Earth. This planet is enveloped in a dense atmosphere of gas. There is very little change in the seasons, and the average temperature is about -130° C. Jupiter has nine moons, of which five range from 10 to 100 miles in diameter; the other four compare with our moon and the planet Mercury in size. The two outermost satellites revolve around Jupiter in a westward direction at a distance of 14,600,000 and 15,000,000 miles; the remaining seven travel eastward.

Saturn. Saturn is the most spectacular of the planets. It resembles Jupiter in size, being 72,000 miles in diameter. It revolves around the Sun in 29.5 years, at a mean distance of 886,000,000 miles, with an average speed of 6 miles per second. Its rotational period is only 10 hours and 14—38 minutes. Since its equator has an inclination of nearly 27° , Saturn has seasons, but the average temperature is naturally very low. The most conspicuous thing about Saturn is the system of rings which surround the planet in the plane of its equator. The outer ring is 11,000 miles wide; then comes a gap 2200 miles wide; the next ring is 18,000 miles wide, merging with a faint inner ring, the crepe ring. These rings consist of particles of matter very much of the nature of dust, for stars are visible behind them. These particles are probably the remnants of an exploded satellite. Saturn has nine satellites, situated outside the rings at various distances; the outermost moves in a westerly direction, the rest eastward.

Uranus. Twice as far away from the Sun as Saturn, this planet, having a diameter of about 32,000 miles, has a mean distance of 1,782,000,000 miles, and makes its complete circuit in 84 years at an average speed of 4.2 miles per second. It rotates on its own axis once in 10 hours and 40 minutes. Because of its distance and slow movement, it was not discovered until 1781; the previously mentioned planets were all known to the ancients. It has four satellites, traveling eastward in the direction of the planet's own motion, situated between 120,000 to 360,000 miles away. The apparent westward rotation of Uranus and its moon is due to the fact that the equator of this planet is nearly at right angles to the ecliptic.

Neptune. The discovery of this planet is one of the most brilliant achievements of astronomical mathematics. Great difficulties had been encountered in calculating the exact position of Uranus in its orbit; it persisted in departing materially from its time schedule at designated points. Astronomers became convinced that the gravitational influence of a still more distant planet was responsible for this seemingly erratic behavior. J. C. Adams, of England, and V. J. Leverrier, of France, independently of each other, calculated the position of the disturbing planet, and J. G. Halle, of Germany, using the data of Leverrier, discovered the planet in 1846 after a very brief search. Its mean distance from the Sun is 2,793,000,000 miles, and it travels with an average velocity of 3.4 miles per second to complete its revolution around the Sun in 164.8 years. Neptune has a diameter of about 33,000 miles, slightly larger than Uranus. Its period of rotation has not been

determined. One satellite, probably of the same size and distance as our own moon, revolves around the planet in a little less than six days.

Pluto. This planet was discovered in 1930. Its mean distance from the Sun is 3,670,000,000 miles; between its nearest and remotest point, from the standpoint of the Sun, the variation in its distance reaches the sum of 1,800,000,000 miles. It travels at a rate of 2.9 miles per second, and its period of revolution is 248 years. Its diameter is not known, nor the period of its daily rotation. Some astronomers are inclined to place Pluto in the category of planetoids, because of the eccentricity of its course.

Planetoids. Planetoids, or asteroids, are very small planets. The first was discovered in 1801 and was called Ceres. Its diameter is a mere 480 miles. Since that time the discovered planetoids number more than a thousand, most of which lie between the orbits of Mars and Jupiter. All move in an eastward direction, as do the planets. Two planetoids come very close to the earth. One, with a diameter of about 1 or 2 miles, approached within 10,000,000 miles, and another, of approximately the same size, was even as close as 6,500,000 miles. Both were discovered in 1932. The orbits of some planetoids are extremely eccentric.

Comets and Meteors. Comets usually consist of a fiery nucleus, which may be a few hundred miles in diameter, a nebulous glowing head, often larger than the Sun in diameter, and a streaming tail which, in some instances, extends over a distance of 100,000,000 miles across the

heavens. The number of comets which are a part of the solar system is very large, perhaps hundreds of thousands. Their period of revolution may be anywhere from a few years to thousands of years; the latter, of course, have orbits which extend far beyond the limits of the remotest planets. They move, with few exceptions, from west to east around the sun. It happens at times that the tidal action of the Sun breaks the nucleus of a comet apart; this happened to Biela's comet. In such a case the comet probably disintegrates into meteors.

Meteors, or 'shooting stars,' are small particles of matter, like grains of sand. When they strike the earth's atmosphere, the heat of friction makes them glow. They then disintegrate to dust. It is estimated that millions of meteors enter Earth's atmosphere daily. In some instances entire swarms travel together in a regular orbit; as the earth crosses their orbit, showers of meteors become visible. Such are the Bielids, Leonids, Lyrids, Perseids, and Giacobinids.

Meteorites are, in all probability, merely meteors of a larger size. Parts or fragments manage to reach the earth's crust. Some, the aerolites, consist of stone material (limestone, magnesia, or silicon), while others, the siderites, consist of metal (iron, alloyed with nickel, with small amounts of copper, cobalt, phosphorus, etc.). Occasionally, a meteorite, weighing many tons, falls to the Earth. A meteorite, which fell in Winslow, Arizona, made a crater a mile wide. Astronomers are convinced that some of these meteorites come from outside the solar system, remnants of exploded stars.

After this brief description of the solar system, we must turn our attention to the universe of stars.

THE UNIVERSE OF STARS

From the standpoint of terrestrial units of measurement, our solar system is spread out over an enormous area. Compared, however, with the rest of the universe, it is negligibly small. Nor is it an isolated system; it is merely one system in a veritable cloud of systems forming what is commonly known as the Milky Way. Our solar system as a unit moves with a velocity of 12 miles per second toward the constellation of Hercules.

The *constellations* are groups of stars joined together by imaginary lines, for the purpose of identification. So far as their actual position in the heavens is concerned, this grouping is purely fictitious, for they do not really belong to the same group or system as indicated by the constellations.

The *number of stars is definitely limited*. The number of observable stars has, of course, increased with the size and perfection of the telescope, but so has the area of starless space grown proportionately larger in extent. This is confirmed by the spectroscope. The total number of stars in all probability amounts to several billions.

By various ingenious methods astronomers have succeeded in measuring the distance, magnitude, composition, and luminosity of the stars. The *light-year* and the parsec are the standard units for measuring distances in the universe. A 'light-year' is the distance which light will

traverse in a year's time. Since light travels over 186,000 miles per second, it covers nearly 6,000,000,000,000 miles in a year. A 'parsec' is equivalent to 3.26 light-years. Proxima Centauri, the closest star which has been discovered, is 4.15 light-years or 1.27 parsecs away. Sirius is 8.6 light-years away, and some of the stars of first magnitude are as much as 400 light-years (Antares) and more than 500 light-years (Rigel, Canopus, Deneb) distant from the earth. When we realize that it takes only 8 minutes for light to travel the more than 92,000,000 miles from the sun to the earth, we have a fair estimate of the distance between the earth and these stars. These stars are relatively close, when compared to the extent of the universe as a whole. Though the calculations of astronomers are of necessity only approximations, we may assume that they are substantially correct.

It must be borne in mind that each star is not really 'fixed' or stationary; it has its own proper motion. This, of course, differs with the different stars. For example, Halley in 1718 noted that, since Ptolemy's time, Sirius had moved $\frac{1}{2}^\circ$, and Arcturus 1° , southward. Due to the long time it takes for the light of stars to reach the earth, one result of their proper motion is that none of them are in the actual position where we see them in the skies. The entire picture of the starry heavens is, therefore, actually quite different from the one which appears to our senses.

Astronomers distinguish between *dwarf* stars and *giant* stars.

'Giants' are known for their great absolute luminosity, some being thousands of times more brilliant than the sun,

while 'dwarfs' have a low luminosity, in some instances being no more than $1/10,000$ that of the sun. Indirect and direct evidence shows that the difference in luminosity must be due to their size. Antares, for example, has a volume which is about 70,000,000 greater than the volume of the sun, because its total radiation is 3000 greater, although its rate of radiation per unit area is only about one fiftieth that of the sun. Sirius is a *binary* star, a double star, one a giant and the other a dwarf. The two are nearly a billion miles apart, and it takes 48.8 years for them to complete their revolution. The dwarf's diameter is only $1/30$ that of the sun, while the combined mass of both is 3.4 times that of the sun. There are many such combinations in the heavens. According to all indications, the dwarfs greatly outnumber the giants among the stars.

The density of the giant stars is low, while that of the dwarf stars is extremely high. It would seem but natural that some of the giants might eventually collapse, while reversely, the dwarfs might expand with explosive force. Actually, astronomers know of stars which suddenly flare up and increase enormously in luminosity and size. There are the so-called *novae* or 'new stars.' To mention but a few of recent date:

Nova Persei (1901), Nova Aquilae (1918), Nova Pictoris (1925), Nova Herculis (1934). The explosion is at times very sudden; thus, Nova Aquilae within two days, from a star of eleventh magnitude, became a star of first magnitude. At other times, the change extends over months and even years. Later, the novae seem to subside to a more or less normal condition, but there are indications that some

undergo great change: for example, it is claimed that Nova Herculis split into two separate stars after its phenomenal burst of fiery expansion. Some stars seem to expand and contract in definite periods.

Quite different from the stars are the *nebulae*. They are immense clouds of gaseous matter spread out through interstellar space. So far as their density is concerned, they are of extreme tenuity. The dimensions of some nebulae stagger the imagination. The Great Nebula in Orion, for example, is so vast in extent, that it is visible to the unaided eye, although it is 600 light-years away; its breadth is estimated at 10 light-years. Some nebulae are luminous, others are dark. Astronomers find the reason for the luminosity of the former in the proximity of stars which supply them with light; the dark nebulae have no stars near by and therefore lack illumination.

One of the most interesting spectacles in the sky is the *Milky Way*. It consists entirely of stars. From the standpoint of the terrestrial observer, it would seem that the stars are massed here in greatest concentration. This, however, astronomers assure us, is not the case. There is actually no crowding of stars. The fact is that the assemblage of stars is distributed in such a manner that the whole galaxy forms a sort of flattened disk. We are merely looking through the galaxy down its longer axis toward its outside border; that gives the appearance of greater concentration. Our view of the heavens may be compared to looking through a low fog; it seems thin when we glance upward in a vertical direction, but thick when we look into it lengthwise in a horizontal direction. It is estimated that the Milky Way is about 30,000

light-years wide on its long axis and about 3000 light-years on its short axis. Thousands of millions of stars comprise this galaxy. They are, of course, not equidistant apart; rather, the galaxy is made up of huge clusters of stars, interspersed with nebulae, and in this sense there exists a partial concentration.

Besides the Milky Way, we notice great *globular clusters* of stars. They are not, in the ordinary meaning of the term, a part of the Milky Way, for they are situated from 20,000 to 200,000 light-years off to the side. Astronomers recognize nearly a hundred such globular clusters. Some of them number their stars by the millions, so that, because of their tremendous distances, they resemble nebulae rather than clusters of stars; such is the Great Spiral Nebula of Andromeda, it being nearly a million light-years away and possessing a maximum diameter of about 42,000 light-years. Some astronomers are of the opinion that practically all these galaxies should be considered as parts of a vast single system. If this view is correct, then the universe of stars would have a maximum diameter of approximately 250,000 light-years and a thickness of approximately 35,000 light-years, with its center in the direction of Sagittarius. The globular clusters would then mark the outer border of the whole system. It might very well be that many galaxies exist which are still beyond the reach of our most powerful telescopes, millions and hundreds of millions of light-years out in space. There seems to be a veritable universe of spirals which are galaxies of stars similar to the Great Spiral Nebula of Andromeda, too distant to be discernible as such.

DIMENSIONS OF THE UNIVERSE

From time immemorial, man has speculated as to the extent of the universe. Is the world *finite* or *infinite* in its dimensions? Modern astronomy, in its estimates of distances among stars, speaks of thousands and millions of light-years; and with the increasing perfection of its instrumentalities of observation, the confines of the physical universe seem to recede farther and farther into practically illimitable distance. Has then, the universe limits? Or, is it limitless in its tri-dimensional expanse?

As for *science* itself, it has not discovered the limits of the universe, if such limits there be. It is true, of course, that astronomers assign definite limits to the dimensions of the Great Galaxy of the Milky Way and adjacent galaxies. It must be remembered, however, that certain celestial bodies which, because of their incalculable distance, appear as single stars or at most as minor nebulae, may in reality be galaxies comparable to the Milky Way itself. And what lies beyond these, no one can say. The imagination stands stunned before the possibilities which it contemplates. Science offers no factual, positive evidence to prove that the universe is limited in extent; conversely, it cannot show that it is limitless in expanse.

Some argue against the infinitude of the world on the ground that this would postulate an *infinite number of stars*, and that, in turn, would mean an infinite amount of light being radiated; but in that case the heavens at night would be covered with a 'blanket of light.' The argument, however, is hardly valid. For one thing, we can only see light

or a star, after the light reaches the earth. Unless the argument also includes an infinite time for the universe, much of the light may not have reached our earth up to the present time. Again, much of this light might have been absorbed by the cosmic dust existing in space between the stars, so that the light never reaches us. Furthermore, light, being a form of energy, might be so weakened and dissipated on its long journey, that it is either stopped entirely or is too weak to make an impression on our senses. Most of all, however, the argument fails to convince, because an infinite extent of the universe does not necessarily involve the postulate of an infinite number of stars. The nebulae are not stars. The stars occupy but a small portion of the space of the physical universe. The universe, therefore, could extend far beyond the range of the stars and consist of gases or even aether. In that event, however, there would exist but a finite number of stars with a finite amount of light, and then the skies would not show an uninterrupted 'blanket of light.' Taking these objections into consideration, we must reject this argument which purports to prove the limited extent of the universe for scientific reasons. Science, in its present stage of development, seems unable to prove or disprove the infinitude of cosmic dimensions.

Philosophy seems in a better position to solve the problem. Philosophers have held different views on the subject. *Anaximander* accepts the 'unlimited' as a basic principle of his philosophy of nature, and this 'unlimited' is equivalent to an infinite material substance. *Democritus*, *Epicurus*, *Lucretius*, and the ancient atomists generally,

assume an infinite number of atoms in an unlimited space. The *stoics* believed in an infinite space, but considered the world itself to be finite; *Plato* taught a similar doctrine. *Aristotle* defended a finite universe, but maintained its eternity. The medieval scholastics viewed the world as limited in extent. Modern philosophers and scientists, whenever they express themselves on the subject, generally concede that the universe should be considered as limited. There are, however, some exceptions. *Giordano Bruno* (1548—1600), in consequence of his naturalistic pantheism, defended the infinity of the world. Some materialists, for example, *Buchner* and *Haeckel*, considered the universe to be infinite and eternal. Kant viewed the question as meaningless, because the world is a noumenon, a thing-in-itself, while space is a phenomenon, a purely subjective innate sense form; hence, we cannot acquire any knowledge of the physical universe as it exists for itself.

Before attacking the problem, it will be necessary to clarify the question. Much confusion will be avoided, if the concepts of indefinite dimensions and infinite dimensions are clearly understood and held apart. By 'indefinite dimensions' we understand dimensions which have limits, but these limits cannot be strictly assigned either as to location or number of measuring units or both. It can be readily granted that the dimensions of the universe, in this sense, are 'indefinite.' We do not know exactly where the universe ends nor can we indicate the number of light-years of distance from one end of the universe to the other in any direction. This is due to our limits of observation. By 'infinite dimensions' something very different is meant. It means

that the universe has no limits in any direction; or, it means that there are no limits in one direction, length or breadth or height. Infinity in one direction only is a mathematical fiction. An actual body or assemblage of bodies in three dimensions, in order to be limitless in extent, must be limitless or infinite in all directions; otherwise its dimensions would really be limited and not infinite. Hence, in this question 'infinite dimensions' coincides with 'tri-dimensional infinitude.' Practically speaking, this implies that the measuring units applied to the universe in any and all directions can be repeated without end, an infinite number of times, not merely an indefinite number of times. It implies that no amount divided into the total, or subtracted from the total, can ever exhaust the total without a remainder. Hence, whether we use as our yardstick of measurement the meter, the mile, the light-year, or a million or quintillion light-years, or any other unit, this yardstick could never reach the limits of the universe even in an eternity or infinity of applications, for the simple reason that the universe has no limits in its extension. Furthermore, since the universe consists of individual bodies which can be numbered, 'infinite dimensions' imply an infinite number of bodies, so that in their aggregate their individual dimensions will sum up to an infinite extension in three dimensions for the universe as a whole. Any other supposition would amount to 'indefinite dimensions,' but not to 'infinite dimensions.'

As will have been noted, the question of the 'infinite dimensions' of the universe resolves itself into the question of an *infinite number of bodies* and also into an *infinite*

number of units of measurement contained within its dimensions. For anyone who is convinced that an infinite number is intrinsically impossible, because it involves a contradiction in terms, the question is already settled: the universe must be limited in extent. However, leaving this *a priori* argument aside, a consideration of our universe as a physical reality leads us to the same conclusion.

An infinite number can neither be increased nor decreased. If it could be increased, it would, by that very fact, show itself to be limited and not infinite. If it could be decreased, the portion deducted would certainly be limited; and the remainder would also be limited, because it could again be increased by the deducted portion. It follows, then, that an infinite number can neither be increased nor decreased; it cannot, therefore, consist of a mere addition of limited numbers, each of which can be exhausted by division or subtraction. If each single part of a total is finite, so that its dimensions can be exhausted through numbering and measuring, through division and subtraction, then the total itself is limited and finite. After these preliminary observations, let us consider the facts pertinent to the problem.

In physical nature, the dimensions of a body become manifested in their *size*. Every physical substance or body, existing in the universe, possesses a *measurable size*, a definite *volume*, a geometrically definable *shape*. This applies to electrons, protons, atoms, molecules, masses, meteors, comets, planets, and stars. Gases and liquids consist of definite quantities of molecules, whether they are confined in jars or oceans, whether on earth, in a star, or

dispersed through interstellar space. That man, with his limited means and instrumentalities, cannot assign precise measurements to these realities, is beside the question. *In themselves*, these bodies and substances have *limited dimensions*. But the whole universe consists of such bodies and substances. Therefore, the whole universe is limited in its dimensions.

Let us look at the problem from another angle. The number of *celestial bodies* in the universe is obviously limited, not infinite. The stars, planets, planetoids, comets, and meteors occupy but an extremely small place in the total universe. There could be many more such celestial bodies than those which actually exist. The number of *electrons, protons, atoms, and molecules is not infinite, but limited*. This is seen from the fact that the interstellar spaces are relatively empty of material substances. Wherever the elements, such as hydrogen, calcium, sodium, etc., are found to be present, they are so tenuous that the highest vacuum man can produce artificially contains a more concentrated amount of such elements than astronomers estimate are found in an equal area of interstellar space. This space cannot be packed solid with elements, otherwise the motion of planets and stars would be impossible; we find, however, that these celestial bodies are not noticeably retarded through friction. Besides, if our modern concept of the atom is correct, all atoms are, for the greatest portion of their volume, empty of material substances. There can be no doubt, then, that the number of material particles (electrons, protons, atoms, etc.) in the universe *could be larger*. To put it practically, God could

create a far greater number of individual particles of matter in the universe than now exist. A number, however, which can be increased, is not an infinite number. Hence, the universe consists of only a limited, though indefinite, number of bodies, and this number can be exhausted without a remainder by division or subtraction. Consequently, the *physical* universe is not infinite in its dimensions.

But how about the *aether*: Could that not extend without limit? We know so little about the aether, that it seems presumptuous to argue one way or the other. However, if we may assume that the law of impenetrability applies also to the aether, since it is a material though imponderable substance, then we must assert that the amount of aether existing in our universe is also limited. The argument runs as follows. The aether does not occupy all possible space, because it does not occupy the space in which the ponderable matter (electrons, protons, etc.) is found. Inasmuch as this space could be filled with aether instead of with ponderable matter, the amount of aether could, absolutely speaking, be greater than it actually is. Hence, the amount of aether, since it could be increased, is in itself a limited amount. But that means that the aether is not infinite in extent. Now, if all ponderable matter and all imponderable matter in the universe is limited in amount, the whole universe consists of a limited amount of matter. But a limited amount of matter can be measured out through division and subtraction, because a limited amount of discrete entities involves a limited number of such entities. One might object, that the *sum* of both might add

up to infinite dimensions, even though the single ones do not. The objection is invalid. If ponderable matter is limited, it can be exhausted by measurement; and if imponderable matter is limited, it also can be exhausted by measurement. Since both can be exhausted singly by measurement, it is obvious that the summation of both makes no real difference: the total amount can be exhausted by measurement. But the total amount of ponderable and imponderable matter constitutes our entire universe. Hence, our entire universe is limited in the total amount of its matter and must, therefore, be finite in its dimensions, because the dimensions of its constituent parts are finite: an aggregate cannot be more than the sum total of its parts.

We must conclude, therefore, that our universe is indefinite, but not actually infinite, in its dimensions. By the very fact that our universe is actually finite, it follows that more bodies and more matter, speaking absolutely again, could be added to the amount existing; in other words, God can extend the present limits of the universe by creating more material, and this indefinitely, because a finite number can never become actually infinite by the mere addition of more finite numbers: the sum will still remain finite.

The final conclusion, therefore, must be: our universe is, and always will be *actually finite*; but inasmuch as it can always be increased indefinitely, it is *potentially infinite*.

THE PLURALITY OF WORLDS

The question has often been raised: *How many* universes are there? Only one? Two or more? In a way, the question seems pointless. However, the question possesses speculative value. Can we arrive at any decisive answer to the question?

In order that the question have an intelligible meaning, we must be clear in our minds just what is meant by a *plurality of worlds*. If there are single bodies or systems of bodies which are totally out of contact with our own universe, so that absolutely no interaction of any kind exists between them, then these bodies or systems form a different world or universe for themselves and cannot under any circumstances be adjudged as forming a unit with our own. If so, then we have a plurality of universes. But if a cosmic bridge exists between them, so that the one can influence the other in any manner whatever, then the mere fact of their cosmic union would make them integral parts of a higher unity or system. In that case, they should not be looked upon as a plurality of worlds. In order to speak of a 'plurality' in this connection, both or all must be absolutely *independent and autonomous*.

There can be no serious question about the possibility of a plurality of universes. Only under the supposition that our own universe be infinite in dimensions, so that it would fill out all possible (absolute) space, could there be any cogent reason advanced against the possibility of more worlds than the present universe in which we live. Our own universe, as we have seen, is limited in extent, not infinite. Hence, other worlds could exist outside the boundaries of our own. And this is true, whether we accept the creation of our universe

in time or its existence from eternity. If we accept creation, no valid reason can be given, why God could not create other worlds beside our own. His power, being infinite, could not be exhausted through the creation of our universe, since our universe is finite. His wisdom, being infinite, could certainly devise similar or different universes and have grounds for creating them, as He did our own. If we accept (for the sake of argument) the eternal existence of our universe, the eternal existence of another world or other worlds, as a possibility at least, must be accepted, because under such a supposition no cause operated to give existence to one world in preference to others. Hence, a plurality of universes is, from the standpoint of reason, at least possible.

Can we know whether other worlds *actually exist*? With the aid of human reason alone, we are incapable of knowing whether other worlds actually exist. Such worlds would be shut off completely from our empirical knowledge. Knowledge could be acquired only by observation of some sort, and that would demand a *medium of communication* between our world and these others, either through light or electricity or gravitation or some other means of interaction. But such a connection would presuppose a cosmic bridge, a contact of entity and operation, which would destroy their independence and autonomy as separate and separated cosmic units; and thereby the plurality of worlds, as postulated, would give way to a single universe on a larger scale. Our senses are irretrievably bound to the beings and bodies of our own universe; what lies beyond can never be observed. For that reason, too, we

cannot deduce the existence of other worlds by means of a process of reasoning from the data of our present universe. Other worlds, being totally disconnected from our own, may be of an entirely different constitution, so that the realities and laws pertaining to our universe have no application in another world. We *cannot even imagine* what such a universe would be like, because all our images are derived from our sense impressions of this world. We have no means of bridging the gap between our universe and any others which might possibly exist.

What would happen, if a star or comet or meteor reached the boundary of our universe? Would it stop? Or, would it continue in its motion beyond the boundary? The question is interesting, but it can hardly be answered. Can any body escape the gravitational attraction of the whole universe? It would seem not. If not, then it should stop at the outermost limits of our universe. On the other hand, since a body will move in the same direction without stopping, unless acted on by an outside force (and there is no such force here), should it not continue indefinitely in the forward direction of its motion and sweep out into empty space? This, too, seems probable. But in what direction would it be going, since there are no directions in empty space? And again, do not the Newtonian Laws of Motion merely apply within the confines of our universe? And where would it go, once it left our world? There are, apparently, no places to which its motion could possibly carry it. It seems more logical to suppose that all bodies within our universe are confined to our universe and can never leave it. But this is only a supposition.

How far away from our universe would other universes be, provided there were such? Absolute or empty space, as we conceive it, is an imaginary thing; it is not an actual reality; it is the mere possibility of other bodies. And since only bodies can be measured, using one type of body as a measuring unit for others, absolute or empty space admits of no measuring units and cannot, therefore, be measured. Hence, there are no distances, in any real sense of the term, in absolute space. It is a pointless question, consequently, to ask how far other worlds would be distant from our own. Absolute space being in reality nothing, we cannot speak of length or breadth or height, of right or left, of up or down, of far or near, of a meter or a mile or a light-year; these concepts have no application and meaning in complete emptiness. The various worlds, if they exist, are simply not in contact, and each is confined within the limits of its own boundaries.

Our knowledge about the plurality of worlds is thus seen to be almost entirely of a negative character. We cannot know whether or not they exist; and if they exist, we can know nothing about them. Our reason, unaided by revelation (and revelation is silent on the question), is certain of only one thing: A plurality of worlds is possible. More than that we cannot deduce, for to argue from possibility to actuality would be an illogical inference.

OTHER INHABITANTS

More than the problem of a plurality of worlds, the question of *other organisms and rational beings* on stars and planets

has agitated the minds of scientists and philosophers.

In discussing a problem of this sort, it is necessary to specify the *type* of living beings one imagines to exist on these stars or planets. If we consider the very high temperatures of the sun and of the glowing stars, it is obvious that organisms of the types with which we are acquainted on our earth could not survive; the liquids of the protoplasm would evaporate, the carbons of the cell structure would burn, and the entire organism would crumble into dust. A temperature of a few thousand degrees, as we know from experience, will destroy any organism on earth. Such beings are, therefore, excluded from the hot stars. Similarly, an extremely low temperature will effectually kill any organism known to us. Hence, any planet or star, whose temperature is permanently below -100° C., could not support life of a terrestrial type. This would, in all probability, rule out the planets which are far away from the sun, namely Jupiter, Saturn, Uranus, Neptune, and Pluto. Mercury and Venus are excluded, because, being so near the sun, their temperatures are too high; besides, no atmosphere has been observed on Mercury, and the atmosphere of Venus seems devoid of oxygen and water vapor, and these are essential to life for the organisms we know. Of course, anyone who wishes may imagine organisms which could live in a flaming star or on a frozen planet; such speculations, however, are the play of sheer fancy and have no objective value. If the problem is to have a reasonable foundation, the discussion must be restricted to organisms which are similar to those of which we have some knowledge.

There can, it is true, be no valid reason for denying the *possibility of other types* of beings on such stars and planets. The conditions on them being very different from those on our earth, such beings would be adapted to these conditions. But we have no way of knowing what the structures of such beings would be like. Hence, it would be an idle dream to even take such beings into consideration. The only sensible procedure open to us, is to limit the question to creatures identical or similar to those existing on our planet. That other planets or stars, with conditions similar to the conditions of our earth, might possibly exist somewhere in the universe, is also true. However, if they exist, they are unknown to us — with one exception. This exception is the planet Mars.

Mars, in many respects, compares favorably with the earth. It is about the same size, its day is about as long, its angle of inclination is similar. Because its year is almost twice as long as that of the earth its seasons are also twice as long. And it also has an atmosphere. There are, however, also unfavorable conditions. The atmosphere of Mars is very thin. Its mean temperature is most likely well below freezing point. Many of the organisms which live on this earth could not live on Mars. Man, with his capability of adapting himself to climatic conditions, might possibly be able to survive on Mars, provided he could live in its tenuous atmosphere; scientists are very skeptical about this.

Schiaparelli, in 1877, claimed to have observed what he called 'canals' on Mars. These markings or streaks, which are narrow and dark, are supposed to follow the arcs of

great circles and are hundreds and thousands of miles in length. *Percival Lowell* improved on Schiaparelli's idea by maintaining that these canals form parallel circles around the globe of Mars and are intersected by other canals, so that a complete network of canals, over 400, covers the entire surface. He supposes that living conditions for the Martian inhabitants are extremely difficult, making it necessary for them to drain the polar caps by means of these canals, in order to obtain water for vegetation. These markings, therefore, represent vegetation. Most astronomers are of the opinion that Lowell let his imagination run wild, because very diligent search and study have failed to reveal anything which resembles such a definite system of canals. Perhaps larger and better telescopes will settle this question in the near future. If these markings are really canals, they are of tremendous length and breadth, which fact alone renders their existence doubtful. Due to the conditions on Mars, some fanciful writers imagine the supposed inhabitants to be some sort of supermen. The whole question has entered into the realms of the fantastic. The bald facts of the case are these: While the conditions of Mars could undoubtedly support some forms of life, there is no positive evidence that organisms exist. Much less is there any evidence that intelligent beings have their abode on this planet. Hence, we are not certain that life is present on Mars.

Some Christian philosophers have attempted to prove the existence of *rational creatures* on other stars or planets on the grounds that it seems unreasonable to suppose that the earth alone has intelligent beings. The wisdom and

goodness of God apparently demands the existence of such beings besides man in other parts of the universe, in order that the works of God and thereby the power and wisdom of God Himself, be recognized and duly appreciated. The argument lacks cogency. If we stress the argument, then it seems unintelligible why man himself should have appeared so late on the scene, measured in terms of the history of the universe, and why, now that he is here, he understands so comparatively little about even the simplest realities, not to speak of the great riddles of the universe. Here again, though, we must say that it is *possible* that other rational beings, perhaps with an intelligence far superior to that of man, actually exist somewhere. They could be of an entirely different order, so that we would never be capable of observing their presence here on earth or anywhere else. That, however, is pure speculation and can lead to no practical result. So far as man can judge by observation, there is no sound evidence for assuming the existence of life, as we know it, anywhere but on the earth.

Some persons are pleased to make a disparaging comparison between 'puny man' and the 'immeasurable universe.' They liken him to a worm crawling on a grain of sand floating through immensity. The universe is indeed a gorgeous phenomenon, terrifying in its magnitude and magnificence. The greatness of man, however, consists in the fact that, though a physically insignificant entity amid all this cosmic vastness, he possesses reason and, with reason, the ability to interpret the world. In this he surpasses the universe, for that makes him akin to God.

SUMMARY OF CHAPTER XV

The various levels of matter lead us to a consideration of the universe of bodies.

1. *The Earth.* From the physiography and geology of the earth's surface we see that the earth's crust consists of many layers of sedimentary rocks resting upon a foundation of igneous rocks. It is estimated that it required at least 100,000,000 years for the sedimentary rocks to be laid down. The earth must have been at one time a hot globe of igneous matter.

Life is a comparatively recent phenomenon, and man is the most recent of the organisms, having probably appeared in the second interglacial stage of the quaternary period.

2. *The Solar System.* It consists of the Sun and nine planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. To these must be added the moons of the planets, planetoids, comets, and meteors. The mean distance of Mercury, the planet nearest the Sun, is 36,000,000 miles, while that of Pluto, the most remote, is about 3,670,000,000 miles; the Earth is over 92,000,000 miles distant from the sun.

3. *The Universe of Stars.* The number of stars, though limited, amounts to several billions. Proxima Centauri, the closest star known, is 4.15 light-years away. There are 'giants' and 'dwarfs' among the stars. Some stars are 'novae' which suddenly flare up and increase enormously in luminosity and size. Nebulae are immense clouds of

gaseous matter. The Great Galaxy of the Milky Way, of which our solar system is a part, consists of billions of stars; it is estimated to be about 30,000 light-years wide on its long axis and about 3000 light-years on its short axis. There are also great star clusters off to the side of the Milky Way, situated at a distance of from 20,000 to 200,000 light-years. They may possibly form one great system with the Milky Way, approximately 250,000 light-years in diameter.

4. *Dimensions of the Universe.* Is the universe finite or infinite in extent? Science cannot answer the question. We must distinguish between 'indefinite dimensions' and 'infinite dimensions.' To be of infinite dimensions, the extent of the universe in all directions must be such that the measuring units can be repeated without end, an infinite number of times, without ever exhausting the total. This implies an infinite number of individual bodies and of units of measurement.

The universe is *limited*. The amount of ponderable matter is limited, since the interstellar spaces are relatively empty; more ponderable matter could find place. The same applies to *imponderable* matter (aether) because the amount of aether would be increased if it occupied the place of ponderable matter. Since both the ponderable and the imponderable matter is limited, the whole matter of the universe is limited in amount and can be measured out. But an infinite quantity cannot be measured out. Consequently, the universe is finite, not infinite.

5. *The Plurality of Worlds.* By a plurality of worlds we understand two or more universes existing simultaneously, totally unconnected, independent and autonomous. Our

universe being finite in extent, no valid ground can be advanced, why a plurality of worlds should not be *possible*. But we could know nothing of their existence or structure, because there would be no medium of communication between our universe and them.

6. *Other Inhabitants*. In the problem, whether other organisms or intelligent creatures exist somewhere in our universe, we must restrict the question to beings similar to those on our earth; we otherwise enter the realm of fancy. The hot stars and the extremely cold planets are incapable of supporting life of this kind. Mars has conditions somewhat similar to those on our earth; but its atmosphere is very thin, and its mean temperature is well below the freezing point. The so-called canals are very dubious evidence for the existence of intelligent beings. Other inhabitants are *possible*; but there is no evidence based on observation which would indicate their presence in our universe.

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Chapter 16

THE COSMOS

SCIENCE, BY PAINSTAKING AND PATIENT OBSERVATION, experiment, and analysis, has solved many of the mysteries of nature. By means of the spectroscope, the telescope, and other instruments, man has been able to reach far out into the vast expanse of the universe. The ptolemaic conception of a geocentric world of spheres had to give way to the copernican conception of a gigantic super-system of the universe in which the heliocentric system plays but a small part. The celestial bodies instead of being composed of the uniform and incorruptible element aether, as Aristotle taught, are now known to consist of the same elements as are found everywhere on this earth. Spirit beings no longer guide the stars and the spheres in their perennial circular motion; rather, physical forces direct the movement of all the bodies in the heavens in an amazing and intricate pattern. The stars are so multitudinous, so enormous, and so vast in their distances, that man's mind feels numbed before all this bigness and finds difficulty in its attempt to find a cosmos instead of a chaos.

Is the world really a *cosmos*? Or, is it only a *chaos*? Is it really an ordered whole? Or, is it merely a jumbled

aggregate? This is an important question, and it clamors for an answer.

UNITY IN THE UNIVERSE

When we speak of the world as a cosmos, we signify that it is an *orderly system*, namely, an assemblage of diverse units so combined as to constitute an integral whole and to function in unison in obedience to some form of control. It is essential to the concept of a cosmos that its parts be interrelated, inter-dependent, and interacting in such a manner that, notwithstanding the diversity of the single objects as units in themselves, they conspire toward an assemblage of all together as a unit or totality of a higher order. Because of the immensity of the universe, both in the number of its component parts and in the distances which separate them, it will obviously be difficult to trace the functioning of the system as a whole except in broad outlines; it is utterly impossible to do this in minute details. However, it is the general conviction of reliable scientists, that such a system prevails and that the world is really a cosmos. There is every indication that the entire universe consists ultimately of the *same uniform elements*. It is, of course, possible that some elements exist in the stars of which we have no knowledge here on earth. Helium, for example, was discovered in the sun before it was found on earth. Since our radioactive elements, at the end of the Periodic Table, form a short series, it is possible, and perhaps even likely, that they are derived from heavier elements, and these elements may exist in their original

condition on some star or in some flaming sun. Be this as it may, it would still be true that the composition of all bodies is made up of the same uniform elements. The number of elements, whether 92 or more, is of minor importance and does not affect the cogency of the general argument. The fact, however, that all bodies in the world, so far as is known, are built up from the same, relatively few elements, is in itself a very strong argument that the world is arranged in the unity of a cosmos. This argument receives strong confirmation from an examination of the single types of elements and the structure of the atoms of which they are composed.

Leaving aside the philosophical question of the ultimate constitution of elements, and viewing them solely from the scientific standpoint, we distinguish the different *types of elements* according to the different *types of structural atoms*. And here the striking fact comes into prominence, that all atoms of all elements are the combination of a few fundamental constituents. And since the same elements exist in the bodies throughout the universe, the composition of the whole universe is based, as we rightly conclude, on these same types. The universe, therefore, possesses a *constitutional unity* which alone would be sufficient to demonstrate that the world as a whole is a 'system.'

While the *systematic arrangement* of the world at large is not so obvious, that of the individual atoms is clear — provided, of course, that the modern interpretation of the atom be accepted as substantially correct. The atom is truly a system, composed of a nucleus and planetary electrons. From hydrogen to uranium, the atoms follow a common

plan, based on the equilibration of an electrically neutral system of parts which are interrelated, interdependent, and interacting in such a manner that they form a totality of a higher order. The atoms of one element and those of different elements combine into molecules of a definite structure, so that here again the concept of a 'system' is verified. There is nothing chaotic or haphazard about the molecular arrangement; it is systematic from beginning to end, as the science of chemistry testifies. This can be observed especially in the geometric formation of the *crystals*, and practically all matter tends to arrange itself in crystalline forms, if conditions are right. Analysis of meteorites shows that the systematic structure of atoms and molecules in extraterrestrial objects is the same as here on earth, and we are, therefore, justified in concluding to the identity of structure in the atomic and molecular aggregates of the planets and stars. But this demonstrates a *structural unity* in the universe which argues strongly for the whole world as a 'system.'

Similar to the atom and molecule, the *earth* as a whole is a structural unit, though not so closely knit in the arrangement of its various parts. The interplay of physical forces operates on a much larger scale. Many of these forces conflict with one another, so that chance results are common on earth.

Irruptions from the central core of the earth, the action of winds and waves, storms and quakes, sedimentation and land upheavals — all contribute their share to the development of the earth. The total result, however, tends toward a general structural unification, as can be seen in

the geological and geophysical formations of our globe. The very fact that our earth is a *globe* shows that it is a structural unit, at least in a broad sense of the term, because it is the direct result of the gravitational forces operating in every part, so that the mass of each body acts upon every other. That the entire globe is a unit, is further evidenced by the *magnetic polarity* of the earth as a whole; the earth is a huge magnet, its lines of force enveloping everything from pole to pole. The same forces must operate throughout the whole extent of the universe, because the stars, planets, satellites, and asteroids exhibit the same globular shape; and where the same results obtain, we conclude that the same causes are active. Here we observe the *unity of physical forces* in the universe.

The unity of the *solar system* is beyond question. The sun, with its family of planets, moons, planetoids, meteors, and comets, is a magnificent exemplification of system on a cosmic plane, extending over a diameter of many billions of miles. The interaction of these vast bodies, while noticeable, never seriously interferes with the majestic sweep of each member in its own particular orbit, and the whole solar system moves as a unit on its path in the direction of the constellation of Hercules. It is inconceivable that this should be an isolated and only 'system' among the multitude of stars. More likely, it is but a unit among many units, which together form a much larger unit of solar systems.

Due to the imperfection of our means of observation, to the immensity of the distances which separate the various units, and to the secular and eonic movements of the stars and star clusters, we are unable to piece together the

integral parts of the *whole universe as a system*. However, the fact that enormous star clusters exist and that the giant nebulae show a definite arrangement of material, is proof enough that an interrelation, interdependence, and interaction are present. After all, the same cosmic forces are active everywhere: light, heat, electricity, and gravitation. *Gravitation* binds the whole world together and brings about the balance which gives to each star and system of stars its place and movement in the scheme of the universe as a *totality of integral parts*. Most astronomers do not hesitate to affirm that the Great Galaxy of the Milky Way is a cosmic unit. Late investigations lend support to the view that the Milky Way rotates as a unit around a point situated in the direction of Sagittarius, having a rotation period of, perhaps, something like 250,000,000 years. Whether the great star clusters flanking the Milky Way are relatively independent units or not, is a mooted question. The fact, however, that all galaxies are spanned and enmeshed by the same fundamental force of gravitation, is a strong indication that the entire universe forms *one system*. Everything — bodies and forces — thus conspires to make the world a cosmos.

This description, though necessarily sketchy in outline, should suffice to show that the world is indeed a *system* of interrelated, interdependent, and interacting parts.

MONISM

Closely connected with the subject of cosmic unity is the philosophical doctrine of monism. *Monism* is the doctrine

which maintains a *single, absolute, self-existent principle of being, the sole constituent of all reality*. This implies an ultimate and universal identity of all being. This general tenet has received a variety of shadings in the course of the centuries.

Monism was quite prevalent among the *ancient philosophers*. The *eleatics* professed a monistic philosophy. By confusing the abstract, logical unity of 'being' with the concrete, real unity of 'being,' they ignored the multiplicity of things and came to the conclusion that, since everything is a 'being' and since 'being' is a unitary and unifying idea, all being is one. All change and multiplicity in the world, therefore, is but an illusion. They maintained, however, that this One-Being is a living reality; hence, their system is a hylozoistic or pan-psychic monism. The *stoics* taught that the material alone is real, so that even the soul and God are material. Matter is a condensation or emanation from the original 'something' (τί) or primal world principle. The evolution of all things from this principle takes place with inevitable necessity; eventually, the world principle will destroy all things and begin anew, the process of evolution and destruction being repeated in endless cycles. This is a form of materialistic, deterministic monism. The *neo-platonists* and *gnostics* gave a mystical turn to monism. The world and its contents emanate from God in such a fashion, that in the course of the consecutive emanations things become more and more deteriorated, finally ending in matter which is the worst of all emanations. The entire process is as follows: the One gives rise to intellect; intellect gives rise to the world soul; the world soul gives rise to

plastic forces; and the plastic forces give rise to matter. Matter is unreal, not-being, limitation, evil. Inasmuch as something of God is in all things and all things are something of God, this doctrine is a form of pantheistic monism. Neo-platonism found an echo in a few of the early philosophers of the Middle Ages. Thus, *John Scotus Erigena* (born about 800 B.C.) maintained that God is the essence of all things. A similar doctrine was held by *Amairic of Chartres*. On the other hand, *David of Dinant* identified God with universal matter. Amalric and David lived in the twelfth century. *Giordano Bruno* (1548—1600) also identified God with the world in his system of pantheism.

Monism received its greatest impetus in *modern times*. *René Descartes* (1596—1650) was, to a great extent, responsible for this. Although he himself was in no way a monist, his philosophy became the direct occasion of much of the materialistic and pantheistic philosophy which followed. Descartes was unfortunate in a few of his doctrines, one of which was his view on the essence of mind and matter. For him, “extension in length, breadth, and depth, constitutes the nature of corporeal substance, and thought the nature of thinking substance.”¹ Since the essence of matter is ‘extension’ and the essence of mind is ‘thought,’ body and soul do not form an organism, but are two completely disparate entities, so that the body of man is nothing more than a machine and the spirit or mind of man is not in any sense the vitalizing principle of the body. This gives an ultra-spiritualistic interpretation to the mind and an ultra-mechanistic interpretation to the body. There exists no cognitional communication between mind and body, and

as a result of this ultra-dualism he made it impossible, according to the principle of this doctrine, for the mind to know anything about the body or the external world; whatever ideas or representations the mind has of these realities, it produces entirely in itself and by itself: ideas are thus potentially innate and not derived through abstraction from percepts. Depending on their philosophic temper, many subsequent thinkers advocated either a *materialistic or pantheistic philosophy*, following either the mechanistic or idealistic trend of Descartes' teaching.

Baruch Spinoza (1632—1677) attempted to remove the irreconcilable opposition between mind and matter, as proposed by Descartes, by bringing them into a higher unity. This he did by an arbitrary definition of 'substance' as something which exists in itself and is conceived by itself, so that it does not need the concept of another in order to be understood. Now, there can be only *one such substance*, as expressed in this definition, and that is the infinite substance, *God*. This infinite substance has as its *attributes* 'extension' and 'thought.' Considered under the determination of 'extension,' God is nature or matter; considered under that of 'thought,' God is the human mind. God and all beings are thus one in substance, and this is, of course, pantheistic monism.

Johann Fichte (1762—1814) contended that thought cannot be deduced from being, but being must be deduced from thought; thought, therefore, is the ultimate and only reality. And since all thought is contained in consciousness, there is no reality but the *Ego*. This Ego is the universal consciousness of the Absolute or God. This is pan-egoism.

Friedrich Schelling (1775—1854) also identified the real and the ideal in the Absolute, but he derived both (real and ideal, subject and object, spirit and nature, mind and thing-in-itself) from the indeterminateness of the Absolute. The Absolute gives rise to the real and ideal in its development, so that they are but two phases of the ultimate reality which is the Absolute. *Georg Hegel* (1770—1831) considered the Absolute to be pure *Thought or Idea*, dynamic with immanent activity, not static like Schelling's 'indeterminateness.' Since the Absolute is pure Idea, it evolves by means of a purely logical and rational process of thought into the ideal and the real, into subject and object, into spirit and nature, into mind and matter. The Absolute is continually in a dialectic evolution, so that all being is thought realized. Since all reality is idea, the laws which govern the development of idea are also the laws which govern the development of reality. Nature and spirit do not proceed from the Absolute, as Schelling stated, but the Absolute gradually *becomes* nature and spirit in a process of self-actualization. As the final result of this self-actualization of Being-Idea, all beings and all selves are but modes and manifestations of the Absolute. There is, of course, no creation. All finite beings are but the 'expression,' the 'appearance' of the Absolute; the Absolute becomes all things in a process of logical necessity. These three systems are forms of idealistic, pantheistic monism.

A. *Schopenhauer* (1788—1860) and *E. von Hartmann* (1842—1906) conceived the Absolute in a far different manner from the Absolute of Fichte, Schelling, and Hegel. Schopenhauer was a voluntarist. Instead of the Idea being

the ultimate root of all reality, it is the *Will*. It is as much the Absolute as Fichte's Ego and Hegel's Being-Idea. The universe is but an objectification of the Will, and the essence of the world consists in a blind impulse, an unconscious, irrational striving of the Absolute Will in an eternal struggle for existence. Von Harrmann attempted a reconciliation of Hegel's idealism and Schopenhauer's voluntarism. The Absolute is the Will, but it is guided by ideas; since, however, it is not aware of this, it is unconscious. The Absolute, therefore, is the Unconscious. *Neo-hegelians* subscribe to the general principles of Hegel; but they differ in their methods of approach and in minor points of doctrine. It is characteristic of these philosophers that they approach their problem through experience rather than by means of aprioristic speculations. Prominent among the neo-hegelians are *F. H. Brailley* and *T. H. Green*. For a time idealistic monism had many followers.

Idealism was too extreme to go unchallenged. The pendulum of thought was bound to swing in the opposite direction, especially under the influence of the natural sciences. The fact-finding tendency of the natural sciences forced the scientists to view the world as composed of many individual entities. This tendency, however, induced many scientists and philosophers to embrace the equally extreme doctrine of a *materialistic, mechanistic monism*. While the ultra-spiritualistic trend of Descartes' philosophy reached its highest peak in idealistic monism, the ultra-mechanistic side of his teaching sank to its lowest level in the materialism of recent years. Strictly speaking, materialism is not a monism at all, because it admits that the unity of the

world is the resultant of a multiplicity of beings. However, since it considers matter to be the only reality in existence and derives all beings from matter, it is usually designated as materialistic monism. The main protagonists of this monism of matter were *Karl Vogt* (1817—1895), *Jakob Moleschott* (1822—1893), *Ludwig Büchner* (1824—1899), and especially *Ernst Haeckel* (1843—1919). Haeckel posed as its great prophet. Nothing exists but matter and mechanical motion; and all phenomena, including the mind and its activities, are the result of physicochemical processes. Matter is without beginning and without end, uncaused and indestructible, eternal and absolute. Haeckel often speaks of the 'souls' of atoms, molecules, etc.; but such 'souls' are nothing but mechanical forces of motion. He admits no essential distinction between the organic and inorganic; all is simply matter in different states and conditions of motion.

In attempting to solve the problem of knowledge, many philosophers of our day have advanced views which are nothing but variants of materialism. They either reduce the object known to the knowing subject or the knowing subject to the object known. Some *neo-realists*, for example *Montague*, claim that "all matter is instinct with something of the cognitive function,"² and this is *hylo-psychism*. Hence, the physical and psychical, mind and matter, are ultimately the same reality. And since they always insist that the material objects are real, it follows that mind is reduced to matter. A similar doctrine is held by the critical realists. They are *pan-psychists*. The universal principle, from which all things spring is 'mind- stuff,' so that the whole world is

really, in a sense, alive, only it is unaware that it is living. *Emergent evolution* is a doctrine of evolutionary naturalism, which maintains that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality. Such properties 'emerge' with specific characters not discoverable in the former (lower) levels. *Lloyd Morgan*, L. T. Hobhouse, C. A. Strong, D. Drake, E. Noble, R. Sellars, and others, are defenders of the theory of 'emergence.' For *S. Alexander* the ultimate evolutionary principle of the world is *Space-Time*. It has in the beginning no quality except the spatio-temporal quality of motion, but subsequently everything 'emerges' from it into the world we know. None of these theories consider the world as having had a beginning; God as the creator is left out of the picture entirely. According to all indications, these doctrines are species of materialistic monism, some mechanistic, some hylozoistic. In every case they seek the derivation of all beings in the world from some root principle of matter.³

If we now analyze these various theories, we find that monism falls into two broad classes. Monism in the *strict sense* defends the *entitative unity* of all being. Such a system is opposed to a multiplicity of things as separate entities. There exists nothing but a numerically single substance or being, and this is God or the Absolute. Monism in a *wider sense* seeks to reduce the multiplicity of beings to the *essential unity* of a *single kind* of entity. They admit that things are not numerically one, but many; however, they deny the essential differences between things and

assert that they evolve from one root principle which constitutes them all as the same kind of substance or being. To this monism in a wider sense belong the pantheistic systems of the stoics, neo-platonists, and gnostics; pan-psychism, hylozoism, and hylo-psychism; mind-stuff and space-time theories; plain materialism; and most of the philosophy of emergent evolution.

From another point of view monism may be said to be either *pantheistic* or *naturalistic*. *Pantheistic* monism starts with *God* or the *Absolute* as the One-Being and derives the present world from this One-Being through emanation or immanence or determination. According to the doctrine of 'emanation,' the One-Being (God or the Absolute) develops the world out of its own substance, so that a portion of the One-Being is present in each individual being. The doctrine of 'immanence' appears in two forms. According to the one form, the One-Being develops into all things in such a manner that they are real affections or modifications of the One-Being's substance. According to the other form, the world is a mere manifestation of the One-Being. In both forms, the One-Being is 'immanent' in all things in such a fashion that they are really not distinct from the One-Being itself. According to the doctrine of 'determination,' the One-Being begins as the most indeterminate sort of being and then develops into the determinate beings of the world, becomes more and more determinate in its own being through this evolutionary process, working out its own perfection unto completion through these successive stages of self-determination and self-realization. *Naturalistic monism* starts with the *world* itself, without any reference

to God or the Absolute. This type of monism also appears in a variety of forms. The principle of a natural *evolution* is accepted by all. The primordial stuff, out of which the present world evolved, is either lifeless matter, and in this theory life and mind are looked upon as physicochemical phenomena of matter; or it is animated matter, so that everything without exception is living; or it is a neutral stuff, which evolved into mind and physical bodies. Some theorists even go so far as to state that this evolutionary process will eventually develop Deity as its final result. Although naturalistic monism admits that the world, as presently constituted, consists of a multiplicity of beings, the adherents of this system claim that their theory is a true 'monism,' because it derives all beings in the world from a single indeterminate kind of primordial stuff. In this it differs radically from pantheistic monism, which defends the substantial, entitative oneness of all things with God or the Absolute, the One-Being.

It should be obvious from this, that the unity of the world as a cosmos receives a unique and comprehensive interpretation in these systems. What are we to think of these views?

CRITIQUE OF PANTHEISTIC MONISM

Pantheistic monism identifies, in one way or another, the world with God or the Absolute. There exists but a single substance, the One-Being (God or the Absolute), and the universe is either an emanation, a modification or manifestation, or a determination of the One-Being. The

One-Being and the universe are, therefore, entitatively one and the same substantial reality. That, the pantheists say, is the ultimate reason and ground for the unity in the world.

We reject *pantheistic monism* as being contrary to *experience* and *reason*.

It is contrary to *experience*.

Unless we wish to indulge in fantastic speculations which have no foundation in fact, we must base our cosmological and philosophical theory of the universe on the experiential data of *scientific observation*. Scientific observation and verification must form the basis and the touchstone of any theory which lays claim to being a true explanation of the universe. The reason is simple: our knowledge of the universe is acquired through observation, and observation is a form of experience. All experience, in its final analysis, rests on the testimony of our *consciousness*. The truth value of our consciousness cannot be denied or seriously doubted, without destroying the foundation of the structure of our knowledge and plunging the mind into complete skepticism.⁴ Now, consciousness in no way bears out the contention of pantheistic monists, that all things are entitatively one with God or the Absolute; on the contrary, it is an irrefragable witness to the entitative multiplicity of beings in the universe. A brief survey of the facts will establish this truth beyond reasonable doubt.

Three main factors enter into this problem: the human *mind*, the human *body*, and the external *world*. The body, as our consciousness testifies, is an extra-mental reality, distinct from the mind; but it belongs to the human Ego as an integral part, together with the mind, and as such is

extra-mental but intra-Ego. The physical world, on the other hand, is extra-mental, because outside the thinking human mind, and also completely external to the perceiving subject or person; as such, it is both extra-Ego and non-Ego. Our consciousness is witness to the fact that these three types of reality are entitatively distinct, the one being different in entity from the other and therefore not identical.

We come to the same conclusion, when we consider the fact of *other minds*. No sane person can doubt the existence of other minds' which are entitatively distinct from our own. Our experience is witness to the fact that we have direct and immediate knowledge of no other mind but our own. And yet we are certain that other minds really exist. This is proved by *language*, because we communicate with these minds through the medium of words which signify ideas. That these other minds are existent realities distinct from myself is clear, because the *ideas* which I receive in the course of this thought-communication from the other minds are often new to me and are evidently given 'from without.' That these ideas are not the product of my own thinking, is an incontrovertible certainty: they are frequently foreign and antagonistic, even contradictory, and in many instances I experience great difficulty in understanding them. Many times it happens that these 'other minds' attempt to communicate ideas to me in a language which I do not understand. How could this be so, if these minds were entitatively identical with my own? There can be no doubt, then, that they have an existence independent of myself and are entirely distinct beings. But that proves that the beings of the universe are not a substantially identical One-Being,

otherwise it is incomprehensible why this One-Being should not be able to understand its own language and grasp its own ideas.

Needless to say, the *natural sciences* are in accord with our view, not with that of pantheistic monism. Astronomy, physics, geology, anthropology, zoology, botany, chemistry — all lead to the inevitable conclusion that nature is a real world of existing, discrete, entitatively distinct bodies, some living and some nonliving. The ultimate particles of matter, electrons and protons, are irreducible entities. The sciences find nothing to indicate that all things are identical in the One-Being.

And thus we see that pantheistic monism, with its doctrine of a single substantial entity, is contrary to experience.

Pantheistic monism is *contrary to reason*.

It is based on a *confusion of concepts*. All the differences between things, pantheists say, are neutralized in the concept of *being*. Each individual thing is a 'being,' whether it be spiritual or material, whether it be an element or a compound, whether it be organic or inorganic, whether it be an atom or a star, whether it be the world or God or the Absolute. The concept of 'being' is realized in each and in all together; and it is a unitary concept, meaning simply 'that which exists.' Since the concept of 'being' is one, all that exists is one being; hence, all things are identified in the One-Being, God or the Absolute. Pantheists fail to see that this line of thought rests on a *confusion of the real and logical orders*. The unity of 'being,' predicated of all things here, is an abstraction of the mind, a logical unity, made by

ignoring the real differences which exist concretely in the things. I can, of course, compare living and nonliving beings, ignore the real difference between 'life' and 'lifelessness,' and focus my attention solely on the fact that they agree in the concept of 'being.' I can also compare material and spiritual things, God and the world, and concentrate solely on their 'being.' Thereby I arrive at the one concept of 'being' which is common to all things. It is, however, only in my *concept* that they are viewed as 'one'; in their *reality* they are still *many* and *different*, because I cannot remove their multiplicity and their differences in the 'real' order by merely ignoring them in the 'conceptual' or 'logical' order. Our experience, as was pointed out, proves that things are multiple and entitatively distinct in the real order of things, and the logical unity of all things in the concept of 'being' by means of mental abstraction does not make all things actually 'one' in the real order: they remain multiple and distinct beings, no matter how we conceive them in our ideas. Pantheistic monism, since it is based on a confusion of the real and logical order, is thus seen to rest on an illogical foundation.

Furthermore, pantheistic monism destroys the most fundamental *laws of thought and being*. The universe, as it exists, is composed of beings having activities and properties which are *contrary* and *contradictory* if present in one single reality. Some beings are inorganic, others organic; some are sentient, others non-sentient; some are rational, others irrational; some perform acts which are morally good, others perform acts which are morally evil; some assist one another, others combat and destroy one

another. But these are contrary and contradictory activities and properties. If, then, there exists but a single substance, a solitary One-Being, it would be simultaneously living and nonliving, sentient and non-sentient, rational and irrational, morally good and morally evil, self-developing and self-destroying, etc. In that case, however, the *Principle of Contradiction* is abolished and *Contradiction* becomes the supreme law of thought and being; this we cannot admit.

Similarly, if pantheistic monism were true, we must abandon the *Principle of Sufficient Reason*. The universe is supposed to be an emanation, evolution, or determination of the One-Being (God or the Absolute). Now, the *reality of the result* of this process of world formation was either present in the One-Being before the process began, or it acquired this reality by means of this process. But if the One-Being possessed all this reality beforehand, why should the process of emanation, evolution, or determination occur at all? What could the One-Being gain by it? But if the One-Being lacked all this reality in its original condition, whence could it receive it? Not from itself, because it did not have it in the first place. Not from another being, because no other being exists which could give it. In the first case, we have no sufficient reason to explain why there should be an emanation, evolution, or determination of the One-Being in the formation of the universe; in the second case, we have no sufficient reason to explain whence the new reality in the universe could be acquired. We have but two alternatives: either pantheistic monism must be rejected as an irrational system, or the Principle of Sufficient Reason must be thrown into the discard. The latter alternative involves the

abandonment of reason and the bankruptcy of all knowledge, in which case, pantheistic monism itself as a system of thought is also of no value. The only thing left, then, is the rejection of pantheistic monism.

Finally, the very *concept* of the 'One-Being,' of 'God,' of the 'Absolute,' as envisioned by the pantheists, is *illogical*, because contrary to reason. The existence and nature of God, as the Supreme or Absolute Being, is proved and explained in theodicy, a separate department of philosophy. Here we assume the findings of theodicy without question or proof, and we argue as follows. A being which is *uncaused* and which, therefore, has the ground of its existence and essence in itself (*a se*), must be infinitely perfect, unchangeable, absolutely independent, without composition of any kind, supremely intelligent, and personal. The pantheistic One-Being, God or Absolute, has none of these attributes, no matter what type of pantheism we examine. Since the One-Being is identical in substance with the universe, the attributes of the universe must be the attributes of the One-Being. But the universe, as was shown repeatedly, contains beings of various degrees of perfection in their entity, is in a continuous process of change, is dependent on the mutual interaction of its parts, is a totality composed of many discrete members, is as a whole without inherent intelligence, and is devoid of personality. The pantheistic God or Absolute or One-Being is thus seen to be a mass of contradictions in its very concept.

Pantheistic monism, therefore, is in opposition to the facts of experience and to the principles of reason. Its

attempt to explain the unity of the world by means of a pantheistic interpretation, ends in failure.

CRITIQUE OF NATURALISTIC MONISM

Naturalistic monism, while it admits the multiplicity of beings in the universe, derives all beings from a single indeterminate kind of primordial stuff. All types of beings and the universe as a whole originate from it by means of a process of *natural evolution* through no other agency than the *inherent power* of this stuff itself. If these philosophers would accept an omnipotent, all-intelligent, extramundane Supreme Being who created primordial matter and endowed it with evolutionary *tendencies*, much of this doctrine could be maintained without serious objection. This, however, is not the case. Naturalistic monism attempts to explain the origin and development of the world in all its beings, inorganic and organic, on purely *naturalistic* principles. Either explicitly or implicitly they deny the existence of God and spirit, and seek to eliminate the essential distinction between living and nonliving beings. Hence, it is the avowed purpose of these monists to explain everything in the universe through evolution, without interference or direction by any extramundane agency; and in order to account for the existence of organic beings, they either reduce vital function to a phenomenon of inorganic matter, or they postulate that all matter was and is always instinct with life, or they assume that life evolved through the powers of nature from inorganic matter. Naturalistic

monism is thus in diametrical opposition to the *dualism* of God and the world, of life and non-life, of spirit and matter.

We reject *naturalistic monism* as an *inadequate explanation* of the world and its unity. Naturalistic monism has no foundation in science.

Unlike the pantheistic monists, naturalistic monists make a great showing of scientific knowledge and appeal constantly to scientific facts. Modern science boasts of its 'exactness in observation and experiment and accepts no conclusion unless based on data which can be verified by scientific methods. When, therefore, some of the monistic philosophers assert that all matter is *instinct with life*, so that all beings in the universe are living beings, one should expect this assertion to be borne out by definite scientific data; only then can such a far-reaching conclusion be warranted. Science, however, does not support this contention. On the contrary, it is the unanimous verdict of the natural sciences that the immense bulk of the universe is *inorganic* and *nonliving* and that only a relatively insignificant portion possesses life. Even on our earth the number of plants, animals, and men, when compared to the earth as a whole, is very small. The characteristics of organisms are so marked and clear that scientists find practically no difficulty in distinguishing them from inorganic elements and compounds. It is true, of course, that scientists are often compelled to revise their conclusions and alter their hypotheses; this usually happens when the data are very meager and obscure or when the method of experiment is unusually difficult and complicated. In the case of organisms, however, there is

such a wealth of material and the research into this material has gone on so long and so thoroughly, that all reasonable doubt is excluded. While there might be some question in individual instances as to the exact classification of a certain being, there is no question about the general classification of 'living' and 'nonliving,' of 'organic' or 'inorganic' bodies. That type of naturalistic monism, which seeks to eliminate the distinction between living and nonliving beings by the claim that everything in the universe is alive, leaves the realm of science and disports itself in the realm of fancy.

Those monists who defend the evolution of an original *neutral* stuff into *inorganic* and *organic* beings through 'emergence' or any other method, also run counter to the facts established by the exact sciences. Such an evolutionary process would be a plain case of *spontaneous generation*, namely, the origin of a living being out of nonliving matter through natural causes. Scientific investigation of the most rigorous sort, following the experiments of *Louis Pasteur*, has given the unshakable verdict that spontaneous generation never occurs: every living being derives its origin from another living being, every cell from another cell, every chromosome from another chromosome. This being so, it is evident that naturalistic monism is entirely unscientific, when it postulates the evolution of organisms from some neutral stuff. Nor can its proponents save their theory by assuming that *organisms existed from the beginning*. For one thing, such an assumption is contradicted by geology and paleontology, which find no evidence of life on our globe in

its earlier geologic history. Again, such an assumption would give the deathblow to the theory of naturalistic monism, inasmuch as the primordial matter would not be monistic, but *dualistic*, since the beings of the universe would be derived from two distinct and mutually irreducible principles, living and nonliving matter.

From whichever standpoint we view naturalistic monism, it is seen to have no foundation in natural science. Science contradicts its postulates.

Naturalistic monism has *no foundation in philosophy*.

Sound philosophy must maintain the *essential distinction* between living and nonliving matter, between organic and inorganic beings. We know the essence of a thing from its properties and activities, because we are incapable of perceiving the essence directly. When, therefore, things differ in their properties and activities *radically and fundamentally*, they must be adjudged to differ in their essence or substantial constitution, for the essence is the root principle from which the properties and activities emanate and is the ultimate reason for all that a thing is and does. Now, the properties and activities of organic and inorganic beings differ radically and fundamentally. Consequently, there is an essential difference between them.

The organism, which is lowest in the scale of life and closest to the inorganic world, is the *plant*. The plant has *vegetative function* only. This function manifests itself in nutrition, growth, and reproduction. These processes occur primarily in the cells of the vegetative being: the cells assimilate the nutritive material, multiply and thus produce

growth, and finally develop special germinal cells which give rise to new individuals of the same species. The basic function is *assimilation*, whereby the organism takes in foreign material and converts it into its own living substance.

The distinguishing feature of vegetant beings, setting them completely apart from inorganic nature, consists in this *assimilation*. We find nothing similar to it in inorganic beings. *Chemical change* is the only activity of inorganic beings which might compare with assimilation. There is, however, a vast difference between the two. In chemical change a new chemical substance arises, different from the component substances in properties and activities; water, for example, differs from oxygen and hydrogen in its behavior to such a degree that one cannot recognize the two in the compound. In assimilation the change is even more profound, but of an entirely different character; the organism assimilates the nutritive material in such a manner that the material becomes an integral part of the organic substance, while the organism itself retains its complete identity and does not change. In chemical change, therefore, the component substances lose their individuality; in assimilation, on the other hand, the vegetant being retains its individuality intact, changing the nonliving material into living substance.

Among all the known inorganic substances, the *crystal* bears the greatest resemblances to the lowest forms of plant life. A comparison between the crystal and the plant should, therefore, prove fruitful in establishing the difference between living and nonliving matter. The activity

of the crystal consists primarily in this, that the atoms which enter into its composition are arranged in such a manner of disposition that the entire crystal is built up in geometrical symmetry. Here again, however, we observe a vast difference between *crystallization* and *assimilation*. In the crystal the entire structure consists of homogeneous atoms and molecules, so that the crystal itself is nothing more than the aggregate of a number of chemically identical atoms and molecules, In the organism the various parts are structurally different and consist of chemically heterogeneous atoms and compounds, subservient to the needs and purposes of the organism as a complete individual in itself. Again, the structure of the crystal is formed by the symmetrical juxtaposition of the atoms and molecules, and these atoms and molecules undergo no change in this process. In the organism, however, the atoms and molecules after assimilation undergo a radical change, so that combinations are made which they in their natural inorganic state are incapable of making. Furthermore, the atoms and molecules in the crystal perform no new activities and acquire no new properties different from those which they already possess. In the organism these same atoms and molecules become living substance and perform activities which, because vital, are of a higher and entirely new order. Finally, the crystal is stable in its structure and, once formed, reveals no activity of self-development, self-perfection, and reproduction. In the organism, however, each cell functions as a unit, and groups of cells form special organs which function as a unit, and all cells and special organs combine to form the

organism which functions through them all as a unit. Each cell and organ nourishes and repairs itself, grows to maturity, and functions as an integral part of the organism as a whole; the organism itself possesses individuality, is endowed with the power of self-preservation against harmful outside agencies, develops to full maturity, ages, and then, after preserving the species by evolving reproductive cells, dies. Such differences are not superficial; they are radical and fundamental.

If life were nothing more than a certain combination of physical and chemical energies, the activities of living beings would of necessity obey the laws prevalent in physical and chemical nature. But life has laws of its own, different from those of the inorganic world. Therefore, life must issue from an essence or principle which is totally different from that of inorganic beings. The activities of vegetancy, sentiency, and rationality are without question of a higher order than the activities of physical and chemical energies. And since no effect can be greater than its cause, and since no cause can produce an effect of an order higher than its own inherent capabilities, the conclusion is inescapable that *life could not have originated from nonliving matter*.

As a philosophic interpretation of the unity of the world, therefore, naturalistic monism is seen to be an inadequate explanation of the facts; it is scientifically and philosophically unsound and must be rejected. Organic and inorganic beings are irreducible ultimates in the universe. *Dualism*, not monism, is the signature written over all.

Unity exists in the cosmos; of that there is abundant evidence. Neither pantheistic monism nor naturalistic monism can give an adequate account of how this unity is affected. In a later chapter we will see that the only adequate explanation lies in acknowledging an extramundane Creator and Designer.

SUMMARY OF CHAPTER XVI

Is the world a cosmos?

1. *Unity of the Universe.* By 'cosmos' we understand an assemblage of diverse units so combined as to constitute an integral whole and to function in unison in obedience to some form of control; in other words, to be a 'cosmos' the universe must be an 'orderly system.'

The universe consists of the same uniform elements, which in turn consist of the same kinds of subatomic particles. There is, therefore, a *constitutional unity*. Each single atom, molecule, and crystal possesses definite structure. There is, therefore, a *structural unity* throughout the universe in its ultimate parts. The *earth*, as a whole, is a unit; this is evidenced in its globular shape, structural formation, and magnetic polarity. The same forces operating on the earth operate throughout the world. Here we have the *unity of physical forces*. The solar system manifests unity. In the universe as a whole we find the same cosmic forces active everywhere: light, heat, electricity, and gravitation. Everything points to the fact that the universe is a *totality of integral* parts, a system of interrelated, interdependent, and interacting parts.

2. *Monism.* Monism is the doctrine which maintains a single, absolute, self-existent principle of being, the sole constituent of all reality. This implies an ultimate and universal identity of all being.

Monism appears in many forms and in many systems of thought. They can be reduced to *two broad classes*. Monism

in the strict sense defends the *entitative unity* of all being; there exists but a numerically single substance or being, God or the Absolute, the One-Being. Monism in a wider sense seeks to reduce the multiplicity of beings to the *essential unity* of a *single kind* of entity. Or, we may reduce all these types of monism to pantheistic and naturalistic monism. 'Pantheistic' monism starts with God or the Absolute as the One-Being and derives the present world from this One-Being through emanation or immanence or determination. 'Naturalistic' monism starts with the world itself; the world originated through natural evolution from some primordial stuff without outside direction. This primordial stuff is either lifeless matter, or animated matter, or neutral stuff evolving into mind and physical bodies.

3. *Critique of Pantheistic Monism.* It is *contrary to experience*. Our consciousness testifies that we consist of mind and body, and the two are entitatively distinct, not identical in being. Consciousness also testifies to the existence of *other minds* and *other bodies* as real as our own, but entitatively distinct and different. To avoid skepticism, we must admit that the universe consists of a multiplicity of beings.

Pantheistic monism is also *contrary to reason*. It rests on the confusion of the ideal and real orders; all things form a 'logical' unity in the concept of 'being,' but in their actual existence they are many and different. It destroys the most fundamental *laws of thought and being*. Contradictory attributes would apply to the same reality, and thus the Principle of Contradiction would no longer hold. There would be no sufficient reason for the evolution of the One-

Being, if it possessed all reality before it began evolution; and if it did not possess all reality from the beginning, there would be no sufficient reason for the new reality acquired. This is contrary to the Principle of Sufficient Reason. Finally, the very *concept* of the pantheistic One-Being is illogical. The uncaused Being must be infinitely perfect, unchangeable, absolutely independent, without composition, supremely intelligent, and personal. The pantheistic God or Absolute or One-Being has none of these attributes.

4. *Critique of Naturalistic Monism.* It has *no foundation in science*.

In seeking to eliminate the essential difference between living and nonliving beings, some monists assert that all matter is *instinct with life*, so that all beings in the universe are really living. This is contrary to the unvarying verdict of science. Others maintain that the original stuff was *neutral* and eventually evolved into inorganic and organic beings. This would be a case of *spontaneous generation*. This, too, is contrary to the verdict of science.

Naturalistic monism has no foundation in philosophy. Sound philosophy must maintain the essential distinction between organic and inorganic beings, because their properties and activities *differ radically and fundamentally*. Assimilation, the characteristic feature of vegetative life, differs altogether from chemical and physical activities; a comparison between assimilation in a *plant* and the activity of chemical change or crystallization shows this clearly. Life has laws of its own, different from those of the inorganic world. Since vital function is superior to inorganic function,

life could not have originated from nonliving matter because no cause can produce an effect of an order higher than its own inherent capabilities.

Hence, as a philosophic interpretation of the unity in the world, neither pantheistic nor naturalistic monism is satisfactory. *Dualism*, not monism, is manifested in nature.

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1 *Principia*, LIII

2 *The New Realism*, p. 283

3 For a more detailed account of these systems of thought, see the author's *Reality and the Mind*, chapters VII and VIII

4 See the author's *Reality and the Mind*, Ch. VI

Chapter 17

CAUSALITY AND LAW

COMMON EXPERIENCE AND SCIENTIFIC RESEARCH AGREE that the cosmos is an immense theater of action and change.

Action and change necessarily involve the concept of *causality*. By 'causality' we understand *the positive influence of one thing in the production of another*. The producing agent is the 'cause'; the produced reality is the 'effect'; the positive influence in the production of the effect on the part of the agent is 'causality.' Hence, the production of an effect involves a 'change,' and this change is brought about through 'action' of the cause.

There are *four main types of causes* which contribute in a positive manner toward the production of things. There is that 'out of which' a thing is made, and this is the *material cause* (matter). There is that 'by which' it is made, and this is the *efficient cause*. There is that 'through which' it is made, thereby becoming specifically what it is, and this is the *formal cause* (form). And then there is that 'on account of which' or 'for the sake of which' it is made, and this is the *final cause* (end, purpose).¹ That matter and form actually contribute toward the essential production of things as

their material and formal cause, has been previously shown (Chaps. 12, 13); they are constitutional factors which bring about the genesis of the composite body whenever such a body comes into being. The existence of causality, in the sense of the operation of *efficient* and *final* causes in the universe, must now be examined and proved.

CONCEPT OF EFFICIENT CAUSE

Scientists often speak of *physical causes*, and the unwary might receive the impression that they mean what the philosophers term 'efficient causes.' The two terms, however, need not coincide in meaning. Thus, John Stuart Mill says: "The causes with which I concern myself are not *efficient*, but *physical* causes. They are causes in that sense alone, in which one physical fact is said to be the cause of another. Of the efficient causes of phenomena, or whether such causes exist at all, I am not called upon to give an opinion."² What are here termed 'physical causes' are nothing more than the necessitating and indispensable *conditions or antecedents* of physical events. Mill thus sharply differentiates between 'physical causes' and 'efficient causes,' the latter being the 'producing agencies' which exert a positive influence in the actual production of a thing. The ordinary scientists, in the work of their experiments and in the observation of nature, do not make such a distinction, but consider 'physical causes' to be identical in meaning with 'efficient causes.' The philosophical scientist, however, may make such a distinction, and this distinction should be noted.

In order to have a clear concept of efficient causality, we must distinguish it from a *condition* or an *occasion*. A 'condition' is something required in order that an efficient cause can act, but it does not contribute any positive influence toward the production of the effect itself. Thus, clear weather or 'visibility' is a condition for the effective and safe flying of an airplane; a fog, extending over a large part of the area over which the aviator must fly, would be an adverse condition making his flight hazardous. Obviously, however, neither the clear sky nor the fog have anything to do with the actual flying of the ship. An 'occasion' is a circumstance or combination of circumstances which affords an opportunity for an efficient cause to act. For example, the birthday party of a friend may be the occasion why the pilot desires to fly his ship to a distant city. Here, too, the occasion of the birthday party has nothing to do with the actual flying of the ship. The efficient cause of the actual flying, which is the produced effect, is the pilot himself and the mechanism of the airship; they contribute in a positive manner toward the production of the effect of traveling through the air. 'Conditions' and 'occasions' exert an indirect influence on an *agent to act*, but it is the action of the agent which produces the effect, and it is this *productive action* of the agent which constitutes 'efficient causality.'

In order to obtain a better understanding of the nature of efficient causality, in so far as it affects the problem under discussion, a few of the *main kinds* of efficient causes must be enumerated.

First Cause and Second Cause. By 'First Cause' we mean one which is absolutely independent of any other cause or being, and on which the causality of every other cause depends. By 'second cause' we mean one whose causality is dependent on some other cause or being. In the sense defined, God alone is the 'First Cause'; all creatural causes are 'second causes,' because their whole being, and therefore also their efficient causality, is derived from, and dependent on, Him as their Creator.

Physical and Moral Cause. A 'physical' cause is one which produces an effect by its own direct action. Thus, the electric spark in the motor of an engine ignites the volatilized gasoline; a boy throws a stone and breaks a window; a soldier shoots an enemy sniper and kills him. A 'moral' cause is one which inclines a free agent to perform an action. Thus, a candidate for office persuades the people to vote for him; a criminal extorts money through blackmail; a mother threatens her child with punishment, if he does not behave.

Principal and Instrumental Cause. By a 'principal' cause we mean an efficient cause which is the primary agent and produces an effect in virtue of its own power. By an 'instrumental' cause we mean an efficient cause which produces an effect in virtue of the power of another cause. Thus, when a sculptor carves a statue, he is the principal cause, since he wields the hammer and chisel; the hammer and chisel are instrumental causes under his control and direction.

Cause per se and Cause per accidens. A 'cause per se' is one which has the natural tendency to produce a particular

effect or, if it be a free agent, which intends freely to produce it. A cause per accidens' is one which produces an effect toward which it has no natural tendency and which the free will (if that be the cause in question) does not intend. When a loose tile falls from the roof, gravity is the 'cause per se' of its falling; but if, in falling, the tile hits a passerby, gravity is the cause per accidens' of this effect, because it has no natural tendency to drop things on people passing by. When a hunter fires his rifle at a deer, he is the 'cause per se' of the shooting, because he intends the shooting; but if the bullet misses the deer and wounds a man, hidden from view in the distance, he is the 'cause per accidens' of the wounding, because he did not intend this effect.

Proximate and Remote Cause. A 'proximate' cause is a cause which produces its effect by immediate action. A 'remote' cause is a cause which produces its effect through the direct action of some intermediate cause or causes. When a pool player sends the cue ball on its way with a blow from his cue, he is the proximate cause of the speed and direction of the cue ball, the cue itself being used as an instrumental cause; but when the cue ball contacts the other billiard balls and sends them in different directions, the player is only the remote cause of this effect.

Total and Partial Cause. A cause is a 'total' cause, when the entire effect is produced by its action; if only a part of the entire effect can be attributed to a particular cause, it is a 'partial' cause. Thus, when a batter in a baseball game knocks a home run, he is the total cause of this score; but he can be only a partial cause of the winning of the game,

even if the score be 1 – 0, because all the members of the team must contribute their share toward the game as a whole.

Necessary and Free Cause. A ‘necessary’ cause is one which is determined by its nature to produce a certain effect, provided the requisite conditions are present. Thus, when the proper conditions of heat, moisture, soil, etc., are present, a normal seed must begin its vital function; when a stone is thrown into the air, gravity must pull it back to the earth. A ‘free’ cause is one which is not compelled to act, even if all the requisite conditions are present. Thus, man is free in many of his actions, such as eating, smoking, playing, etc.

We are now ready to discuss the question of the existence of ‘efficient causality’ in the universe.

THE EXISTENCE OF EFFICIENT CAUSES

After all that has been said about chemical and physical changes, about the mutual interaction of bodies upon one another throughout the universe, it hardly seems necessary to prove the existence of efficient causality. However, some philosophers have denied, or at least doubted, the possibility of knowing or proving its existence, and their contention cannot pass unnoticed.

The *opposition* to the concept and fact of efficient causes is based on various grounds.

The defenders of *mechanical atomism* admit nothing in the universe but matter and mechanical motion. Bodies are completely inert, passive; they have no spontaneous activity

of any kind. All movement comes from an outside applied force. This assumption of the complete passivity of material beings is, as was pointed out before (Ch. 11), false. It is disproved by the fact of *radioactivity* in certain elements. The disintegration of these elements and the expulsion of alpha and beta particles occur spontaneously and are not brought about by outside agencies; the energies inherent in the core of the atoms produce these powerful effects and radical changes. The active production of a change, however, is the same as 'efficient causality.'

The *occasionalists*, like Malebranche and others, deny all creatural activity and causality. In their view, causality, since it implies the production of some new reality, amounts to *creation*, and creation is an activity reserved to God alone. Hence, when creatures appear to be active and produce effects, it is really God who is active in and through them. At best, then, creatures are 'occasional causes' for the activity of God, inasmuch as they furnish the 'occasion' for God to produce effects in nature. Occasionalists fear that the distinction between Creator and creature would be obliterated, if creatures were capable of self-activity and causality. This fear is ungrounded. For one thing, whatever power of efficient causality creatures may have, they have from the Creator, not from themselves. Then, their activity would not be creation, because creation means to produce the complete substance without any pre-existing material from which it is taken; creatures, through their efficient causality, merely change a pre-existing substance from one kind of being into another kind of being. Finally, the facts are too clear: man, for example, is conscious of producing

effects through his own activity, as when an artist paints a picture, or a farmer plows his field, or a sprinter runs a race. To deny the trustworthiness of our consciousness in such matters, is tantamount to complete self-delusion and would lead to universal skepticism.

Kant and his followers denied the objective validity of our concept of efficient causality because of his peculiar theory of knowledge. According to this theory, we can know nothing but 'phenomena,' and these exist only in the mind; the noumena' or 'things-in-themselves,' as they exist outside the mind in external nature, man can never know. 'Efficient causality' is a *category* of the mind, is purely mind-made, and as such has only subjective value for the mind and its operations; whether anything corresponds to this category in external nature, is beyond the knowledge of man.³ This view is erroneous. It rests on the assumption that we can know nothing of things outside our own mind. In that case, however, we could know nothing of *other minds*, since they would assuredly be 'things-in-themselves.' That we do actually have a knowledge of 'other minds,' is clearly proved by the fact of language. Hence, Kant's main objection against the existence of causality in the universe rests upon a false assumption. In fact, if we can prove the existence of causality in the case of man himself, we prove the existence of causality in the universe, because man is a part of the universe. This will be proved shortly.

Phenomenalists, like Hume, Mill, and many others, also deny the objective validity of the concept of efficient causality. According to these philosophers, all that we can know is what we can perceive with our senses. The senses

merely reveal the *phenomena* of things. Events appear in *invariable sequence*, the one preceding and the other following in time and place. Because we always perceive this 'invariable sequence,' habit and the association of ideas delude us into imagining the relation of 'cause-and-effect' to exist between them, the earlier event being the 'cause' and the later event the 'effect.'

Phenomenalists are sadly mistaken. We do not at all consider invariable sequence to be real causality. Night and day, winter and spring, follow each other in an *invariable sequence of events*, but we do not on that account consider night to be the cause of day or winter to be the cause of spring. Nor is it true that we derive our concept of the cause-and-effect relation from the observation of the *frequency* of an occurrence through *habit* and the *association of ideas*. We apply this relation of cause-and-effect to events which occur only once, so that habit and the association of ideas can play no part in our judgment. Thus, when the first airplane crashed, the question was immediately asked: "What caused it to crash?" No 'invariable sequence' was required for man's mind to realize that something had to produce this disastrous effect. Similarly, when the first steamboat, or the first locomotive, or the first telephone, or the first automobile, went into operation, no one waited for the hundredth or the thousandth appearance of the phenomenon, in order to establish an 'invariable sequence' and then apply the principle of the relation of cause-and-effect. The very first appearance was sufficient to inquire into the cause of the perceived effect: "How does it run? What makes it go? How

does it work? What causes it to perform as it does?" The mind perceives that a new reality has come into being, an effect has been produced, and there must be a cause, even in the *first instance of occurrence*, to account for it. True, the senses perceive only the external phenomena and not the internal power which produces the change, but *reason* demands that such a power exist as the 'efficient cause,' otherwise the 'effect' could not occur.

Having disproved the assumptions on which the opposition to efficient causality in nature is based, we now proceed to the *positive proof* of the existence of efficient causality.

Experience proves efficient causality.

First, there is internal experience. Consciousness is the ultimate source of all true knowledge. We cannot doubt the truth-value of consciousness without doubting the validity of all human knowledge. But consciousness is a million-fold witness to the fact of efficient causality *within our own being*. We have many internal activities, such as imagining, thinking, desiring, willing. We are conscious that they not only take place *in* us, but that they are also produced *by* us through *our own action*; in other words, they are produced in us as effects, and we are the efficient causes. Thus, to give a simple example, we propose a problem to ourselves and desire to solve it. We then seek the solution of the problem through a lengthy process of reasoning, using ideas, judgments, and inferences, which we ourselves elaborate. We are conscious of the fact that we inaugurate and conduct the entire activity involved in this process through our own deliberate action; we *produce* this

complete chain of events within us, and that is 'efficient causality.' And since we are a part of the universe, it follows that efficient causality actually exists in the universe. This proof, taken from our internal experience, really suffices to prove our point. Then, there is *external experience*; it also proves conclusively that efficient causality exists in nature. I take some boards, cut them, nail them together, and form a table. I mix some paints, dip a brush into the mixture, and proceed to decorate the room. I get behind the wheel of my automobile, turn on the ignition, step on the starter, feed the engine, manipulate the gears, release the clutch, and drive the automobile through the streets. I take pen, ink, and paper, and begin to write a letter or an essay. And so with a hundred other operations. No one can convince me that all this shows nothing more to me than a set of phenomena in invariable sequence in which there is no efficient causality present. I know beyond the possibility of doubt that I am the *producing agent* of these various phenomena and that these events owe their existence to the positive influence of my activity; in other words, I am the efficient cause of these effects. The important point to consider here is: these are 'external effects' occurring in 'external nature' and not merely in my mind.

Reason demands efficient causality in nature.

Phenomenalists commit the supreme error of admitting no knowledge except sense knowledge to be valid and true. They overlook the fact that *reason* must interpret the data of sense before we can have true knowledge. All science and philosophy is a 'knowledge by reason,' not a 'knowledge by sense.' The demands of reason must be

satisfied, because that is the essence of science and philosophy. Reason, however, demands that we admit the existence of efficient causality *in other beings* besides ourselves.

If I do a bit of carpentering and produce a table, I am the efficient cause or producer of that table. If, then, I perceive other men carpentering, whether it be in the making of a table or of a chair or of a house or of anything else, what am I to conclude with regard to their actions? They are doing the same thing I did; they are performing the same sort of action. Consequently, reason demands that I conclude that they, too, are *producing the objects* which appear after their action is complete. If I am an efficient cause, then they must also be efficient causes. My senses, naturally, perceive only a 'sequence' of actions on their part; *my reason*, however, demands that if my actions were the efficient causes of definite effects, their actions must be adjudged to partake of the same nature. And the same principle applies to all actions performed by others. Any other conclusion would be illogical.

On identical grounds, reason demands that we admit productive activities *in the world at large*. Plants and animals come into existence, live for a while, and die. Mechanical motion originates in bodies, and then it ceases to exist. Physical and chemical changes occur incessantly throughout the universe. These are *new realities*. These new realities must be accounted for; they cannot originate from 'nothing,' because 'nothing' cannot account for anything. Since these new realities did not exist always and do exist now, they must have *received existence*; and if they

have received existence, they must have received it from some other being in nature. But to be brought from nonexistence to existence by some other being, means that this other being gave it existence through some *positive action*; because, if this being had performed no action, nothing would have happened to bring about the existence of the new reality. Now, to bring a being from nonexistence to existence by means of a positive action, means to exert a positive influence in the production of that thing. And that is what we mean by 'efficient causality.' Consequently, *efficient causality exists* as a fact in the universe.

We thus see that the concept of 'efficient causality' is not an idle speculation or the figment of a vivid imagination, but a fact of nature.

THE CONCEPT OF FINAL CAUSE

By a 'final cause' we understand that *for the sake of which* an efficient cause acts; the *end* or *purpose*, which induces and prompts the agent to act and determines the kind and the manner of action, so that the end or purpose may be achieved and realized. When a man 'intends' to build a home, he gives the architect an idea of what kind of home he wants; the architect draws up the plans and specifications; the contractor collects the materials and puts his builders to work; the builders construct the house according to plans and specifications; eventually the house is completed and turned over to the owner for habitation. From start to finish, this chain of events was dominated and determined by the original 'end' or 'purpose' of the owner

‘to build himself a home.’ That the end or purpose was a positive influence in the production of the building, is obvious. Had he intended to construct a factory or store or service station or museum or library, the entire course of events would have been altered accordingly, suiting the action to the end or purpose intended.

The concept of the ‘final cause’ will become clearer when we consider the *main classes* of final causes.

Intrinsic and Extrinsic Final Causes. Final causes are *intrinsic*, if the action producing a definite effect is the result of a being’s *natural tendencies*. The growth and structural development of a plant from the seed to full maturity illustrates the point of a ‘natural tendency.’ The germ cell of the plant has a very definite direction in its developmental action, and this action proceeds from the powers inherent in the seed itself. External agencies, such as light, heat, moisture, soil, etc., also play their part in the growth and development of the plant; but the actual growing and the actual developing is determined by the vital constitution of the plant alone, and this is a ‘natural tendency’ inherent in the plant. Provided, then, we have here a case of ‘final cause,’ so that the plant really ‘tends’ to carry out a definite ‘plan’ of growth and development, we must say that this is an instance of an ‘intrinsic final cause.’ Final causes are *extrinsic*, when their causality is *impressed* upon them by some *outside directive force*. When a hunter for example, shoots at a deer, the bullet ‘tends’ to speed in the direction of the animal and penetrate its body; if the aim is accurate, the result will be attained. Obviously, however, this tendency on the part of the bullet is not due

to the nature of the bullet itself, because bullets have no 'natural tendency' to kill deer; it is the result of an outside directive force impressed upon the bullet by the rifle and the hunter. This is a case of 'extrinsic final causality.'

Besides this very general classification, final causes are also classified according to the *different ends or purposes* present in the productive activity of the agents. Each end or purpose designates a different type of final cause.

The 'End Which' and the 'End for Which.' The *end which* is the *good itself* which is striven for as the end or purpose to be realized through the action. For example, when a man goes about building a house, it is the house itself that is the 'end which' he strives for. The *end for which* (or *whom*) is the *thing* or *person* that is to benefit by the realization of the 'end which' is intended. When a man builds a house as a home for his family, that purpose is the 'end for which' the house is built.

Proximate End and Remote End. An end will be the *proximate end*, if it is referred to some ulterior end, but has no other end referred to itself. An end will be a *remote end*, if one or more other ends are referred to it. And this remote end will be either an 'intermediate' or an 'ultimate' end. It will be *intermediate*, if one or more ends are referred to it, and it is itself referred to some ulterior end. It will be *ultimate* if it has one or more ends referred to itself, while it is not itself referred to some other end. This ultimate end will be *relatively ultimate*, when it is the last purpose in a series of purposes in some particular line, and it will be *absolutely ultimate*, when it is the last purpose of all purposes in any line, so that no ulterior purpose or end can

be conceived. To take the example of the builder of a house. The immediate or 'proximate' purpose of building is the complete house itself. But he builds it so that his family may have a comfortable home (remote, intermediate end) and thereby enjoy earthly happiness (remote, relatively ultimate end for his family), while he himself thereby fulfills his duty as a father and husband (remote, relatively ultimate end for himself); and all this he does for the greater glory of his Creator (remote, absolutely ultimate end).

Primary End and Secondary End. The *primary* or principal end is the main one among two or more which actuates an agent and is sufficient of itself to induce the agent to act. Thus, the primary end of a man building a house may be the comfort of his family. The *secondary* or accessory end is one which is intended together with a primary end, without, however, exerting the same potent influence on the action of the agent. The builder, for example, may also be prompted by his dislike for paying rent.

End of the Act and End of the Agent. The end of the act is the purpose which is present in the act itself and which the act tends to realize because it is this particular kind of act. The end of the agent is the end which the agent has in performing this particular act. For instance, the end of the 'act of building' is the 'house' itself, while the end of the 'agent' (builder) is the 'comfort of his family' living in the house.

THE EXISTENCE OF FINAL CAUSES

The philosophic doctrine which holds that final causes are operative in nature, that things act according to a definite purpose or design, is called the doctrine of *finality*, or *teleology* (τέλος end, purpose), or purposiveness. The doctrine which denies the existence of finality or final causes in nature, is called mechanism; it explains all occurrences in nature as being determined in a purely mechanical way, so that everything is caused by what is temporarily antecedent without having any 'tendency' to produce definite results in the future.

The *problem* revolves around the question: Do beings act *in order* to realize some definite *end* and purpose through their action? Or are there merely efficient causes operative in the world which act machinelike in producing their effects?

The teleologist admits the existence of efficient causes. He does not assert that all efficient causes in the universe act with finality at all times: even the confirmed teleologist concedes that chance happenings occur. But he does maintain that all beings, organic and inorganic, are governed, to a very great extent, by ends and purposes in their actions. The mechanist asserts that nothing but efficient causes are at work in nature, and ends and purposes play no part in natural occurrences; the concept of 'finality' is a philosophic figment, due to the 'anthropomorphizing' bent of man's mind which tends to explain all things in human terms.

Among those who *advocate* teleology in nature we find Anaxagoras, Plato, Aristotle, and all scholastics. Many scientists of prominence, for example, Copernicus, Kepler,

Newton, Darwin, Pasteur, etc., were convinced of the existence of finality in the operations of nature. Among those who *deny* that final causes operate in the universe are the ancient and modern materialists, the pantheists, and those scientists who admit nothing but mechanical determinism in nature. It is well to note, however, that scientists in general preserve a more or less negative attitude toward the problem rather than a positive antagonism. The philosopher-scientists who are positivists, agnostics, and empiricists consider teleology unacceptable, because, in their view, we cannot know anything which goes beyond the immediate data of sense perception; their denial of final causes rests, therefore, on epistemological grounds rather than on the facts themselves.

To the question: 'Do final causes exist at all, at any time, under any conditions?' the answer is emphatically and categorically:

Final causes exist in conscious operations.

In the case of *man*, the evidence is so clear, that an extended demonstration is unnecessary. We are all *intuitively aware* of the fact that we perform most of our actions with precise ends and purposes in view, and these ends and purposes determine the whole course of our actions. All the activities engaged in during a normal day are inaugurated, controlled, sustained, and completed under the influence of ends and purposes; we do things *in order* to achieve definite results. Whether a man work in an office or a garage or a factory or a store or a school; whether he be a farmer or a mechanic or a broker or an engineer or an executive; whether he drive a car or a truck

or a locomotive or a boat or an airplane; whether he play cards or golf or billiards or tennis or pingpong: in whatever he does with conscious effort, he always has a *purpose* in view which prompts him to act so as to bring about a desired end-result. The entire structure and operation of industry, business, commerce, art, labor, government, etc., is the result of a host of actions, all of which are directed and dominated by definite ends and purposes. It is only the somnambulist, or the insane, or the complete idiot, who acts without a conscious end in view. Even the mechanist, when he marshals his arguments for disproving the existence of final causes and purposes, sets a purpose for his argumentation and proceeds to bring about its realization; he proves himself to be a teleologist by his very attempt to disprove teleology. The fact is transparently clear: man *intends* to achieve definite ends and purposes and *arranges his actions* accordingly; that is teleology, without question.

We also find final causes at work among *sentiently conscious beings*. Brute animals are such beings. Study the individual actions and the life history of all the animals, from the amoeba to the whale, and note how everything is dominated and regulated according to the all-controlling purposes of the *preservation of the individual and of the species*. Millions of illustrations could be adduced to show how they act in order to achieve these great fundamental purposes. Two examples must suffice. When a cat watches at the hole in the floor with unswerving eyes, crouches with tensed muscles, chases the mouse that unwisely comes forth, pounces upon it with unsheathed claws, kills it, and then devours it, is this not done for the immediate purpose

of catching its prey and for the ultimate purpose of appeasing its hunger and sustaining its life? And when a bird flies about, seeks bits of string, feathers, straw, and twigs, brings them together to a certain tree, and then shapes them with a co-ordinated sequence of apt motions into a nest, is this not done for the immediate purpose of fashioning a place for its prospective brood and for the ultimate purpose of preserving its kind? The bird, of course, does not know that its mating will result in eggs and fledglings which will need a nest, but that is beside the point; the point is, that the bird 'intends' to build a nest and its complicated chain of actions is arranged in such an orderly manner that the end-result, a completed nest fit for breeding purposes, is definitely achieved. Animals may not (and, for that matter, do not) understand the 'rationality' of their actions, but they certainly *perceive* things, *desire* them, and *strive* for them. This is finality, or purposive action, pure and simple. Teleology, therefore, actually exists in nature, at least among conscious beings.

Most scientists are willing to admit purposiveness in such instances, especially in the case of man. They experience, however, great difficulty in recognizing finality or teleology in *unconscious* beings. They argue somewhat as follows. In order that something be done 'for a purpose,' it would seem necessary that this purpose be 'held in view' as a 'future result to be achieved.' That demands a mind of some sort, which consciously apprehends the purpose and deliberately sets about to achieve it by means of appropriate actions. Unconscious beings, however, cannot apprehend such a purpose. Consequently, their actions

cannot be purposive, and final causes are therefore excluded.

This *objection* is based on a *confusion of ideas*. The opponents confuse the 'end of the agent' with the 'end of the act.' If the 'act' is purposive in itself, what difference does it make whether the 'agent' is aware of its purposiveness or not? To postulate *a priori* (beforehand) that the action must be conscious in order to be 'purposive' is a *begging of the question*, because it is an attempt to settle the question by definition instead of by fact. Certainly, if conscious knowledge of the purpose be required in order that beings can 'act for a purpose, then unconscious beings cannot possibly 'act for a purpose. But why should it be impossible for the acts in themselves to be naturally purposive; that is to say, why should it be impossible for the Creator to have given unconscious beings a *natural tendency* to perform certain actions which, as a matter of fact, have as their goal an end-result which is to be achieved in the future at the completion of the action? Purposiveness, without doubt, does actually presuppose a knowledge of the end to be realized. If then, the actions of unconscious agents are purposive in themselves, so that they have a natural tendency to lead to definite end-results unknown to the agents, the necessary conclusion to be drawn is, that an outside intelligence has *imposed* this natural tendency upon their very *essence* and *constitution*. This would be a proof, of course, that a Supreme Intelligence exists which made their essence and constitution to be what it is and gave it definite direction of action. The Creator of all beings, of course, alone could do

this. Given, then, the existence of the Creator, the objection of the opponents is pointless. Only on the supposition that the existence of a Creator is impossible, could one argue that finality in unconscious beings is impossible. On the other hand, if the *facts in the case* prove that finality exists in unconscious beings, then these facts also prove the existence of an intelligent Creator. What do the facts show?

Finality exists in unconscious operations.

To understand the problem properly, consider an action of man which is an indubitable instance of the working of a final cause. Scrutinize, for example, the action of a watchmaker assembling a watch. What is the end and purpose of his action? To construct a mechanism which will tell the time. This purpose determines the selection of the materials he must use and the method and sequence of actions necessary to assemble all the parts in their respective positions. As his action proceeds, the timepiece gradually takes shape; eventually, it is completed, and the watchmaker's action ceases, because the construction of the timepiece, which was the purpose and goal of his action, is finished. The actual watch, it will be noted, was the first thing intended and the last thing executed: the entire sequence of activity and the appropriate selection of materials was determined by something which would be achieved only in the future as the end-result of the whole operation. In the case of the watchmaker this process was consciously apprehended and intelligently carried out; a *conscious plan and design* controlled the making of the watch. When, however, we speak of finality in unconscious operation, a *similarity of purposive action* must prevail, so

that there is *plan and design* calculated to achieve a *definite end-result* through actions *appropriate for the purpose*; but all this is done unconsciously, without the benefit of knowledge on the part of the agent. It is the 'purposiveness' of the action which constitutes the essence of a final cause, not the consciousness or unconsciousness of its finality. If, then, we find that organic or inorganic beings have a distinct, though unconscious, *tendency* to perform actions which parallel the purposive actions of man, so that they proceed planfully in every way toward a definite end-result to be achieved in the future, we must admit that (unconscious) finality also controls their actions; they are purposive actions, dominated by final causes. That, we claim, is so.

Organic activity shows abundant evidence of unconscious finality or 'purposiveness.'

The *metabolic processes* of organisms are all unconscious, even in the body of an animal or man. Yet they are carried out by a marvelous adaptation of means to an end. The process is entirely *selective* in its operation, depending on the type and condition of the organism in which it takes place. The digestive organs, for example, form a complete laboratory, arranged and equipped solely for each particular type of organism, and work with an efficiency of such a high degree that the efficiency of intelligent man in his best laboratories is, by comparison, more like that of a bungling amateur. And when, for some reason, the organs of this organic laboratory are injured, they strive to *repair* the damage with every means at their disposal, something never observed in purely mechanical

things. It is as if the cells understood the exact nature and function of every organ and structure in the body, both as an individual member and as an integral part of the whole. How strong this inherent urge or tendency of the cells is, can be seen in the case of red corpuscles. If a drop of blood is placed in a suitable medium and some of the red corpuscles happen to flow away from the drop, they immediately begin forming a protective bank; fibrin filaments then solidify the banks into a tiny pipe; white leucocytes now start their work of covering the surface with a membrane of contractile cells. And thus a bit of circulatory apparatus is formed by these corpuscles and leucocytes, through the driving power of an inherent urge and tendency residing in them. Although the action, incidentally, misses its fundamental purpose, due to the fact that the blood is no longer present in its parent organism, the essential purposiveness of the action itself, namely, the building and repair of an adequate circulatory system, is plain to see. In a similar manner, the leucocytes, when taken out of the organism and placed in suitable containers, will continue to destroy microbes. They do not understand that they, under the conditions, are not defending the parent organism against its enemies, and that shows that their action is unconscious; but they have the irrepressible urge to destroy microbes, which is their purpose as scavengers, and they carry out this purposive action even when the action is no longer necessary. This is finality of action. Such instances of purposiveness could be multiplied indefinitely.

Perhaps the most striking and most universal instance of finality in organic activity is that of *embryonic development*. it is a totally unconscious process in plant, animal, and man, yet it is the most amazing illustration of a planned and designed activity observable in nature. Growth is an unconscious operation of living tissue. It begins with one original cell and proceeds to develop into a completely mature individual. Notwithstanding the unconsciousness of the process, there is a very distinct tendency and direction in it toward a specific result which lies in the future. There is no hit-and-miss method, no blind groping for effects, no chance achievement of results. Everything is methodical procedure, scheduled operation, progressive construction. No house was ever built with such precision, efficiency, and dispatch. Somehow, the germ cell contains within itself the design of the mature *individual* of a particular *specific type*, and it *tends* to develop this type under all conditions. The individuals vary in height, size, weight, and characteristics within certain limits; but they develop according to a well-defined plan, so as to carry out the pattern of the type. This development is constant, regular, natural; it is the result of an *internal driving power* present in the germ cell and prolonged through the whole life history of the organism.

As a result of this internal principle of development, billions of cells are formed, combine together into various kinds of structural members, tissues, and organs, placed in mutual relationship as to position and function. These members, tissues, and organs have their own individual kind of activity, but they are coordinated and interdependent in such a manner that the well-being of the

organism *as a whole* is the evident purpose and tendency of all combined. The end-result planned lies altogether *in the future*, because most of the organs and structures are of no use in the embryo. The chick in the shell, for example, has no use for its eyes, ears, feet, wings, lungs, digestive apparatus, sex organs, etc.; they are made for future use, and the purpose of their construction in the embryonic stage is apparent. The individual, as Alexis Carrel aptly remarks, "is born from a cell, as if the house originated from one brick, a magic brick that would set about manufacturing other bricks. Those bricks, without waiting for the architect's drawings or the coming of the bricklayers, would assemble themselves and form the walls.

They would also metamorphose into windowpanes, roofing-slates, coal for heating, and water for the kitchen and the bathroom. An organ develops by means such as those attributed to fairies in the tales told to the children in bygone times. It is engendered by cells which, to all appearances, have a knowledge of the future edifice, and synthesize from substances contained in blood plasma the building materials and even the workers."⁴

If a house is a purposive structure, built under the influence of final causes, then the development of an organism must be the same, because it is a million times superior to the most luxurious castle in beauty, compactness, complexity, appropriateness, correctness of design, and perfection of construction. Compare a ship or submarine with a fish, an airplane with a bird, an automobile with a horse, a camera with an eye, a telephone exchange with a nervous system, a pump with a heart, a

laboratory with a digestive tract, a canal with the circulatory system, a scaffold with a skeleton, an electric control station with a brain, in fact, compare any mechanical device with a similar living structure: the products of human intelligence and ingenuity suffer tremendously in the comparison, although they are the products of conscious finality. But if these human contrivances demand purposive action in order to explain their existence and performance, the construction and functions of living structures and organism from a single cell through *inherent tendency and technique* demand purposive action as an adequate explanation. And if human inventions require intelligence in conscious activity, then the unconscious development of organisms from an embryonic cell to full maturity and to death requires an intelligence which is so much more superior to man's mind as the organisms are superior to man's mechanical products. That the cells know nothing of their purposive action, is obvious. Hence, the unconsciously purposive structures and functions of organic beings must be attributed to an extraneous Intelligence immensely more perfect than the intelligence of man; any other explanation is illogical and irrational. At any rate, the *fact of finality* in unconscious organic activity must be admitted, otherwise one does violence to the facts of nature.

In organic activity also shows abundant evidence of finality or 'purposiveness.'

We observe purposive action in the *formation of atoms* from electrons, protons, and neutrons. Electrons and protons possess opposite electric charges and tend to

attract each other; neutrons are electrically neutral and neither attract nor repel other particles. Due to these facts, one would naturally suppose that single electrons and single protons would pair off to form a neutralized single electron-proton combination and be content to remain in this condition indefinitely; and one would also naturally suppose that neutrons, being unaffected by the electric charges of electrons and protons, would remain permanently in a solitary, isolated existence, without any tendency to unite with electrons and protons. Nevertheless, we find unneutralized protons crowding together in the nucleus of the elemental atoms and unneutralized electrons swarming together at a distance from the nucleus. This is not a haphazard result which is achieved now and then at random. On the contrary, these particles have a *natural tendency* and an *irrepressible urge* to unite into *definite atomic constellations* of various *specific types* which we call the *elements*. While man, through bombardment, can break up these combinations, it requires an enormous expenditure of energy to do so. This shows, that these combinations are natural, because the atoms of the elements resist dissolution to the utmost and strive to retain their integrity and individuality at all cost. When *ionization* occurs, so that orbital electrons are detached from an atom, the atom invariably seeks to capture stray electrons in order to complete the system. The atom of each element has a *typical structure and design*, resulting in properties and activities which are specifically characteristic of the element. Even in the spontaneous disintegration of radioactive elements, the entire procedure runs according

to a *planned schedule* which nothing can alter, determined by the inner constitution of the atom itself, so that each step of the process can be predicted with accuracy. We thus see that the ultimate particles throughout the universe *aim at definite end-results*, and these end-results determine their activity in all phases.

This is also true of the reactions in *chemical compounds*. No doubt, it is often accidental that elements come into contact with other elements. Once the contact is made, however, their behavior is no longer accidental, but determined by the *laws of affinity*. Elements display an unmistakable tendency to make certain combinations and reject others. Peculiar in this respect is the fact that a definite *preference* is noticeable among the elements. Even though, for example, two distinct elements would complete the octet in the outermost electronic orbit, thus producing a neutralized electric system, the atom will invariably select one of the elements in preference to the other, even displacing the one already in the compound. In all cases of chemical combinations a very definite trend is present, so that chemists can always predict the end-result. Similarly, in *crystallization* there exists an urge or tendency for all the molecules to arrange themselves according to a *planned pattern* of geometric design, and the whole process is natural, constant, and permanent.

All this leads to the inevitable conclusion, that all beings are governed, to a very great extent, by finality in their activities. Final causes are operative everywhere in nature. This striving to produce specified end-results proceeds from the *inner nature* of the agents themselves and not from

external compulsion. This world, therefore, is a teleological world, and it is a natural phenomenon. If we seek the *ultimate reason* for the marvelous finality exhibited by all beings in the organic and inorganic world, then, indeed, the explanation cannot be found in the things themselves, because they do not understand the finality of their actions, but in the *Creator*.

NATURAL LAWS AND MIRACLES

By a *natural law* we understand the rule or *norm* according to which a being is *induced to perform an action or to refrain from an action*. In its original meaning, the term 'law' is applied to the rule or norm which governs the free actions of an intelligent being; but in a wider sense, the term is applied to any imposed norm of action, and in this sense irrational and nonliving beings are also said to be governed by 'laws.' Such laws in a wider sense are the 'natural laws' or 'laws of nature. We thus speak of the Law of Gravity, the Law of the Conservation of Energy, the Law of Biological Origin, and so forth. Proximately, we mean by a 'natural law' the *constant and uniform activity* of a being; fundamentally, we mean thereby the *natural and inherent tendency* of a being to act in a constant and uniform manner.

The exact *sciences* are witnesses to the fact that the activities occurring in nature are governed by laws. It is the distinctive function of science to penetrate the apparently chaotic jumble of phenomena and discover the laws which express the cause-and-effect relations existing in the

manifold operations of physical beings. To be able to formulate these laws in words, is one of the great achievements of science.

Because of the knowledge of these laws, scientists are capable of *predicting* accurately the behavior of things under given conditions.

When objects act *constantly and uniformly* under the same set of circumstances, this cannot be due to chance, but to law. Chance-occurrences, precisely because they are not subject to law, cannot be predicted with any degree of certainty; they are neither constant nor uniform in operation and are always an exceptional event. In 1939 it happened in Berkeley, California, that in a game of bridge a perfect hand was dealt to each of the four players; one had all spades, another all hearts, another all diamonds, and the fourth all clubs. Statisticians estimate that the probability of four such hands being dealt is one in 158,000,000,000 deals. And yet the number of cards is relatively small, only 52. When, therefore, we observe the events of nature occurring with unswerving regularity, we are forced to the conclusion that they are governed by exact laws and not by the vagaries of chance.

And that is to be expected. The activities of things proceed from inherent *tendencies* present in them, and these tendencies, in turn, are grounded in the essence of things. Since the essence of things is a constant and uniform reality, it is a natural consequence that these tendencies and activities will also be constant and uniform. Concretely, therefore, the essence or nature of things is the

ultimate natural ground or reason why physical beings act constantly and uniformly according to a strict norm or law.

Some scientists consider a 'physical law' to be nothing more than a *convenient formula*. They give it only provisional value, and they base their argument on the fact that such a 'law' is the result of an *incomplete inductive enumeration*. Because of this incomplete enumeration, they say, we can never be certain that the 'law' holds for all times, or for all places, or for all conditions. Thus, the 'law' states that 'water will freeze at sea level at +32° F.' However, the amount of water which was actually frozen in this manner is infinitesimally small, compared to the amount of water that was never frozen; hence, we cannot be certain that the 'law' has universal application. These scientists are in error. Once we know the 'nature' of water, we also know that water is always and everywhere the same. Since the 'nature' of water is what it is, it must act in the same manner always and everywhere; consequently, it will always freeze at sea level at + 32° F. A complete inductive enumeration, therefore, is unnecessary for the establishment of a universal physical law. It is true, of course, that we are unable to understand the essence of physical things completely; but that is a proof of the limitation of our knowledge, and not a valid proof against the constancy and uniformity of creatural activity.

We speak of natural laws as being *necessary laws*. They are necessary in the sense that physical objects are determined by their very nature and essence to act or not to act as they do, and they have no choice in the matter. This necessity, however, is not absolute, but *contingent*. The

laws governing the physical operations occurring in the universe are dependent on the natural tendencies inherent in the beings themselves. Only under the supposition that these beings themselves are absolutely necessary both in their essence and existence, would it be correct to state that the laws of nature are absolutely necessary. No one, however, can prove that the universe and the objects comprising it are absolutely necessary in their essence and existence. On the contrary, many beings, especially all organisms, come into existence and pass out of existence; chemical compounds are made and unmade continuously. Hence, they are contingent, and the laws governing them can only be contingently necessary. As a matter of fact, all beings were created by the Supreme Being, and it was He who gave them their essence and with it the laws determining their activities. Consequently, all the *laws of nature* are only *contingently necessary*, depending entirely on the will of the Creator.

From this it follows that the Creator can, if He so desires, suspend the effects of the laws of nature at any time, either entirely or in part; He can make exceptions to the general laws in individual cases at will. Since He made the natural laws, He can also abrogate them. Now, any *perceptible event*, forming an *exception* to the regular course of nature and produced by *divine intervention*, is a *miracle*. Miracles, therefore, are *possible*. To deny the possibility of miracles is equivalent to denying God's power over His own handiwork, which is absurd. Whether miracles have ever actually occurred, is a matter of historical evidence and lies outside the purview of philosophy. Philosophy is concerned with the

problem of the possibility of miracles, and that cannot consistently be denied.

The complete subjection of all things in the world to law and order in their efficient causality and the all-encompassing dominance of final causality over physical bodies and their activities, clearly indicates that the origin of organic and inorganic beings lies not in themselves but in a Supreme Lawgiver who imposed His will upon them.

SUMMARY OF CHAPTER XVII

By *causality* we understand the positive influence of one thing in the production of another. There are *four main types of causes: material, formal, efficient, and final*. Here we are concerned with efficient and final causes.

1. *Concept of Efficient Cause*. An 'efficient cause' is one 'by which' an effect is produced; it is an agent which by its positive action produces something. The main *classes* of efficient causes are: First cause and second cause, physical and moral cause, principal and instrumental cause, cause *per se* and cause *per accidens*, proximate and remote cause, total and partial cause, necessary and free cause.

2. *The Existence of Efficient Causes*. Experience proves the existence of efficient causality. Our 'internal experience' proves that our mental operations are produced in us and by us. Our 'external experience' proves that we are the producing agents of many external effects.

Reason demands efficient causality in nature. When we observe other human beings producing things which we know to be instances of efficient causality in our own actions, we must conclude that they, too, are efficient causes. On identical grounds, reason demands that we admit productive activities in the world at large. New realities constantly come into existence, e.g., organic beings and chemical compounds. Since they cannot originate from nothing, they must be 'produced.'

3. *The Concept of Final Cause*. A final cause is one 'for the sake of which' an efficient cause acts in producing

something. There are many classes of final causes. Besides the general classification of 'intrinsic' and 'extrinsic' final causes, we classify final causes according to the *ends* or *purposes* which may actuate an efficient cause: the 'end which' and the 'end for which,' proximate and remote end, primary and secondary end, the end of the act and the end of the agent.

4. *The Existence of Final Causes.* Teleology, the doctrine of final causes, is opposed to mechanism, the doctrine which explains all natural occurrences in a purely mechanical way. The *problem* is: Do beings act 'in order to' realize some definite 'end' and 'purpose' through their action?

Final causes exist in *conscious operations*. Our own consciousness testifies to the fact that we almost invariably act with a purpose in view; we intend certain results and arrange our actions in an intelligent manner to achieve these results. *Sentiently* conscious beings, namely, brute animals, are governed in their actions by the all-controlling purposes of the preservation of the individual and of the species; they perceive things, desire them, and strive for them.

Final causes also exist in *unconscious operations*. They act according to a plan and design calculated to achieve a definite end-result through actions appropriate for the purpose. *Organic* activity manifests purposiveness in the metabolic processes and in embryonic development. *Inorganic* activity manifests finality in the formation of atoms, in the typical structure and design of the elements, in chemical compounds, and in crystallization.

5. *Natural Law and Miracles.* By *natural law* we understand the rule or norm according to which a being is induced to perform an action or to refrain from an action.

The exact *sciences* are witnesses to the fact that the activities occurring in nature are governed by laws. Things are so *constant and uniform* in their activities, that scientists can predict the course of events with accuracy; chance effects are haphazard and exceptional. This constancy and uniformity is based on the internal constitution and *essence* of the things themselves, the latter giving rise to *specific tendencies* of action.

Physical laws are *necessary* laws, but only *contingently*, not absolutely, necessary. This is due to the fact that physical beings are themselves contingent, because they are created; they are dependent on the will of the Creator.

It follows that the Creator can suspend the effects of the laws of nature or make exceptions in individual cases. When this happens, a *miracle* occurs, which is a perceptible event, forming an exception to the regular course of nature and produced by divine intervention. Hence, miracles are *possible*.

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1 See Aristotle, *Physics*, Bk. II, Ch. III. Also, see the author's *Domain of Being*, Ch. 21

2 *System of Logic*, III, V, 2.

3 See the author's *Reality and the Mind* (ch. 7), for a more detailed elucidation of Kant's system

4 *Man, the Unknown*, p. 108 This book contains a wealth of material illustrative of teleology. By permission of Harper & Brothers, publishers.

Chapter 18

RELATIVITY

PERHAPS THE MOST CONTROVERSIAL ISSUE BEFORE THE MINDS of present-day thinkers is Einstein's *Theory of Relativity*. It is so complicated in its mathematical calculations and so vast in its scope, that only experts in mathematical physics are capable of following the theory through all its ramifications and intricacies. It is primarily a theory of *physics*, not of metaphysics. However, certain phases of the Theory of Relativity involve metaphysical concepts, and the cosmological implications interest the philosopher.

While it is practically impossible to give an adequate exposition of the theory in the short space at our disposal, a summary of its leading ideas and a critical evaluation of some of its features will be attempted.

ORIGIN OF THE THEORY

The Theory of Relativity has its origin in the *problem of motion*. The problem arose largely in connection with celestial mechanics. *Tycho Brahe* (1546—1601), without the aid of a telescope, made an exhaustive study of the movements of the planets. He did not possess the key to the

proper understanding of these movements, because he viewed them from the standpoint of the earth. *John Kepler* (1571—1630), his pupil and assistant, discovered the key; viewed from the standpoint of the sun, these complicated movements resolved themselves into regular ellipses around the sun. One great problem of astronomy was thus solved when Kepler expressed the data of his master in three simple descriptive laws. He, however, did not understand why the planets move in such ellipses.

Galileo Galilei (1564—1642) discovered the laws of terrestrial dynamics through a study of falling bodies. He found that all bodies, whether heavy or light, fall to the ground in the same way, their velocity increasing by about 32 feet per second in every second. *Isaac Newton* (1642—1727) combined the ideas of Kepler and Galileo in a grand synthesis. Studying the movements of the planets, as expressed in Kepler's laws, he found that the acceleration of a planet depends on the distance of the planet from the sun, and its acceleration diminishes as the distance increases according to the law of the inverse square. In other words, planets have a tendency to fall toward the sun, just as bodies have a tendency to fall toward the earth; *gravitation* regulates the movements of the planets. In formulating his *Laws of Motion*, Newton enunciated the fact that a change or *acceleration* of motion demands an outside impressed force; motion itself, once started, goes on indefinitely in a straight line. Newton intended his laws to be merely descriptive formulations. Still, at times he turned philosopher and philosophized on the concepts of 'time,' 'space,' and 'motion.'

Newton distinguished between *absolute* time, space, and motion and *relative* time, space, and motion. By 'absolute time' he meant duration, or the persistent existence of things; and that, he says, cannot be changed, but is always the same, whether motions be swift or slow or null. He admitted that, perhaps, there is no equable motion by which time can accurately be measured; hence, our ordinary measurements of time are relative to some particular motion and are therefore more or less inaccurate. Similarly, in common affairs we use relative places and motions, measuring them against other places and motions. 'Absolute place' would be the place of a body which is altogether at rest with respect to absolute space in general, and 'absolute motion' would be the motion of a body in reference to a body or set of bodies in absolute rest. He claims that in physical disquisitions we should abstract from the senses and seek to measure places and motions according to absolute standards; again, however, he admitted that it may be impossible to find any body absolutely at rest, which could serve as a fixed point in the universe from which absolute standards of time, space, and motion might be taken.

Here we have the *crux of the problem* which eventually gave rise to the Theory of Relativity. An example will illustrate the difficulty of accurate measurement. I am traveling, let us say, in a straight line toward the north at a speed of 50 miles an hour. But relative to what am I traveling in this manner? Relative to the earth; the earth is my fixed point or *frame of reference* (post of observation). The earth, however, has a rotational motion, which twists

my movement over its surface from a straight line into a curved line; and, since the earth moves at a rate of approximately 100,000 miles an hour around the sun, I am really moving much faster than 50 miles an hour, relative to the sun, and the elliptic path of the earth gives an additional curvature to my actual motion. The entire solar system is also in motion toward some point in the universe, and this also influences my velocity and my line of motion. A further complication arises from the fact that the entire galaxy of the Milky Way also moves. Viewed, then, from the different 'frames of reference' — earth, sun, solar system, Milky Way, and the universe at large — my simple journey becomes a very intricate affair of velocity and curved motion. We have now a number of 'relative motions,' motions 'relative' to some particular frame of reference; but what is my *absolute motion*, measured according to the absolute standard of distance from some body or system in the universe which is absolutely at rest? Is there such a body or system? Can we discover any fixed point as an *absolute frame of reference*? If not, all our measurements of time, space, and motion are only 'relative.' To put the matter concretely: When I travel 50 miles an hour straight north, relative to the earth as my frame of reference, what is my absolute velocity, time, and direction of movement, gauged by the absolute standards of measurement derived from a body or system absolutely at rest in the universe?

Newton himself thought he had found the motionless frame of reference in the *fixed stars*. Subsequent discoveries, however, have shown that these stars in the celestial constellations are not 'fixed' in the sense indicated.

So far as we know, all are in motion relative to one another. Later scientists hoped to find the absolute standard of rest in the *aether*. Hence, if the motion of a body relative to the aether could be determined, they felt that the motion of this body, for example, of the earth in its revolution around the sun, could be measured in absolute units; that accomplished, the absolute motion and position of the other heavenly bodies could also be calculated. A number of experiments were made along these lines. Most famous among these were the experiments of *A. Michelson* and *E. W. Morley* in 1881.

The Michelson-Morley experiment was designed so as to determine the velocity of the apparatus, and thereby also of the earth, in the supposedly fixed aether. It was based on the velocity of light. A ray of light was directed onto a half-silvered mirror, placed at an angle of 45° to the beam. Half of the beam went through the un-silvered portion and traveled on in a straight line, while the second half was reflected in a direction at right angles to the first half. The two half-beams were reflected back and forth by mirrors placed at equal distances, were rejoined, and then compared. If there was any difference of velocity in the two directions, the phenomenon of interference should appear; otherwise, the two rays should be in phase. There should be a difference in this velocity, if the apparatus (and the earth) is moving in the same direction as the light; there should, of course, be no difference, if the apparatus (and the earth) is at rest. In the first case there would be a time-lag, and in the second case there would be none; this time-lag would produce a difference of phase and cause interference. As

the apparatus is turned, or as the earth reverses its course during its annual revolution, this difference of phase should be noticeable and measurable. As a matter of fact, however, the results were rather negative; the experiment failed to manifest the expected velocity through the aether. The experiments were repeated in 1904 and 1905 by E. W. Morley and Dayton Miller, and by Miller again in 1921, and thousands of experiments were made between 1921 and 1925. The results were divergent. They did show a definite 'aether-wind' or 'aether-drift,' estimated at between 5 and 10 kilometers per second. Even in the Michelson-Morley experiments the results were never null; but they were unsatisfactory and generally overlooked or ignored.

Scientists were at a loss to explain the apparently negative results of the experiments; they should have been positive, if the earth really moves through the stationary aether. It was unthinkable to return to the ptolemaic world system, in which the earth occupied the center of the universe and was absolutely at rest. Then how explain the paradox? *Fitzgerald* and *Lorentz* now came forward with a daring hypothesis. If we assume, they said, that every body suffers a *contraction* of length in the direction of its motion while passing through the aether, the absence of a measurable aether-drift is explained. This contraction would affect all measuring rods, clocks, and also the apparatus of Michelson and Morley. Provided this contraction is sufficient in amount to compensate for the difference in length of the two half-beams of light, the time-lag would be eliminated, and the time of passage would be the same for both half-beams traversing the two paths.

Under such conditions an aether-drift could neither be detected nor measured. This accounts for the negative result of the experiments designed to discover and measure the velocity of the earth in reference to the 'fixed aether.' It must, therefore, be assumed that it is impossible for us to determine a frame of reference which is absolutely at rest. To all appearance, then, the only available standards of measurement are 'relative' standards; 'absolute' standards for measuring time, space, and motion are unavailable.

It was at this point that *Albert Einstein* stepped to the fore with his *Theory of Relativity* in 1905.

THE SPECIAL THEORY OF RELATIVITY

The notion that our measurement of observed motion is, to a great extent, 'relative,' is nothing new. Newton was explicit on the point. Einstein deserves the credit of having developed the principle into a complete system embracing the whole world, from electromagnetic phenomena of atomic dimensions to physical events of astronomical proportions.

We are dealing with *observable local motion*, and that, Einstein says, has only a 'relative,' not an 'absolute' meaning. This is clear from the fact that, whenever we attempt to determine and measure 'motion,' 'direction of motion,' and 'rest,' we can do this only by comparison with some other body as a frame of reference. The values change as the frame of reference changes. Let us suppose a train is moving past an embankment at the rate of 50 miles an hour. A passenger leans out of the window and drops a

pebble to the ground. Is the path of the pebble straight or curved? The passenger would see it as a straight line; an observer on the embankment would see it as a parabola. Both are right, because each has a different frame of reference; the passenger views the pebble from the frame of reference of his train, while the other observer views it from the frame of reference of the embankment. Similarly, if the passenger walks toward the head of the train with a speed of 3 miles per hour, one can say that he is traveling 3 miles per hour or 53 miles per hour, depending on the fact whether one takes the train or the earth as the frame of reference. So, too, it is impossible, from the *mere observation* of two trains, to determine which of the two is in motion and which is at rest, provided the observer has no fixed point (e.g., the surrounding landscape) from which to reckon; the phenomenon of motion is the same under either supposition. So long as we cannot discover any fixed, motionless frame of reference for the universe as a whole, it is obvious that we cannot assign any absolutely valid determinations of place and motion for bodies moving in space, except those which are relative to these observable bodies. The *law of inertia*, formulated by Newton and based on the mechanics of Galileo, postulates that a body, which is sufficiently removed from other bodies so as not to be affected by them, will continue in a state of rest or of uniform motion in a straight line. This law gives us the system of co-ordinates or reference bodies to be employed in mechanical description. It applies to *inertial systems*, not to systems having a rotational or accelerated motion, because to an observer on a rotating or accelerated system

the straight line of the inertial system would appear circular or curvilinear.

When, therefore, we have two co-ordinate systems, K and K' , both of which are moving uniformly in a straight line with respect to each other, then any mass which has a uniform translatory motion relative to K will also have a uniform translatory motion relative to a second coordinate system K' . In such a situation the general laws governing natural phenomena are identical for both co-ordinate systems, K and K' . This is the *principle of relativity* in a restricted sense.

Einstein applied this principle to the propagation of light. Light moves in a vacuum in a straight line with a velocity c 300,000 kilometers per second (approximately 186,000 miles). It is the same for all colors. De Sitter, from observations on double stars, showed that this velocity was *independent of the velocity* of motion of the radiant body. This, however, involves serious difficulties, when viewed from the standpoint of classical physics. When one body is at rest and another in motion in the same direction as the light, it should take the light longer to reach the body in motion. The Michelson-Morley experiments showed that there was no evidence of time-lag. Fitzgerald and Lorentz explained this by means of the contraction of moving bodies. Einstein, in accord with the principle of relativity, made a far more fundamental assumption. In his view, since the Michelson effect was null in the inertial system in motion and in the system at rest, it was necessary to assume that aether-drift has no observable influence of any kind on the velocity of light; the measured velocity is the

same in both instances. The medium of transmission can have no effect on the optical and electromagnetic phenomena. Such a medium, therefore, is superfluous. This is Einstein's *postulate of the constancy of light*.

According to Einstein, nature is so constituted in its phenomena and laws, that it is impossible to demonstrate the existence of absolute motion. The newtonian concept of 'absolute space and 'absolute time' is meaningless. The concepts of 'space' and 'time' must be recast and reconstructed to fit the conditions of relativity. There are any number of different systems of space and time, all equivalent in value, depending on the particular inertial systems in which they are found; and every inertial system can consider its own space and time to be the true space and time.

Events are said to occur in time. The term 'time' involves the concepts of *succession* and *simultaneity*. When events succeed each other in time, the one is 'before' and the other is 'after.' When events occur at the same moment, they are said to be 'simultaneous.' The physicist demands that 'time' be reduced to the quantitative measurements of a clock. It is usual to consider the 'time' of an event independent of distance and velocity, possessing a value of its own; no matter how fast or slow things move, the time is the same for all things, whether at rest or in motion, whether with reference to the earth or to the stars. If this were so, time would have an absolute value. The postulate of the constancy of light, however, shows that the concepts of 'succession' and 'simultaneity' have only relative value. For example, if two lights are flashed a mile apart toward

an observer who is midway between the two points, and he himself is stationary, he will see them simultaneously, provided they are flashed at the same moment according to the readings of a clock. But if a second observer is traveling on a speeding train parallel to the path of this light, the second observer will meet the ray coming from one point and recede from the ray coming from the other point, so that the first ray is shortened toward him and the second ray is lengthened; in consequence of this, he will see the one flash earlier than the other, even though he be midway between the two points. It follows that an event may be simultaneous for one frame of reference and not simultaneous, but successive, for another frame of reference. The reverse, of course, is also true; what would appear 'simultaneous' to an observer on a moving frame of reference, would be 'successive' to an observer on a stationary frame of reference. On similar grounds, events happening in the stars may appear to a terrestrial observer to be simultaneous, although these events, due to the difference of distances from the earth, are really in the relation of 'before' and 'after,' the one happening earlier than the other. It will even occur that a 'past' event in the stars, viewed from the earth, will follow some other event and thus appear to be 'future' to it, thus reversing the order of time. Every reference system, therefore, has its own 'time,' and 'time,' together with 'simultaneity' and 'succession,' becomes meaningless, unless we know the reference system to which it applies. This is the *relativity of time*.

The same line of reasoning applies to the measurement of *lengths* and *distances*. They have no absolute values; their values are relative to the different frames of reference. The lengths of moving bodies are contracted or shortened in the linear direction of their motion. Fitzgerald and Lorentz used this principle to explain the negative results of the Michelson-Morley and similar experiments. Einstein accepts the principle of contraction; he finds the reason for it, however, not in the motion itself, but in the motion relative to the chosen body of reference. Thus, the mirror system of the Michelson-Morley experiment was contracted or shortened for a co-ordinate system at rest with respect to the sun, but not for a co-ordinate system which moves with the earth. This explanation is in accordance with the principles of relativity and is more satisfactory. Hence, a body at rest, when measured, will be longer than a body in motion, and the contraction of a body in motion will become greater as the speed increases; however, it is only at high velocities that this contraction is noticeable and measurable. Motion affects all measuring rods and clocks; a clock, for example, will go faster in a reference system at rest than in one which is in motion.

It follows, that 'space' and 'time' are relative to a definite system of co-ordinates or frame of reference and depend upon the standpoint of the observer and the velocity of the system with respect to the observer. This is Einstein's *Special, or Restricted, Theory of Relativity*, and it is based on two *postulates*. The *first* reads: When two systems move with a uniform linear velocity relative to each other, observers in either system, by observation and

measurement of phenomena in the other, cannot learn anything more about the motion than the fact that there is this relative motion. The *second* reads: Measurements of the velocity of light in either system will always give the same numerical value, no matter what the position of the source of light happens to be; in a vacuum the speed of light is constant.

The *consequences* of the application of this theory and its principles on physics are manifold and far reaching. The *inertia* of a body is not constant; measured from the standpoint of the earth, inertia increases and decreases with velocity. The Inertia of a moving body even varies according to different directions relative to motion; at right angles to the direction of motion the variation is less, and more in the direction of the motion itself. It follows from this that the *physical mass* of a body also varies with motion. If we call the mass of a body 'lying in the direction of its motion its 'longitudinal' mass and the mass lying transverse to this direction its 'transversal' mass, then its 'longitudinal mass' increases with the increase of motion and is greater than the 'transversal mass.' In fact, the longitudinal mass increases proportionately as it approaches the velocity of light; and this mass would be infinite, if it could ever retain the velocity of light. The principles of relativity also apply to all electrical and magnetic phenomena, to sound, color, etc., because of the motions and measurements involved. In virtue of this relativity, there are only a few physical constants available for the accurate description of the universe: the velocity of the propagation of light in a vacuum, Planck's quantum of action, the electrical charge

on an electron, the mass of an electron while at rest, and perhaps a few more.

THE GENERAL THEORY OF RELATIVITY

The Special, or Restricted, Theory of Relativity applies only to inertial systems. Under the sole influence of inertia a body will remain in a state of rest or, if it be in motion, will move with a uniform speed in a straight line. A change of the velocity of a moving body, as regards either its speed or direction or both, is termed *acceleration*. Hence, any body passing from rest to motion or from motion to rest, or whose motion is increased or retarded, or whose direction of motion is altered in any manner, is said to be subject to 'acceleration.' According to Newton's Second Law of Motion, it takes a *force* to produce such a change, and this force is measured by the product of the body's inertia by the acceleration produced.

In 1915 Einstein published his *General Theory of Relativity*. There are very few, if any, instances of inertial motion among the natural occurrences of the universe; all, or practically all, belong to the class of accelerated motions. It was the purpose of the General Theory to apply the principles of relativity to accelerated motions. According to the principle underlying the Special Theory of Relativity, two reference-bodies, the one at rest (K) and the other in a uniform rectilinear motion (K') are equivalent to each other, so that, in the physical description of natural events, the general laws of nature have the same form in both. This principle enunciates the physical relativity of all *uniform*

motion. In a broad way, the *general* principle of relativity, as extended to include non-uniform motion, may be worded to read: All reference-bodies (K , K' , etc.) are equivalent for the formulation of the general laws of nature, or description of natural processes, *irrespective of the character of their motion*. The principle, therefore, applies also to reference-bodies in *rotating* or *curvilinear* motion.

In classical physics the description of the scene of an event and of the position of a body in space was based on the designation of some point of reference on a rigid body. Measurements were made by using the cartesian system of co-ordinates, namely, three plane surfaces perpendicular to each other and rigidly fixed to a rigid body. The *cartesian* co-ordinate system presupposes the validity of euclidean geometry and has value only for a euclidean continuum of three dimensions. Now, it is not always possible to use rigid reference-bodies in the space-time description of events or positions, and thus the cartesian system of co-ordinates will not be adequate under all conditions. We must substitute the *gaussian* system of curves for the cartesian system, because the gaussian system can be applied to a continuum of any number of dimensions and not merely to a euclidean continuum of three dimensions. The general principle of relativity then receives the following expression: All gaussian co-ordinate systems are essentially equivalent for the formulation of the general laws of nature. The special theory of relativity has validity only for inertial reference bodies uninfluenced by a gravitational field. As a matter of fact, however, all moving bodies are subject to the influence of a *gravitational field*, and that means *accelerated* motion.

Even clocks are affected in this manner, and that involves changes in their indication of time, which is an important item in all physical description of events. The Special Theory of Relativity must, therefore, be expanded into a General Theory of Relativity.

In applying the general principle of relativity to the effects of a gravitational field, Einstein combined the concepts of *inertia* and *gravitation* in a remarkable synthesis and subjected both to relativity. In this manner he attempted to arrive at a better understanding and a more adequate explanation of the working of gravitation. He was led to this synthesis by the fact that physics measures the inertia of a body by its weight. Science never has been capable of explaining why all bodies of whatever mass fall with the same speed of acceleration in a vacuum. Einstein finds the explanation of the phenomenon in the theory that the gravitational mass of a body is equal to its inertial mass, both being the result of the accelerated motion of an inert body. This leads to Einstein's *Principle of Equivalence*: For any one particle in a gravitational field it is possible to replace the effect of the field by a mathematical transformation of axes. This means, that the effect observed upon a body by a gravitational field would appear to the observer to be the same if his reference system would acquire an acceleration equivalent to that of the body.

Einstein clarifies this principle by means of an illustration. If we imagine a large chest or box (something like the cage or compartment of an elevator) situated in space far from all appreciable masses, this chest would approximate the condition of an inertial system. If this chest

is pulled upward by an imaginary being with a constant force, it will move with a uniformly accelerated motion. This accelerated motion will be transmitted to the body of an observer isolated in the chest and to any object, say a ball, which he holds in his hand. On releasing the ball from his hand, it will be freed from the acceleration of the chest and drop to the floor with an accelerated relative motion. Whatever kind of object he releases, to the man in the chest it will appear that its acceleration is always of the same magnitude, and he will conclude that he and the chest are at rest in a gravitational field. If the man affixes a body to the free end of a rope suspended from the lid of the chest, a tension will be caused in the rope and it will assume a vertical position. The man will attribute this to the downward pull in a gravitational field and conclude that it is the *gravitational mass* of the suspended body which produces the tension. An observer, situated on another system of reference and poised freely in space, will interpret the phenomenon in an entirely different manner; he will attribute the physical phenomenon of the tension to the accelerated motion of the chest, not to a gravitational field, and conclude that it is the *inertial mass* which determines the magnitude of the tension. This proves the relativity law of the equality of gravitational and inertial mass.

The problems of gravitation thus become subject to the general theory of the relativity of all motion, and the existence of aether as a medium becomes superfluous.

The *consequences* of the General Theory of Relativity have an important bearing on the doctrine of light. The

behavior of light will be different in a galilean inertial reference-system and in an accelerated gravitational reference-system. In the galilean reference-system K , light will travel rectilinearly with a velocity c ; here the velocity, for instance, on the surface of the earth is constant. But in an accelerated gravitational field the rays of light will be propagated *curvilinearly*. Einstein estimated, and predicted, that the magnitude of the curvature of light rays, when passing very close to the sun, should be 1.7 seconds of arc. Subsequent observations, made during solar eclipses, substantially verified Einstein's claims, at least to the satisfaction of many scientists. A second application of the general principle of relativity was made in the development of formulas for the motion of planets, particularly with regard to the orbital motion of *Mercury*. After all allowances had been made for the gravitational factors involved, the rotation of Mercury, which is in the direction of the motion of the planet, could not be accounted for by classical physics by an amount equal to 43 seconds of arc per century. Newton's laws failed to explain the phenomenon. By means of relativity equations Einstein succeeded in determining the true rate of rotation to within one second of arc per century. Einstein's third triumph occurred, when his prediction was verified that *light waves* would be *lengthened* in the gravitational field of the sun, and that this lengthening would vary with the respective wave lengths. For the blue light of wave length 4000\AA , he estimated that this would amount to 0.008 angstrom units. Grebe and Bachem, in 1920, claimed to have observed such a lengthening; it was equivalent to the recession of the

source of light of 0.56 kilometers per second. This means that the vibration of a light wave in the sun occurs at a rate which is slower than the rate of a light wave for a similar atom on our globe. In the eyes of many scientists, these predictions, resulting from formulas deduced from relativity equations without the aid of special assumptions, must be looked upon as strong arguments in favor of the Theory of Relativity, because Relativity succeeded where classical physics had met with failure.

THE NON-EUCLIDEAN UNIVERSE

It is a commonplace among relativists that the main features of the universe are *non-euclidean in character*; that is, they do not conform to the three dimensions of euclidean geometry. The universe must be envisioned as a *four-dimensional spacetime continuum*. In order to give us a comprehensive picture of the non-euclidean universe, A. S. Eddington¹ summarized the salient points of the theory of relativity.

1. The order of events in the external world is a four-dimensional order.

2. The observer either intuitively or deliberately constructs a system of meshes (space and time partitions) and locates the events with respect to these.

3. Although it seems to be theoretically possible to describe phenomena without reference to any mesh-system (by a catalogue of coincidences), such a description would be cumbersome. In practice, physics describes the relations of the events to our mesh-system; and all the terms of

elementary physics and of daily life refer to this relative aspect of the world.

4. Quantities like length, duration, mass, force, etc., have no absolute significance; their value will depend on the mesh-system to which they are referred. When this fact is realized, the results of modern experiments relating to changes of length of rigid bodies are no longer paradoxical.

5. There is no fundamental mesh-system. In particular problems, and more particularly in restricted regions, it may be possible to choose a mesh-system which follows more or less closely the lines of absolute structure in the world, and so simplify the phenomena which are related to it. But the world-structure is not of a kind which can be traced in an exact way by mesh-systems, and in any large region the mesh-system drawn must be considered arbitrary. In any case the systems used in current physics are arbitrary.

6. The study of the absolute structure of the world is based on the 'interval' between two events close together, which is an absolute attribute of the events independent of any mesh-system. A world-geometry is constructed by adopting the interval as the analogue of distance in ordinary geometry.

7. This world-geometry has a property unlike that of euclidean geometry in that the interval between two real events may be real or imaginary. The necessity for a real distinction, corresponding to the mathematical distinction between real and imaginary intervals, introduces us to the separation of the four- dimensional order into space and time. But this separation is not unique, and the separation

commonly adopted depends on the observer's track through the four-dimensional world.

8. The geodesic, or track of maximum or minimum interval-length between two distant events, has an absolute significance. And since no other kind of track can be defined absolutely, it is concluded that the tracks of freely moving particles are geodesics.

9. In euclidean geometry the geodesics are straight lines. It is evidently impossible to choose space and time-reckoning so that all free particles in the solar system move in straight lines. Hence, the geometry must be non-euclidean in a field of gravitation.

10. Since the tracks of particles in a gravitational field are evidently governed by some law, the possible geometrics must be limited to certain types.

11. The limitation concerns the absolute structure of the world, and must be independent of the choice of the mesh-system. This narrows down the possible discriminating characters. Practically the only reasonable suggestion is that the world must (in empty space) be 'curved no higher than the first degree'; and this is taken as the law of gravitation.

12. The simplest type of hummock with this limited curvature has been investigated.² It has a kind of infinite chimney at the summit, which we must suppose cut out and filled up with a region where this law is not obeyed, i.e., with a particle of matter.

13. The tracks of the geodesics on the hummock are such as to give a very close accordance with the tracks computed by Newton's law of gravitation. The slight

differences from the newtonian law have been experimentally verified by the motion of Mercury and the deflection of light.

14. The hummock might very properly be described as a ridge extending linearly. Since the interval-length along it is real or time-like, the ridge can be taken as a time-direction. Matter has thus a continued existence in time. Further, in order to conform with the law, a small ridge must always follow a geodesic in a general field of space-time, confirming the conclusion arrived at under '8'.

15. The laws of conservation of energy and momentum in mechanics can be deduced from this law of world-curvature.

16. Certain phenomena such as the Fitzgerald contraction and the variation of mass with velocity, which were formerly thought to depend on the behavior of electrical forces concerned, are now seen to be general consequences of the relativity of knowledge. That is to say, length and mass being the relations of some absolute thing to the observer's mesh-system, we can foretell how these relations will be altered when referred to another mesh-system."

As a consequence of the theory of relativity, says Eddington, "our partitions of space and time are introduced by the observer and are irrelevant to the laws of nature; and therefore the current quantities of physics, length, duration, mass, force, etc., which are relative to these partitions, are not things having an absolute significance in nature." That does not mean that there is nothing absolute in the features of the world, because "material particles and

geodesics are both features of the absolute structures of the world.”³ “The relativity theory of physics reduces everything to relations; that is to say, it is structure, not material, which counts. The structure cannot be built up without material; but the nature of the material is of no importance.”⁴ The four-dimensional world is not merely an illustration of mathematical processes. Eddington is emphatic, that “the real three-dimensional world is obsolete and must be replaced by the four-dimensional space-time with non-euclidean properties.”⁵

Eddington gives the following picture of Einstein’s world according to curved space-time. “His world is cylindrical-curved in the three space dimensions and straight in time dimension. Since time is no longer curved, the slowing of phenomena at great distances from the observer disappears. . . The radius [of the universe] is thought to be of the order 10^{13} times the distance of the earth to the sun. A ray of light from the sun would take about 1000 million years to go around the world; and after the journey the rays would converge again at the starting point, and then diverge for the next circuit. The convergent rays would have all the characteristics of a real sun so far as light and heat are concerned, only there would be no substantial body present. Thus corresponding to the sun we might see a series of ghosts [phantom suns, Author.] occupying the position where the sun was 1000, 2000, 3000, etc., million years ago. . . . Perhaps one or more of the spiral nebulae are really phantoms of our own stellar system.”⁶

This brief description of Einstein’s Theory of Relativity, stripped of its mathematical calculations, is rather

inadequate; but it should give the student an idea of its general trend and implications.

SCIENTIFIC OBSERVATIONS

What are we to think of this theory? Relativists attempt to express unusual ideas in customary terms, and the result is often confusing and sometimes misleading. We must bear in mind, however, that they must use the terms of language as they find them. It is the ideas, more than the language, which we must consider.

Viewed from the scientific standpoint, Einstein's Theory of Relativity has for its purpose a more exact formulation of the laws which govern observable phenomena of nature. This is a legitimate endeavor. How far the theory succeeds in this, is a matter of scientific investigation and verification. The final verdict rests with the physical and mathematical sciences. While many scientists have accepted the theory, it would be erroneous to think that it has been universally adopted; in fact, many prominent physicists and mathematicians refuse to subscribe to it.⁷

Even from a scientific point of view, the theory seems to rest upon a rather insecure foundation.

One of the phenomena which called forth the Theory of Relativity was the apparently negative result of the Michelson-Morley experiment. Yet, as a matter of fact, the result was, to a large extent, positive. Michelson, Morley, Miller, and Piccard estimated that an aether-drift actually occurred. How, then, can Einstein and the relativists assert so emphatically, that an aether-drift could, from the very

nature of the case, neither be measured nor detected, especially when these scientists arrived at their conclusion through practical experiments whereas Einstein arrived at his through theoretical considerations? Secondly, while the aether-drift was not as quantitatively great as expected and calculated, might this not be due in part to the imperfection of the mechanical apparatus? The surfacing of the mirrors could never be perfect, and the very motion of the molecules in the whole system should presumably have an effect upon the extremely fine waves of light, so as to interfere with completely accurate results. Finally, if we assume that aether is viscous and is carried along to a certain degree by the earth, the drift on the surface of the earth would naturally be less than at some distance from the earth; the measurements would not reach an absolute value, but only a diminished approximation. The issue does not seem definitely settled. Perhaps more refined experiments will solve the problem one way or the other. At any rate, there is a discrepancy between practical experiments and theoretical calculations which must not be overlooked or ignored. In case a real aether-drift should ever be demonstrated experimentally, the foundation of the theory of Relativity will be destroyed.

Then, too, the truth of the *postulates* of the theory are by no means self-evident. There is the postulate of the *constancy of light*. This constancy of the velocity of light (300,000 kilometers per second) is not assumed for all media; we know that it varies for gases and liquids. But it is assumed for the passage of light in a vacuum, and that irrespective of the motion of the source which emits the

rays: This is an *a priori assumption*. If light were a wave motion, then the wave would indeed go forward, no matter what the velocity of its source. Light, however, consists of photons which are material particles, and the variations in the energies of the source (e.g., the sun) might possibly bring about a variation in the velocity of the light. There is little evidence to show that this possibility must be ruled out. And if the aether exists as a medium in space, as most scientists hold, any variation in its density would in all probability affect the velocity of light to some degree, no matter how slight, so that it would not be altogether constant.

It is also a postulate of the relativity theory that motion is relative and that all *reference-systems are equivalent*. 'Absolute motion' is meaningless, because it is impossible to determine any fixed points in the universe from which the measurements of absolute distances and motions could be made. This is, of course, a *practical* difficulty, originating in the meagerness of our knowledge of the universe. But that is by no means a positive proof that such fixed points do not exist. There might be cosmic bodies or cosmic centers which are stationary and could serve as the guiding points for the measurement of absolute distances and velocity. The fact that we do not, as yet, know them, is beside the question; improved knowledge may reveal them. In this case, absolute motion could be determined. Why should not the outermost boundaries of the finite universe act as an absolute frame of reference? We cannot determine them at present, but they certainly are there and may possibly be discovered in the future. The existence of a diurnal

variation of cosmic rays reaching our earth, which now seems established, might possibly become, as some scientists believe, a method of determining the position and motion of the earth with regard to some fixed medium or point of reference in space. If this be true, the basic assumptions of relativity will have lost much, if not all, of their validity.⁸

Besides, if the equivalence of the reference-systems is stressed, it should be equally true to say that the sun and the stars revolve around the earth as it is to say that the earth and the planets revolve around the sun; as a matter of fact, from the standpoint of the terrestrial observer, they do appear to revolve around the earth once in every 24 hours. This, however, cannot consistently be maintained. The *rotation of the earth* must be upheld, because only on that supposition can science explain the tides, the bulging at the equator and the flattening at the poles, the deviation of the pendulum and of the gyroscope, and similar phenomena. To assume the contrary, would involve science in insurmountable difficulties. It is inconceivable that the enormous masses of the stars galaxies, thousands and millions of light-years distant, *could revolve around the earth in the period of a day*. The universe would burst asunder. It is a principle of the Theory of Relativity that bodies would have an infinite mass, if they attained the speed of light. Considering the distance to be covered by the universe at large, if it revolved around the earth, the stars would travel at a rate far in excess of the speed of light; and that, the Theory of Relativity itself states, is an impossibility. Theoretically, in the case of two isolated

reference-systems, motion may be considered relative, so that neither system has a preference; practically, however, in the case of the actual physical conditions of the earth and the stars, the earth has a preferential position as a reference-system, and its rotational motion on its axis should be considered *absolute*, not merely relative. Of course, the Restricted Theory of Relativity applies, not to the accelerated motion of a rotational system, but to the rectilinear motion of an inertial system. It must be remembered, however, that it is a cardinal principle of the theory that absolute motion is meaningless and that all motion is relative. It was the express purpose of the General Theory of Relativity to extend the principle of relativity to accelerated motion, including rotational movement, so that all reference-bodies (K , K' , etc.) are equivalent for the description of natural processes, *irrespective of the character of their motion*. Under this supposition, it would, according to the principles of relativity, seem impossible to attribute an absolute character to the rotation of the earth. Reason, however, demands that this rotational motion be considered absolute.

Then there is the Fitzgerald-Lorentz *contraction* of moving bodies in the direction of their motion. This looks very much like an hypothesis made expressly for the purpose of eliminating an inconvenient phenomenon. If all bodies, even clocks and measuring rods, contract in this manner, so that no absolute standards of measurement remain, such a contraction and its amount could never be detected experimentally. The hypothesis seems to be nothing more than a pure assumption. Concerning this

contraction, Eddington remarks: "It may seem somewhat strange that we should be able to deduce the contraction of a material rod and the retardation of a material clock from the general geometry of space and time. But it must be remembered that the contraction and retardation do not imply any absolute change in the rod and the clock. The 'configuration of events' constituting the four-dimensional structure which we call the rod is unaltered; all that happens is that the observer's space and time partitions cross it in a different direction."⁹ This explanation is hardly convincing. It makes the contraction a matter of mere appearance, not a reality. An observer on the earth would not be able to observe it, but an observer, let us say, on Mars would. How do we know? Since we have no means of verifying the contention, the theory is a mere assumption. Again, if the contraction is not real, how could the mechanical apparatus be affected by it, so that the experiments were more or less negatived in their general results?

These are a few of the problems and perplexities — there are more — which confront the Theory of Relativity, when viewed from the standpoint of science.

PHILOSOPHIC OBSERVATIONS

Viewed from the standpoint of philosophy, we encounter further difficulties in the theory. If the Theory of Relativity were purely scientific, philosophy would not be called upon to pass judgment on it. The theory, however, contains certain implications of a philosophic character which cannot

go unnoticed; they amount to a metaphysics of nature, and that is a distinctly philosophical problem.

A persistent confusion of the conceptual and real order seems to underlie the thinking of most relativists. The theory had its origin in the difficulty of making scientifically exact measurements of motion, space (dimensions), and time. Relativity sought more accurate mathematical methods for the description of physical events and laws. It seemed more reasonable to express relations and measurements of things in motion, space, and time by means of frames of reference rather than to attempt to express them in absolute terms. Scientifically, this is admissible. Most relativists, however, then took the fatal step of ascribing to the objects themselves what pertained only to their modes of measurement; the relative measurement of motion, space, and time was transferred to these entities themselves so that they themselves lost absolute meaning. It is true, of course, that motion, space, and time do not exist as absolute entities, distinct from, and independent of, the bodies in which they are present. In this sense, it is true to say that they are 'relative' in character. If, then, relativists intend nothing more than the assertion that we cannot make an absolute determination of the *quantitative measurement* of these realities, unless we know the relation of our frame of reference to other frames, the assertion need not be impugned. But when the assertion is made that motion, space, and time have no 'absolute significance' *in themselves* as realities in nature and that they cannot be recognized as such, then the assertion is a philosophical error.

Motion, space, and time, in the sense of real motion, space, and time, have an absolute significance and can be recognized as such. I cannot doubt the testimony of my consciousness that I actually move in space and time, when I walk along the street or when I drive an automobile along the highway, and that it is not the buildings and countryside which move while I am at rest. *Theoretically* and *abstractly*, merely as a mathematical equation and construction, it may make no difference whether I state that I or the objects around me are moving or at rest; the result of the calculation would be the same. *Practically* and *concretely*, however, I experience no difficulty in determining that I am really moving in an 'absolute sense,' even though I may not be able to determine the rate of this motion with reference to some problematical 'fixed points' somewhere out in interstellar space. Einstein maintains that it is impossible to ascertain which of two frames of reference is in motion and which at rest; the quality of the motion is the same, whether, for example, the train or the earth moves. He is wrong. If four trains move out of a station and each goes in a different direction — north, east, south, and west — their motion is real and has absolute significance; otherwise one must assert that the earth moves in opposite directions at the same time. The same applies to 'space' (dimensions) and 'time.' To say that 'time' itself can be reversed simply because light consumes time to signalize the existence of a cosmic event far out in the universe, would undermine the foundation of all science, the *Principle of Causality*; because under such a supposition an effect could have existence prior in time to the causal action which gives it existence.

Relativists frequently speak of 'motion,' 'space,' and 'time,' as if they were the product of the observer's mental processes and not realities in nature. That is a remnant of *kantism*. The correct philosophical notion of these realities has been elucidated in previous chapters and need not be repeated here.

Relativists generally discard the idea of an aether, because it cannot be observed and measured. On the same grounds they should discard energy as a factor in the universe. No one observes energy as such, but only the transformations effected by energy. Furthermore, in the place of aether they substitute *space-time*. They speak of 'space-time' as if it were an entity existing independent of the bodies which make up the world; to all appearances, this 'space-time' performs all the functions of the discarded aether. That the absence of a real aether involves the doctrine of an *action at a distance*, does not worry them. Notwithstanding the fact that relativists reject Newton's idea of 'absolute space' and 'absolute time,' this four-dimensional space-time bears a strong resemblance to both. The description of the universe as a 'non-euclidean *space-time continuum*' with a 'curvature' which leads back to its starting point, so that there might be 'phantom' suns and stars in the heavens, is something so weird that one cannot avoid the suspicion that a mathematical formula and a geometrical construction has been substituted for the reality of the physical world. So far as our actual experience of the world and its dimensions are concerned, it is *euclidean* in every respect. To deny the essential validity of

this experience, is tantamount to a destruction of the foundation of all knowledge.

There is much in the Theory of Relativity which is constructive and sound. But there seems to be something radically wrong with its premises, when they lead to conclusions so far removed from the concepts of conservative science and philosophy.

SUMMARY OF CHAPTER XVIII

The Theory of Relativity, though mainly a theory of physics, involves *metaphysical* concepts.

1. *Origin of the Theory.* It has its origin in the *problem of motion*. Can we find an 'absolute frame of reference' which would give us absolute standards of measurement? Scientists sought it in the *aether*. The experiments of Michelson, Morley, Miller, and others, failed to find an 'aether-drift' of the amount expected. Fitzgerald and Lorentz explained this by the 'contraction' of bodies in the line of motion.

2. *Special Theory of Relativity.* Einstein, in 1905, formulated this theory as an explanation of the uniform rectilinear motion of inertial systems. When we have two co-ordinate systems, K and K' , both of which are moving uniformly in a straight line with respect to each other, then any mass which has a uniform translatory motion relative to K will also have a uniform translatory motion relative to a second co-ordinate system K' . There is a relativity of 'time' and 'space.' Light is constant in its velocity, irrespective of the velocity of motion of the radiant body. Every inertial system can consider its own space and time to be the true space and time, because 'space' and 'time' have no absolute significance; they depend on the observer.

The Special, or Restricted, Theory is based on *two postulates*:

1. When two systems move with a uniform linear velocity relative to each other, observers in either system, by observation and measurement of phenomena in the other, cannot learn anything more about the motion than the fact that there is this relative motion;
2. Measurements of the velocity of light in either system will always give the same numerical value, no matter what the position of the source of light happens to be; in a vacuum the speed of light is constant.

3. *General Theory of Relativity*. Einstein, in 1915, expanded the theory to include *accelerated* motion. The general principle reads: All reference-bodies (K , K' , etc.) are equivalent for the formulation of the general laws of nature, or description of natural processes, *irrespective of the character of their motion*. More abstractly: All gaussian co-ordinate systems are essentially equivalent for the formulation of the general laws of nature.

Einstein combined the concepts of inertia and gravitation and enunciated the *Principle of Equivalence*: For any one particle in a gravitational field it is possible to replace the effect of the field by a mathematical transformation of axes; gravitational mass and inertial mass are equivalent.

4. *The Non-Euclidean Universe*. The real three-dimensional world is obsolete and must be replaced by the *four-dimensional space-time with non-euclidean properties*. The world is cylindrical-curved in the three space

dimensions and straight in time dimensions. The curvature of space-time is such, that the rays of light can return to their starting point.

5. *Scientific Observations.* The theory seems to rest upon an *insecure foundation*. The Michelson-Morley experiments were not altogether negative, but positive, in their detection and measurement of an aether-drift. The *postulates* are not self-evident. It has not been proven that light is constant under all conditions. Nor is it clear that all reference-systems are equivalent and that absolute motion is meaningless. The rotation of the earth should be considered 'absolute,' otherwise we could assert that the universe rotates around the earth in 24 hours. The Fitzgerald-Lorentz contraction is an assumption made without positive proof.

6. *Philosophic Observations.* The relativity metaphysics of nature seems to rest to a large extent on a *confusion of the conceptual and real order*. Relativists ascribe to the objects themselves what pertains only to their modes of measurement. 'Motion,' 'space,' and 'time' have an *absolute* significance and can be recognized as such; experience proves this. If 'time' could be reversed, the Principle of Causality would be undermined.

Space-time becomes a real entity and is substituted for the aether. It involves 'action at a distance.' The 'non-euclidean space-time continuum' appears to be a mathematical formula and a geometrical construction substituted for the reality of the physical world. Our experience shows that the world is *euclidean*.

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1 *Space, Time, and Gravitation* (Cambridge University Press, 1921), pp. 149-151.

2 In Eddington's book *Space, Time, and Gravitation*

3 *Ibid.*, pp. 155, 156.

4 *Ibid.*, pp. 197

5 *Ibid.*, pp. 181

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7 *The Case Against Einstein*, by Arthur Lynch (London: Philip Allen, 1932, p. XXVII

8 See Harvey B. Lemon, *Cosmic Rays Thus Far*, p. 124

9 *The Mathematical Theory of Relativity*

Chapter 19

BEGINNING AND END

ONE OF THE MOST FASCINATING COSMOLOGICAL PROBLEMS IS that of the beginning and the end of the world. Even the illiterate person, looking into the skies on a clear night, cannot but wonder whence the stars came and whither they go, whether they were there always and whether they will remain there forever. The problem of the origin and the final destiny of the world occupied the minds of the earliest thinkers. It is a burning question among the scientists and philosophers of our own day, because the materialistic trend of the times has added a new interest to the age-old search for the answer. It was inevitable that the increased scientific knowledge of the universe would furnish data which might be of assistance in attempting a solution.

SCIENTIFIC COSMOGONY

There is no doubt in the minds of scientists and philosophers alike, that the *earth* arrived at its present state through some process of *natural evolution*. Geology and paleontology have uncovered an overwhelming amount of evidence which convinces the impartial student that a

geogony, or evolution of the earth through natural agencies, actually took place. As was pointed out before (Chap. 15), this evolutionary process consumed hundreds of millions, and most likely billions, of years. It was but natural to inquire whether the solar system and the universe at large, as we know them now, were not the result of an evolution of some kind. Such a theory of the origin and development of the universe through natural causality is termed *cosmogony*. Leaving aside the cosmogonical ideas of the older scientists and philosophers, who had no accurate knowledge of the universe, we will restrict ourselves to the theories based on scientific data.

First among these is the *Kant-Laplace Nebular Hypothesis*. This hypothesis attempted to explain the origin of the solar system. *Kant*, in 1755, proposed the theory that the material which gave rise to the solar system was a tenuous gas. It covered the area of the present system in a uniform manner. The heavy elements attracted the lighter ones. Repelling forces were also at work, giving a rotary motion to the nuclei of this material. There were many such nuclei; but frequent collisions gradually formed definite centers of condensed material, so that eventually the entire material became concentrated in the massive central sun and the planets, with minor satellites and asteroids. In this manner he sought to explain why the planets and the smaller bodies are all in a plane and move in the same direction in nearly circular orbits.

Laplace, in 1796, proposed a theory which resembled Kant's in its fundamental assumptions. The sun, he assumed, was shrouded in the beginning with an

atmosphere or nebula of hot, slowly rotating, gaseous material. Upon cooling, this atmosphere contracted and acquired a faster rotation, until all the material had arranged itself in the plane of the sun's equator. Eventually this rotation increased to such a degree, that the centrifugal force of the equatorial nebular mass surpassed the attraction of the sun, and then this mass spun out into space. Left alone to itself, the disconnected nebula condensed toward the center, forming the nucleus of a planet, which in turn was enveloped with a nebula of gaseous material. Paralleling the process of the sun, satellites were then formed out of the material surrounding the planet, until the remaining material was used up. In the meantime, the sun went through a similar process, repeating the performance until all the known planets, together with their satellites, came into being. By an extension of the solar theory to other star systems, the development of the universe could be explained. The Nebular Hypothesis is now abandoned. The mechanics involved violate the law of the conservation of moment of momentum; the gaseous material would in all probability be dissipated into space and not concentrate into solid bodies; the theory does not account for the eccentric orbits of comets and asteroids, for the east-to-west motion of some satellites, and for the fact that the inner moon of Mars revolves in a period shorter than the planet's own period of rotation.

The *Planetesimal Hypothesis* was advanced by *Chamberlin and Moulton* at the beginning of the present century. According to this view, a very large number of

diminutive planets, or 'planetesimals,' revolved around the sun; they were more or less in the same plane and traveled in intersecting orbits. The configuration in general was that of a spiral nebula with centers of condensation. Gradually, in the course of the revolutions, *collisions* occurred between these centers and the planetesimals; the result was the growth of the planets and their satellites by continuous accretion. Due to the fact that fewer collisions occurred in some regions, the smaller planets and the asteroids retained orbits of greater eccentricity and inclination. In order to account for the original 'spiral' structure, it was suggested that the passage of some large star might have occasioned great *tides* in the sun; in consequence of these tides, enormous masses of gas were torn out of the sun in opposite directions, i.e., toward and away from the star. After the star had passed, portions of this material were drawn back into the sun, increasing its rate of rotation; other portions formed the planetesimals. *Jeans* and *Jeffery* modified this theory to some extent. They assume that the separated masses became *liquified* through cooling. These large liquified masses eventually became the planets and their satellites. This tidal action of the passing star would account for the general plane and the west-to-east direction of the whole system, because these ejected masses followed the direction of the orbit of the star. *Russell* objected to this tidal theory on the grounds that the average relative angular momenta of the different planets are far in excess of what the theory can allow. To offset this, he assumes that the sun was originally a *double star*; one of the two stars exploded under the influence of

the passing star, and a portion of its material became the planets.

These hypotheses are ingenious. The initial conditions, however, are *arbitrarily assumed*. There is, for example, no real evidence of any kind to show that a star ever passed so close to the sun as to cause tidal eruptions of a nature which could give rise to the planetary system. These hypotheses are interesting conjectures of what might plausibly have happened. None of the cosmogonical theories advanced so far offers any suggestions as to what the primordial stuff of the universe was like, how it originated, and in what manner it developed into the present world system. We can safely assume that an actual evolution of some kind took place in the course of the eons of time. The fragmentary character of meteors, the various stages of incandescence among the stars, the flaming eruptions of 'novae' ('new stars') in the heavens, the presence of vast nebular patches in interstellar space, the constant expenditure of enormous quantities of energy — all are evidence of causal agencies at work which must have produced far-reaching changes in the development of the universe. As yet, however, science has not been able to piece together the evidence and give us a comprehensive picture of the evolution which probably took place.

CONTINGENCY OF THE WORLD

Science, then, is of little help to the philosopher in his endeavor to solve the problem of the beginning of the world. It offers no factual evidence concerning the

development of the universe in the remote ages of the past; much less is it able to state whether the universe had a beginning in time or whether it was present from all eternity. The philosopher, studying the nature of the bodies comprising the universe, must arrive at a decision, if he can, by applying the *principles of reason* to the data of science. The first step in this direction will be taken, if he can answer the question: Is the world and its contents 'necessary' or 'contingent'?

A being is said to be necessary, when its nature or essence is such that it *demand*s existence. It is *contingent*, when its nature or essence is such that it does *not demand* existence. The necessary being cannot be nonexistent; it must exist. The 'contingent' being can be nonexistent; it need not exist. It would be a contradiction in terms, if the 'necessary' being did not exist; but it would involve no contradiction, if the 'contingent' being did not exist. In the 'necessary' being existence is included in its very essence; in the 'contingent' being existence is superadded to the essence.

The world is contingent.

It is clear, for one thing, that organic life and the organisms themselves, taken singly and collectively, are contingent beings. The single organisms, whether plants, animals, or men, come into existence and pass out of existence. Organic life in general did not always exist on our globe; it began at a definite period in geological history. How it originated, is beside the question. In its earlier stages of development, the earth was a superheated mass, and no organism could live under such conditions. Similar

conditions still prevail on many of the stars, and life, as we know it, is impossible there. 'Whatever planets and stars there may be which could now support life, they could not have done so in the past, because they, like the earth, must also have been in a superheated condition, incapable of sustaining life. Organisms, therefore, are certainly contingent and not necessary in their being and existence.

Inorganic beings are also contingent. There is nothing in the single *stars* and other celestial bodies to show that they are necessary beings. On the contrary, everything points to the fact that they originated through a process of cosmic development. They undergo continual change. Some even break up and lose their identity; the existence of meteors is a clear indication that they are the fragments of disrupted stars. This proves that stars, as stars, are not necessary beings. And what is true of one star, must be true of all, because they all consist of the same materials and are structurally alike. Besides, it involves no contradiction to assert that, if *any* single celestial body ceased to exist, the universe would still be there. More stars could exist than actually exist, and fewer stars could exist than actually exist. The *number*, *size*, and *duration* of the stars and of all bodies in the universe could be different; there is nothing necessary in all this, as if a change in the configuration of the universe would be impossible. In fact, it is conceivable that an entirely different kind of world could exist in the place of the present one; there is nothing contradictory in such an idea. Hence, the universe, as now constituted, is not necessary, but contingent.

The entire universe consists of the same types of *chemical compounds* and elements. It is a known fact, however, that chemical compounds are continually made and unmade. They have no necessary existence. They come and go in a ceaseless process of change. Old compounds lose their identity and new compounds take their place. Even the elements are contingent in their being and existence. This is seen most clearly in the case of the radioactive elements; they suffer a spontaneous disintegration. All elements can be changed by artificial bombardment in the laboratory. They also change to a great extent through chemical reaction and ionization. It follows, then, that chemical compounds and elements are contingent beings.

Even the *subatomic particles* cannot be said to be necessary, in the sense that their nonexistence would involve a contradiction in terms. We know that the number of electrons exceeds by far the number of protons, neutrons, positrons, etc.; the number of the latter, therefore, could be larger than it is. Similarly, why should it be inconceivable that these particles be increased or decreased, *absolutely speaking*, in number, volume, mass, electric charge, and so forth? Modern scientists are insistent that mass and even matter can be converted into energy, and reversely. If this were true, it would be an incontrovertible proof that matter and energy are contingent in their being and existence. We do not agree with this, at least in so far as the 'ontological mass' is concerned, because it seems impossible that matter, which is a substance, can be changed into energy, which is a

qualitative accident. Be this as it may, no one can prove that these particles are individually so necessary in their being and existence, that their nonexistence would be *intrinsically impossible*; it is only on this supposition that they can be said to be 'necessary.' Since everything else in the universe is contingent, they also must be considered 'contingent.' At any rate, the burden of the proof rests on the shoulders of the opposition. The very fact that all material beings are influenced by others and have a natural *relation* to others (for example, electrons and protons, due to opposite electric charge), is indication enough that they are *essentially relative* in their being; this excludes any sort of essential independence and necessity in the individual.

BEGINNING IN TIME

Everything in the universe is contingent; no being is such that we would be compelled to consider its nonexistence as intrinsically impossible. We must conclude, therefore, that the existence of all bodies is not a part of their essence, but is something adventitious. This brings up the question: Does the universe exist *from eternity*, or did it, as a matter of fact, have a *beginning in time*?

In speaking of 'time' in this connection, it will be well to recall that the notion of 'time' is derived from a measurement of the motion of bodies. 'Time,' as such, is a conceptual entity, with its foundation in the changes occurring in bodies. *Concrete time* is coincident with the particular duration of the particular bodies. Outside 'concrete time' there is nothing but 'possible time,' and this

is conceived by the mind as 'absolute time.' *Actual time*, therefore, has no existence except in the concrete time of particular bodies. Consequently, when the question is asked whether the universe existed from eternity or had a beginning in time, the sense is: Does the world exist *without a beginning*, or did it *have a beginning* and time have a beginning with it? If the world exists without a beginning, then it exists from eternity, and time also exists in it and with it from eternity. And since the universe is not an abstraction, but consists of actual bodies and material entities, it is a question here about the absolute beginning of the materials out of which the universe evolved in the course of the ages.

The universe had a beginning.

This follows logically from the *contingency* of the world. Since none of the beings in the world are such in their nature or essence that existence must be considered as necessary to them, so that their nonexistence is inconceivable and impossible, there must be a *sufficient reason why they exist rather than not exist*. Nothing can happen without a sufficient reason to account for it happening.¹ Since existence is not essential to a contingent being, the sufficient reason for its existence does not lie in the essence of this being itself. It follows, then, that a contingent being must have the sufficient reason for its existence in some other being which is *prior* to it and *gave* it existence. If this were not so, the contingent being would have no sufficient reason for its existence, and it would never have existence. This means, that its existence is a given and *caused* existence, and it did not always have

existence, but was brought from nonexistence to existence by an extraneous cause. This means further that its existence had a beginning, and concrete time had a beginning with it. Hence, the universe, which is contingent, had a *beginning in time* and does not exist from eternity

Other considerations lead to the same conclusion. Science has been unable to find any formless, homogeneous primordial stuff, out of which the universe might have evolved as out of some ultimate material. The universe is composed of bodies, compounds, elements, and subatomic particles; the latter are, so far as science knows, the ultimate actual components of all things. Now, there must be a sufficient reason to explain the peculiarities of these particles: their *kinds*, their *size*, *weight*, *mass*, *number*, *energy content*, *electric charge* or absence of charge (i.e., with respect to neutrons, if they are without charge), mutual relationship, and distribution throughout the world. The reason for these peculiarities does not lie in these particles themselves. Each particle is a unit for itself and could not have had any influence on the conditions of other particles, especially when they are millions of miles apart. Nevertheless, there must be a sufficient reason for the arrangement of all this; it cannot be accidental, because accident and chance have no regulating influence. Hence, the sufficient reason must lie in some other being.

Similarly, all beings in the universe are governed by physical *forces* which act according to the norms of *physical laws*. These forces are active throughout the universe, fashioning all bodies and directing their development. Gravitation, for instance, controls all beings, from electrons

to stars; nothing can escape its power. Subatomic particles have an inherent tendency to enter into the formation of different kinds of elemental atoms; atoms have an inherent tendency to combine into definite compounds; the compounds are forced to unite into large aggregates, such as asteroids, moons, planets, and stars. Yet, each particle and atom is a unitary entity in its own right. To say that they exist from eternity and never had a beginning in their existence is no rational explanation for these phenomena of nature, because 'eternity' is a mere matter of 'duration.' It would still be necessary to find a sufficient reason for these facts. This sufficient reason cannot be found in these bodies themselves, because they, singly and collectively, are *subject to the laws of nature as a whole*. The single particles and atoms cannot explain the forces and laws which dominate the universe in its *totality*. Being completely subjected to laws, these laws must have been imposed on them, because the laws themselves express a rationality and intelligence which these inanimate bodies do not possess. It is obvious, however, that these forces flow out of the essence of the beings, since they result in the natural actions of these beings. The only sufficient reason which can account for the essences, forces, and laws present in the universe, is this: an extraneous cause *produced* them in such a manner that all work together harmoniously to form a cosmos. This explanation alone is in accordance with reason.

Finally, *matter*, which is the fundamental principle and base common to all things in the world, cannot be eternal. It is essentially *inert*, and as such it is *indifferent* to rest or

motion. Given existence, however, it must be either at rest or in motion. Hence, if it exists of itself and has the sufficient reason for its existence in itself, it could not be indifferent to rest or motion; its eternal nature would of necessity be such that it would be either at rest or in motion. Consequently, if it were originally at rest, it could never go over into motion; and if it were originally in motion, it could never come to rest. No change in this original condition would ever be possible, because it would be an *eternal* condition. As a matter of fact, however, bodies are indifferent to rest or motion, and changes from rest to motion and from motion to rest are characteristic of all bodies; *inertia* is a common property of bodies, and inertia implies an indifference toward both rest and motion. Hence, matter cannot have existed from eternity; it must have had a beginning.

The universe, then, had a beginning. This brings us to the final question: What or who gave it existence so that it had a beginning?

CREATION

By creation we understand an act whereby the entire substance of a being is brought *from nonexistence to existence* (*productia totius substantiae ex nihilo sui et subjecti*). When a new being originates, for example, a chemical compound, a plant, an animal, or a human being, this specific entity had no previous existence and then becomes existent. Before production it was, as such an entity, actually nothing; after production it is an actual

entity in the order of real beings. Such a production is said to be *ex nihilo sui*. This is not creation, because the material elements, which compose it, were already in existence. In order that such a production be termed 'creation,' it is necessary that this specific entity be produced outright, without a pre-existent 'subject' or material of any kind contributing toward the production of the entity. This is a production *ex nihilo subjecti*. The *total substance* must be produced, so that it passes from nonexistence to existence with respect to everything that it is and has, no pre-existent material being used in its formation.

Since the entire universe is contingent and had a beginning, it is obvious that, previous to this beginning, it had no existence. This also includes the *matter* out of which all beings in the universe are made. Hence, not only the specific entities in the universe, but also the 'subject' or 'material (matter)' itself, passed from nonexistence to existence. This passage from nonexistence to existence demands a sufficient reason. The universe is not an emanation or determination of the Absolute or of God; this possibility was eliminated when it was proved that pantheism is irrational and false. Hence, the sufficient reason for the existence of the universe can only be found either *in the universe itself or in an extramundane cause*.

The sufficient reason for the existence of the universe is *not in the universe itself*. If it were, it would have had to bring itself from nonexistence to existence; that is equivalent to the assertion that it was the cause of its own production. Such an assertion, however, involves a contradiction in its very notion. It was as yet nonexistent,

because it had to give itself existence. Yet it must also have been existent, because, to be the cause of its own existence, it had to be the active agent of its own production, and a being must exist in order to be active. Under the supposition, therefore, it would be both nonexistent and existent in the same set of conditions. That is a contradiction and intrinsically impossible.

The cause, then, which gave existence to the universe, must be one which is *outside* the universe itself and is *prior* to it. It must be 'outside' the universe, in the sense that it is not a part of it or identified with it. If it were a part of the universe or identified with it, it would partake of the contingency of the universe and thereby also require another cause. It must be 'prior' to the universe, because every cause is prior to the effect it produces. Hence, the cause which brought the universe from nonexistence to existence is an *extramundane cause*. And since the 'total substance' of the universe is the term of the causal act of production, this production is *creation* and the cause is a creating cause or creator.

THE CREATOR

It is always a logical procedure to argue from the perfection of the effect to the perfection of the cause. The cause may have a greater and higher perfection than the effect it produces, but it can never have less. No one can give what one does not possess, but one can give less than one possesses. Hence, any perfection which the effect manifests must be found to at least an equal degree in its producing

cause. From these simple principles we are able to deduce a number of truths concerning the creating cause of the universe.

This creating cause must be an *intelligent person*. Man is an integral part of the universe, and he is an intelligent person. It makes no difference whether we assume that he is the product of a direct creation or the result of evolution. Man is far superior to animals, brutes, and inanimate things, because of the fact that he is an intelligent person. If he is the product of a direct creation, the creating cause cannot be less, but must also be an intelligent person. And if he is the result of an evolutionary process, the developmental factors of this process must ultimately be referred to the creating cause of the universe as their ultimate source. Hence, the creating cause is an intelligent person. We call Him the *Creator* or *God*.

God is very great in His *power*. A glance at the magnitude and multitude of the stars is all that is required in order to bring home to our mind the greatness of His power. No word picture can adequately describe a power which has built a world that reaches out through distances which can be measured only in terms of light-years and parsecs. The tremendous energies at work, whether in the heart of an atom or in the gigantic furnaces of the innumerable suns, baffle our imagination. More than anything else, however, the absolute power involved in the creative act, producing the vast expanse of the wheeling galaxies and capable of producing more universes in limitless numbers and diversifications, out of sheer nothingness, postulates an inconceivable perfection.

God is very great in His *knowledge* and *wisdom*. Everything, from the dervish dance of the electrons to the majestic parade of the constellations, is arranged according to number and measure, balance and symmetry, rule and law, so that the order of nature is indeed a thing of beauty. Each discovery of science reveals new marvels and discloses new mysteries. The formulation of the laws of nature tax the capabilities of the mathematical geniuses of mankind to the utmost. Man, despite his ingenuity, has succeeded but in a very small degree in tracing the intricate pattern of the world's design, so deep and hidden are the workings of nature in its simplest and most commonplace operations. From beginning to end this world is a teleological world, with a disposition of means toward ends which is precise in its minute details and vast in its cosmic proportions, so that the eye of a gnat and the glow of the sun fulfill a divine purpose of mutual relationship.

The universe is indeed a mirror for the perfections of the Creator. The discussion is restricted to these few considerations, because these perfections are so clearly manifested in physical nature. A different department of philosophy, theodicy, gives a full treatment of God and His attributes.

The question has been asked: Can God *create* something so that it could *exist from eternity*? In that case, the being would have a beginning; however, since it was created in eternity, it would have existed from all eternity. Some scholastics, among them St. Thomas,² maintain that the impossibility of an 'eternal creation' cannot be clearly demonstrated. They base their contention on the grounds

that, since God is eternal and has the power of creation, He can exercise this power in eternity; hence, an eternal creation should be possible. Most scholastics, however, claim that an 'eternal creation' involves a *contradiction*. The difficulty lies, not with God, but with the *creature*. An eternal creature, they say, is like 'wooden iron,' a square circle,' and a 'stick with one end extending infinitely.' Let us suppose that such a creature existed now. It exists in time, and time consists of a *succession of moments*, and this number of moments increases daily. But it would take an infinite number of moments to fill out the duration of God's eternity, and an infinite number is incapable of increase. A year ago the number of moments of this eternal creature's duration was smaller than it is today, and a year from now this number will be larger than it is today, and so forth, as time rolls on. How can this number be infinite in the past, if it grows continuously with the years? A smaller number certainly is limited. But if it is a limited number, it is finite and can be exhausted through subtraction or division. Infinity of duration in the eternal past, however, cannot be exhausted, or we will reach a moment which is the first, beyond which this creature did not exist; and in that case it is not 'eternal' but 'in time.' Hence, it seems clear that an 'eternal creature' is an idea which implies an *infinite finite duration*. It is 'infinite,' because the supposition is that it is 'eternal'; it is 'finite,' because successive duration brings on a constant increase in the number of moments, which leaves the present number always limited. This is a case of the confusion of *indefinite and infinite* number. The argument does not apply, of course, to God's eternal

existence, because in His duration there is no succession of moments, but a complete and simultaneous possession of interminable life.

God alone is eternal. Creatures are temporal. No finite being can have an existence which reaches back through eternity. The world, as was shown, is limited and contingent; it, too, must have had a beginning in time. Having had a beginning in time, it must have been brought from nonexistence to existence through God's act of creation. God existed prior to the world. He is not only extramundane but supra-mundane, incalculably superior to the world in perfection of being and of existence. It is natural, however, that the world should reflect to some extent the perfections of its Creator, because the perfection of an effect must be included, in some manner, in the cause which produces it.

THE END OF THE WORLD

Will the universe come to an end? Or will it last forever? While science can tell us very little about the original development of the cosmos, its data enable us to forecast the final destiny of the universe with a fair amount of accuracy.

The present world will come to an end.

This end is inevitable, because of a peculiar condition which attaches to the energy working in the universe. Energy is the capacity to do work, and it is of two kinds, kinetic and potential. According to the law of the Conservation of Energy, energy may be changed in form

from one kind to another, but the sum total of energy in any closed system is always the same quantity. Kinetic energy can change into potential, and potential energy into kinetic; but the sum of both is always constant. As the one increases, the other decreases in proportion, and reversely. The universe being a 'closed system' the total amount of energy in all forms, present in the universe, never changes; energy is merely transformed, but no energy is ever really gained or lost. This is what is meant by the physicists' statement that 'energy can neither be created nor destroyed.'

All the activities of natural bodies are the result of energy. Due to the fact that one form of energy can be transformed into another, while the sum of all energy is constant, the conclusion might suggest itself, that a complete 'cycle' of energy transformation should occur, so that the universe, similar to a perpetual-motion machine, would go on forever. This would indeed be the case, if all processes of nature were reversible with an absolute degree of efficiency. However, *natural processes are actually irreversible*. This is due to the peculiar character of the energy of heat.

All natural processes are accompanied to some extent by heat. Heat has a tendency to *diffuse* itself into surrounding objects and, because of this, becomes scattered, so that a completely reversible process is impossible. The reason for this lies in the *Second Law of Thermodynamics*, which states that heat cannot pass directly from a cold to a hot body of its own accord. In order that heat be able to do work, there must be a difference of temperature between

two bodies. Work is done, when heat passes from a body of higher temperature to a body of lower temperature. Once the temperature of the two bodies is equalized, *heat can do no work*. Only when another body of lower temperature is contacted, can this heat do work again. This process will continue until heat has reached the *lowest temperature level* existing in the universe. On this level no more work can be done, so that heat at this stage becomes *potential* energy which *can never become kinetic again*. This is a necessary consequence of the Second Law of Thermodynamics.

Only if some *other form of energy* were to reverse the process by transforming this heat into mechanical energy, electrical energy, chemical energy, and so on, could this heat energy on the lowest temperature level again become kinetic. This, however, is not possible, at least not forever. The reason is simple. For one thing, one of the most important *sources* of energy in the universe is heat. This is plainly noticeable in the sun and stars. Secondly, in all processes of nature a certain amount of energy is always transformed into heat, through friction, chemical action, etc. Now, much of this heat is lost for a reversible process by conduction and radiation into space. Witness the sun and the radiant stars. The chemical processes taking place in these storehouses of energy develop enormous quantities of heat, most of which is radiated into the extremely cold regions of interstellar space. This heat can never be recaptured and turned back into the sun and stars, because heat cannot pass from a cold to a hot body of its own accord. It will keep on doing work until it reaches the

lowest level of temperature out in space; having brought about an equilibrium of temperature there, it is now *unavailable for work*. Little by little, degree by degree, even though it takes billions times billions of years, the energy sources in the universe will become depleted, because their finite energy has gradually turned into heat and radiated away. In other words, a *constant degeneration of energy* is taking place in nature. The amount of energy available for work is constantly being converted into energy unavailable for work. The time must inevitably come when *all forms* of energy have changed into *dissipated heat* in a state of *cosmic equilibrium of temperature*. When we consider the immeasurable expanse of the interstellar space of the universe, compared to the sources of energy in the stars, it is safe to assume that the equalized temperature of the universe as a whole, after all available sources of energy have been changed into diffused heat, will not be far over Absolute Zero.

In formulating the ratio between the available and unavailable energy of a thermodynamic system, scientists speak of *entropy*. 'Entropy' is defined as the mathematical factor which is a measure of the unavailable energy in a thermodynamic system. It measures thermodynamic degeneration. Broadly speaking, entropy gives us that amount of the heat content of a closed system which can no longer be converted into kinetic energy and is, as such, unavailable for work. In consequence of the degeneration of all forms of energy into diffused heat, there is a *constant increase of entropy* in all natural processes through the universe. The sum total of all kinetic and potential energy is

still the same and constant, but the amount of energy available for work is growing less and less as time goes on. This fact is expressed by science in the *Law of Entropy: The entropy of the world tends toward a maximum, while the ectropy (free energy) tends toward a minimum*. Eventually, therefore, all kinetic energy of the universe will be converted into potential energy, the potential energy of heat in a state of equilibrium on the lowest level of temperature, where nothing can ever bring it back to a state of kinetic energy, because in the closed system of the universe there is no available energy left to introduce a reversible process. It would take energy from another universe to reverse the process; but that is impossible, because such a universe can have no contact with ours, since both are independent 'closed systems.'

The universe, as presently constituted, must die an entropic death. Due to friction with cosmic dust, to collisions with meteors, to the tidal action of their masses, the revolution and rotation of planets, solar systems, and star clusters will slow down, and gravitational attraction will force all celestial bodies to spiral toward each other. There should be a gradual *collision* of all bodies in each system, until the system collapses to form an enormous central body. The same end should occur with all systems relative to one another. This will, of course, liberate great quantities of energy for a period of time; but the heat generated in such collisions will also be radiated into space. The catastrophic end-result cannot thereby be averted.

Some scientists are convinced that *atoms are being rebuilt* somewhere in the vast reaches of space. This view is

probably nothing more than wishful thinking, coming from the desire of maintaining a world which is eternal in its duration and processes. There is nothing inherently impossible in the hypothesis. We must bear in mind, however, that there is *no concrete evidence* to support such a hypothesis. These scientists relinquish the solid ground of scientific data for the airy tenuity of arbitrary assumptions, because they postulate the rebuilding of the universe as the result of *physical agencies*, and such agencies, so far as science knows, are not available.

The processes of the world, therefore, do not form a reversible cycle which, like a revolving wheel, always returns to its starting point and keeps on forever. Rather, the world is more like a *cosmic clock*, with its spring wound up to highest tension by the hand of God from the beginning; with every process, as with every swing of the pendulum, some of the potential energy of the spring is released and changed to kinetic energy, until at last all tension is gone and the cosmic clock stops. Then the universe will be a frozen mass in frozen space, devoid of life and light and motion.

ANNIHILATION

Will the universe then be *annihilated*? Will it drop back into the complete nothingness from which the creative power of God called it forth?

Of itself, the universe will not be *annihilated*. The Law of the Conservation of Energy and of Mass preclude such a possibility. Physical agencies can change things in the

universe from one kind of body into another kind of body and can also transform one kind of energy into another kind of energy. But physical agencies can neither create nor annihilate. The universe would still remain in existence, with the same amount of matter and the same amount of energy. No activity, however, would be possible, because there would be no energy available for work. So far as the universe itself is concerned, barring all extraneous influence, it would remain forever in this *static existence* without change.

God can annihilate the world. There can be no question about the *possibility* of an annihilation of the world. God, as theodicy proves, has infinite power, because His power is identical with His being, and His being is infinite. Since all creatures, the universe included, are contingent beings, existence is not an attribute of their essence; hence, their existence is not necessary. An infinite power, however, must be capable of destroying anything which is not necessary. Hence, God can destroy, or annihilate the universe. Besides, it was God's creative power which brought the entire universe from nonexistence to existence. Just as the universe owes its first moment of existence to God's creative power, it owes every subsequent moment of existence to the same power. Were God to withdraw His power at any moment, the universe would of necessity sink back into nothingness, because the power which was capable of giving existence must by equal right be capable of taking it away. In that case, however, the total substance of the universe would cease to exist, and that is what is meant by

‘annihilation’ — a reduction of the total substance to nothing.

Will God annihilate the world? From the fact that God can annihilate the world, we cannot validly conclude that He will. Who can fathom the designs of God? St. Thomas was of the opinion that nothing created would be completely destroyed.³ Most scholastics hold a similar view. God made matter and energy *naturally indestructible*, and they conclude from this that it would not seem in harmony with the wisdom of God, if matter and energy were completely destroyed. Of course, this is no stringent argument, and these philosophers do not consider the argument to be such. The Creator may have reasons of His own, why He would grant only a limited existence to the world. On purely rational grounds, therefore, the question cannot be answered.

If God has decided to permit the universe to continue in existence forever, will it remain in the *static condition* of ‘entropic death’? This question also admits of no definite answer. It is possible that He may have made some provision in the universe itself for its rejuvenation. It is also possible that He may give to events a turn which would bring about an entirely ‘new heaven’ and a ‘new earth,’ of a kind very different from the present configuration of things. There is no limit to the possibilities, and all attempts to solve the mystery of the future, without special revelation from God Himself, is but idle speculation.

END AND BEGINNING

If the Second Law of Thermodynamics and the Law of Entropy are actually laws of nature, then the world will indeed come to an end, in so far as all activity is concerned; but the universe would continue to exist, unless God annihilated it, for all future time. This raises the important question: Would not the world, under such a supposition, exist for all *eternity*, and would this not involve an 'infinite time' with an *infinite number of successive moments*?

The answer is: The number of moments would be *indefinite*, but never infinite. Inasmuch as the number of moments in the duration of the world is at present only finite, each successive moment becomes an addition to the existing finite sum, leaving it always a *finite number*. Finite additions to a finite number, no matter how large the sum, never make an infinite number. Even if the world be not annihilated, the number of moments will always be finite, so that it can be exhausted by subtraction or division. This number will grow and grow, and never come to an end in growing, but it can never grow into infinity. Hence, if we speak of the 'eternity' of the world in the future, the word 'eternity' is not used in the strict sense as it is used of God's duration, but only in an analogical sense. The world would simply exist *indefinitely in time*. We may call this a 'potential eternity,' but it would never become an 'actual eternity.'

Reading backwards into the history of the universe, it is obvious that the *present* universe, as we know it, could not have been active from eternity, taking 'eternity' here as coterminous and co-existent with God's eternal duration. Being endowed with a limited amount of energy, every moment of activity makes a certain amount of energy

unavailable for work, due to the Law of Entropy, and such a finite amount could not possibly last through the actual eternity of God. That would postulate an *actually infinite number* of successive moments, with the necessity that an *actually finite number* of energy units could be spread out over an infinite number of successive moments, although each moment reduces the amount of available energy. That is impossible, because a contradiction in terms. If our world had been from eternity, it would now already be in a condition of entropic death, because now already the number of successive moments, having existed during the infinity of an actual eternity, would be *actually infinite*. But the world is not at a standstill. Therefore it could not have existed from eternity, but must have begun in time.

The world, then, is finite in every respect. It is finite in the number of bodies which comprise it, finite in its dimensions, finite in its energy, finite in its processes, finite in its existence in the past, and also finite in its existence in the future.

This ends our investigation into the general characteristics and basic principles of the material universe. The subject matter is vast and intricate, the problems are many and deep. Our studies took us all the way from aether to cosmos. Wherever possible, we followed in the footsteps of science, basing our conclusions on the reliable data of scientific research, so as not to lose ourselves in the quagmire of subjective speculations. Many of the operations of nature are shrouded in impenetrable darkness. In many instances, however, we feel that we have been able to give a satisfactory solution to the problems

which confronted us. We now certainly have a better and deeper understanding of the universe in which we live.

It is a wonderful world, marvelously constructed in its atomic and in its cosmic aspects. It is difficult to decide where it is more beautiful, in the extremely minute configurations of its atoms or in the dimensionally vast proportions of its stars. Both stagger the imagination and mind of man. In both aspects it is an intelligently and teleologically constructed masterpiece. Man occupies a midway position, so far as size is concerned, between the infinitesimal electron and the immense universe. He is the rational interpreter of the world, and it is logical and fitting that his position be halfway between the two extremes. Whichever way he casts his gaze, he sees the invisible hand of the Creator. Man himself is a privileged being, endowed with the intellectual capacity to recognize his and the world's Creator. He alone can give tongue to the universe, to praise the Maker of all.

SUMMARY OF CHAPTER XIX

Did the world have a beginning? And will it come to an end?

1. *Scientific Cosmogony*. Geology and paleontology show that the earth arrived at its present state through a process of natural evolution. Scientists have also attempted to develop a *cosmogony*. The *Kant-Laplace Nebular Hypothesis* postulates that the solar system originated from a nebula of gaseous material. The *Planetesimal Hypothesis* postulates that it originated from a large number of small planets through collision. The original planetesimals were the result of a passing star which occasioned great tides in the sun, drawing out enormous masses of gaseous material.

2. *Contingency of the World*. A being is 'necessary,' when its essence is such that it demands existence: it is 'contingent,' when its essence is such that it does not demand existence. *The world is contingent*. *Organisms are contingent*, because they live and die; they did not always exist. Inorganic beings are also contingent. Neither the stars, nor the chemical compounds, nor the elements, nor the subatomic particles, are such that they must always exist; their nonexistence is not inconceivable and impossible.

3. *Beginning in Time*. *The universe had a beginning* and is not from eternity. Since all things in the universe are *contingent*, there must be a *sufficient reason* for their existence; this reason cannot lie in the things themselves, or their existence would be necessary, not contingent. The ultimate components of all bodies are the *subatomic*

particles, and there must be a sufficient reason for their kinds, size, weight, mass, number, energy content, electric charge, mutual relationship, and distribution. This reason cannot lie in the particles themselves, because each particle is a unit for itself and could not have had any influence on the conditions of other particles. All are governed by physical *forces* and subject to the *laws of nature as a whole*; since they are subject to these laws, the laws must have been imposed on them by an extraneous cause which produced them. *Matter is indifferent* to rest and motion, because it is essentially inert. Such an indifference would be impossible, if matter were from eternity. Hence, all material beings are not from eternity, but must have had a beginning in time.

4. *Creation*. Creation is an act whereby the *entire substance* of a being is brought from nonexistence to existence (*productio totius substantiae ex nihilo sui et subjecti*). Since the entire universe had a beginning and cannot have the sufficient reason for its existence in itself, only an extramundane cause could have given it existence; and since it is here a question of the total substance of the universe, this causal act is a creation.

5. *Creator*. The perfection of the effect manifests the perfection of the cause. Since man, who is a part of the universe, is an *intelligent person*, the creating cause must be an intelligent person; we call Him the Creator or God. Everything in the world proclaims His power, knowledge, and wisdom. Although God is eternal, an *eternal creation* does not seem possible. The duration of a creature consists of successive moments. An eternal duration would involve

an infinite number of successive moments; inasmuch, however, as this number of moments is increased daily, it is finite. An infinite finite number is a contradiction.

6. *The End of the World.* The present world will come to an end. Natural processes are irreversible, due to the conversion of all energy into heat and the diffusion of heat into space. Because of the *Second Law of Thermodynamics* and the *Law of Entropy*, heat eventually becomes unavailable for further work. This constant degeneration of energy will continue and lead to the entropic death of the universe.

7. *Annihilation.* Of itself, the universe will not be annihilated. This follows from the Law of the Conservation of Energy and of Mass. *God can annihilate* the universe; the power which was capable of making the universe pass from nonexistence to existence must also be capable of making it pass from existence to nonexistence. On purely rational grounds, we do not know whether God will eventually annihilate the world. Probably not, because He made matter *naturally indestructible*.

8. *End and Beginning.* The world *could* exist forever in the future. It would not be an 'eternity' in the strict sense. The number of its moments of existence in the future would not be 'infinite,' but a 'finite' number growing indefinitely. Since the units of energy in the world are finite in number, the world cannot have been active from eternity, because that would involve an *actually infinite number* of moments now already, and the finite amount of energy could not have lasted through an infinite number of moments. Hence, the world *began in time*. In every respect, the universe is finite.

READINGS

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1 See the author's *Domain of Being*, Chap. 5

2 *De Aeternitate Mundi*.

3 *Summa Thol.*, I, q. 104. a. 4.

GLOSSARY OF TERMS

NOTE: In the case of qualified words, always look for the word or noun qualified. For example: in seeking for *Immanent Activity* look for *Activity*, *Immanent*, etc.

ABSOLUTE. The unconditioned; the ultimate ground of all reality.

ACCIDENT. A being whose nature it is to inhere in a subject (substance) in order to exist; the modification and determination of an existing substance.

ACTION AT A DISTANCE. Philosophically, the action of an agent upon a reagent across an absolute vacuum, so that the agent and the reagent are at a distance from each other without immediate or mediate presence in any manner whatsoever.

ACTIVITY, IMMANENT. An activity by means of which a living being perfects itself and makes itself the goal for the acquired actuality.

ACTIVITY, TRANSIENT. An activity which tends to change another object, distinct from the agent.

AETHER. A kind of imponderable matter assumed to exist in all those parts of the universe not filled by ponderable matter.

AETHERISM. The theory which holds that all matter is a modification of aether.

AEVITERNITY. The duration in existence of a creatural being which of its nature is substantially incorruptible and immortal.

ANNIHILATION. The reduction of the total substance of a being to nothingness.

ATOM. The smallest particle of an element into which the element can be divided chemically while still remaining a portion of this particular element.

ATOMISM. A theory which holds that the ultimate constituents of bodies are atoms.

ATOMISM, DYNAMIC. The atomistic theory which holds that the constitution of bodies, their properties and activities, can be explained by means of the two concepts of homogeneous matter and purely mechanical forces.

ATOMISM, MECHANICAL. The atomistic theory which holds that the constitution of bodies, their properties and activities, can be explained by means of the two concepts of homogeneous matter and applied local motion.

BILOCATION. The Simultaneous presence of one body in two places.

BODY, NATURAL. A body which has a single nature or essence and is an individual substance, so that it is a real unit in the order of being and operation.

CAUSALITY. The positive influence of one thing in the production of another.

CAUSE. That which in any way whatever exerts a positive influence in the production of a reality.

CAUSE, EFFICIENT. That 'by which' something is made; the agent which, through its positive influence, produces something.

CAUSE, FINAL. That 'on account of which' or 'for the sake of which' something is made; the end or purpose of an action.

CAUSE, FORMAL. That 'through which' something is made, thereby becoming specifically what it is.

CAUSE, MATERIAL. That 'out of which' something is made.

CHANGE, SUBSTANTIAL. The transition of one kind of substantial entity into a different kind of Substantial entity.

COMPENETRATION. The presence of two or more three-dimensional or circumscriptive bodies in the same place and space.

COMPOUND. A chemical compound is a substance composed of two or more elements chemically combined in definite proportions by weight.

CONDITION. Something required in order that an efficient cause can act, without contributing any positive influence toward the production of the effect itself.

CONTINGENCY. That attribute of a being in consequence of which its nature or essence does not demand existence.

CONTINUUM. Continuous quantity.

COSMOGONY. The theory of the origin and development of the universe through natural causality.

COSMOLOGY. It is the science of the corporeal universe in its ultimate reasons, causes, and principles.

COSMOS. An assemblage of diverse units so combined as to constitute an integral whole and to function in unison in obedience to some form of control.

CREATION. An act whereby the entire substance of a being is brought from nonexistence to existence (*productio totius substantiae ex nihilo sui et subjecti*).

CRYSTAL. An inorganic structure of molecules arranged in well-defined geometric forms, with definite planes, axes, and angles.

DURATION. The persistence of a being in existence.

DYNAMISM. The theory which holds that the ultimate constituents of bodies are unextended, active forces or unextended mass points with extended forces.

EDUCTION. In the hylomorphic theory, the production of the substantial form out of the potentiality of matter.

ELECTRON. A subatomic particle with a unit negative electric charge.

ELECTRONISM. The theory which holds that all matter is electricity.

ELEMENT. Any material substance which cannot be resolved by ordinary chemical means into two or more simpler substances different in nature from itself.

ENERGISM. The theory which holds that all realities in the universe are but forms of energy, without a material substance which is the bearer or subject of energy.

ENERGY. The capacity for performing work.

ENERGY, KINETIC. The energy which a particle, body, or system of bodies possesses in virtue of its movement.

ENERGY, POTENTIAL. The energy which a particle, body, or system of bodies possesses in virtue of its position or configuration in reference to the position or configuration of other particles, bodies, or systems.

ENTROPY. The mathematical factor which is a measure of the unavailable energy in a thermodynamic system.

EPIGENESIS. See EDUCATION.

ESSENCE. The ultimate reality in a being which makes it to be specifically what it is and distinguishes it from other beings.

ETERNITY. The complete and simultaneous possession of interminable life; the duration characteristic of God's existence.

ETHER. A kind of imponderable matter assumed to exist in all those parts of the universe not filled by ponderable matter.

EVOLUTION, EMERGENT. A doctrine of evolutionary naturalism which maintains that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality.

EXTENSION. Side-by-sideness of parts in length, width, or depth, or in combinations of these dimensions; dimensive quantity.

EXTENSION, EXTERNAL. The extension of a body in virtue of which its parts are distinct with reference to place and space.

EXTENSION, INTERNAL. The extension of a body in virtue of which its parts have a definite position and order among themselves and in reference to the body as a whole, without any regard to the place or space which they occupy.

EXTENSION, VIRTUAL. The property of a reality consisting of unextended and indivisible parts which occupy a certain field of space through their force.

FORM OF CORPOREITY. According to the theory of John Duns Scotus and his followers, it is the form which makes a particular living being to be 'this body,' whereby 'body' is understood in the sense of 'organized matter' as distinct from the soul as the life-giving principle.

FORM, SUBSTANTIAL. An incomplete, physically simple substance which is the ultimate intrinsic principle of all determination in a body.

GNOSTICISM. A pantheistic form of monism which holds that the world and its contents emanate from God in such a fashion, that in the course of the consecutive emanations things become more and more deteriorated, finally ending in matter.

HYLOMERIC. Consisting of many matter particles.

HYLOMORPHISM. The theory which explains the constitution of 'natural bodies' by means of the dualistic composition of matter and form; matter is indeterminate but determinable, the form is the specifying and determining principle; matter and form are incomplete substances, and their union results in a unitary composite substance, the natural body.

HYLONS. Matter particles, subatomic particles.

HYLOSYSTEMISM. A theory which explains the constitution of the natural body (element and chemical compound) as an atomary energy system, in the sense that the atom of an element and the molecule of a compound are composed of subatomic particles (protons, electrons, etc.) united into a dynamic system working as a functional unit.

HYLOZOISM. The theory which holds that all material substance is endowed with life.

INERTIA. That universal property of matter by which it will remain at rest, or in uniform motion in a straight line or direction ('constant velocity'), unless acted upon by some external force; the property of all bodies to maintain a constant velocity.

INFINITE. Without limit.

INFINITE, ACTUAL. A positive reality without limit.

INFINITE, POTENTIAL. A reality, actually finite, but capable of increase without limit.

INVOLUTION. The theory which holds that all substantial forms are actually precontained in matter from the beginning of creation.

ISOTOPEs. Elements which occupy the same position in the table of elements, because they are identical in chemical behavior, although they differ in their respective weights.

LAW, NATURAL. The rule or norm according to which a being is induced to perform an action or to refrain from an action. Proximately, it is the constant and uniform activity of

a being; fundamentally, it is the natural and inherent tendency of a being to act in a constant and uniform manner.

MASS. The amount of matter in a given volume.

MATERIALISM. A naturalistic form of monism which finds the ultimate solution of all phenomena, physical and psychical, in the nature and activity of universal matter or force.

MATTER. The universal base or substrate of all bodies; the passive principle of diffusion in space; the general principle common to all natural bodies, indeterminate but determinable; the incomplete sub-stance and co-principle which, together with the form, makes the complete substance of the natural body.

MATTER, PRIMARY (PRIMORDIAL). An incomplete corporeal substance, undetermined but determinable, capable of receiving any kind of substantial form.

MATTER, SECONDARY. Informed matter; matter actualized by a form; the matter of an actual, concrete body, as it exists in nature.

MECHANISM. The doctrine which denies finality in nature and explains all occurrences in nature as being determined in a purely mechanical way, so that everything is caused by what it temporally antecedent without having any 'tendency' to produce definite results in the future.

MIRACLE. A perceptible event, forming an exception to the regular course of nature and produced by divine intervention.

MOLECULE. The smallest portion of a compound or, if an element can exist in the free state, of an element.

MONADISM. The Leibnitzian doctrine which holds that the ultimate individual beings are monads; they are partly material and partly immaterial, possess innate power of representation, have no means of cognitional intercommunication, and obtain knowledge corresponding to reality through a divinely pre-established harmony.

MONISM. The doctrine which maintains a single, absolute, self-existent principle of being, the sole constituent of all reality.

MONISM, IDEALISTIC. That type of pantheistic monism which holds that the real and the ideal, thought and thing, nature and spirit, object and subject, world and mind, are ultimately identified in the infinite and absolute Ego.

MONISM, NATURALISTIC. That type of monism which holds that the world originated through natural evolution from some primordial stuff without outside direction, and this primordial stuff is either lifeless matter, or animated matter, or neutral stuff evolving into mind and physical bodies; it seeks to reduce the multiplicity of beings to the essential unity of a single kind of entity.

MONISM, PANTHEISTIC. That type of monism which derives the present world from God or the Absolute as the One-Being through emanation or immanence or determination; it defends the entitative unity of all being.

MOVEMENT. Continuous change.

MULTILOCATION. The simultaneous presence of one body in two or more places.

NATURE. In a being, it is the ultimate source and principle from which all its properties and activities are derived.

NEOPLATONISM. A pantheistic form of monism which holds that the world and its contents emanate from God in such a fashion, that in the course of the consecutive emanations things become more and more deteriorated, finally ending in matter.

NEUTRON. A subatomic particle, equal in mass to the proton and electrically neutral.

OCCASION. A circumstance or combination of circumstances which affords an opportunity for an efficient cause to act.

OCCASIONALISM. The doctrine which denies all creatural causality, so that creatures are only 'occasional causes' for the activity of God, inasmuch as they furnish the occasion for God to produce effects in nature.

PANEGOISM. That type of monism which identifies all reality with the universal consciousness or Ego; a form of absolute idealism, asserting the oneness of all things in the absolute Ego.

PANPSYCHISM. That type of monism which holds that all material reality, in its ultimate analysis, is endowed with psychical powers.

PANSPERMISM. See INVOLUTION.

PANTHEISM. The monistic doctrine which holds that the universe is identical with God; the reduction of God to the universe, or of the universe to God.

PHILOSOPHY. It is the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone.

PHOTON. A particle or corpuscle of light.

PLACE. Where a body is.

PLACE, COMMON EXTERNAL. The general position of a body with respect to other bodies at some distance from it.

PLACE, EXTERNAL. The surface of the object or objects immediately enveloping a body, considered as the receptacle of this body's entire volume.

PLACE, INTERNAL. The amount of space contained within the boundaries of the outside surface of a body, considered as the receptacle of the body's entire volume.

POSITRON. A subatomic particle, equal in mass to the electron, with a unit positive electric charge.

PREFORMATION THEORY. See INVOLUTION.

PRESCIENTIFIC. Pre-scientific knowledge is the knowledge of physical objects and phenomena acquired through ordinary sense perception, without the aid of special experimental methods and precision instruments.

PRESENCE, CIRCUMSCRIPTIVE. The presence of a corporeal extended substance in such a manner that it has parts outside parts in the place where it is.

PRESENCE, DEFINITIVE. The presence of a spatially unextended substance in such a manner that it can exercise its activity only within certain limits of space.

PRESENCE, REPLETIVE. The presence of a spatially unextended substance in all space, past, present, and future; the presence of God in the universe or universes.

PRIVATION, In the theory of hylomorphism, it is the lack of a substantial form in primary matter, in so far as primary matter is in a state of proximate aptitude for the reception of a new form.

PROTON. A subatomic particle with a unit positive electric charge.

QUALITY. An absolute accident completing and determining a substance in its being and in its operations.

QUALITY, ENTITATIVE. A quality which modifies a substance in its being, in so far as it is a being for itself.

QUALITY, OPERATIVE. A quality which modifies a substance in its operations, in so far as the substance is capable of activity and change.

QUANTITY. That property of a thing in virtue of which it can be divided into its inherent components, each of which is a single and complete whole.

QUANTITY, CONTIGUOUS. A quantity whose components are in contact at their boundaries.

QUANTITY, CONTINUOUS. A quantity which is uninterrupted in its being, so that the components within it are united by common limits or boundaries.

QUANTITY, DIMENSIVE. Quantity of extension, of magnitude.

QUANTITY, DISCONTINUOUS. A quantity which consists of components, each of which is an entity for itself and has its own complete limits or boundaries; together, they form some sort of unit or whole in a wider sense.

QUANTITY, DISCRETE. See QUANTITY, DISCONTINUOUS.

QUANTITY, INTENSIVE. A quantity of degrees.

QUANTITY, SEPARATE. A quantity whose components are at a distance from one another, so that their boundaries are not in immediate contact.

QUANTITY, SUCCESSIVE. A quantity of components which follow one another in sequence.

QUANTUM. A unit of action or energy, designated as $h\nu$, in which ν is the frequency of the radiation and h (Planck's constant) is a universal constant the value of which is 6.55×10^{-27} ergs.

RADIOACTIVITY. The process whereby certain elements, through their own natural power, spontaneously emit alpha, beta, or gamma rays, or combinations of these rays.

RELATIVITY, EINSTEIN'S THEORY OF. A physico-mathematical theory with reference to motion, space, and time and their measurement.

REPLICATION. The simultaneous presence of one body in more than one place.

SPACE. In a general sense, the three-dimensional container or receptacle of all extended material substances; specifically, abstract extension considered as a receptacle for bodies.

SPACE, ABSOLUTE. The space which is the sum of all real and possible (ideal) space considered as one.

SPACE, IDEAL. See SPACE, POSSIBLE.

SPACE, IMAGINARY. Absolute space, pictured by the imagination as an immense container of bodies.

SPACE, POSSIBLE (Ideal). The space unoccupied but occupiable by extended bodies.

SPACE, REAL. The space occupied by three-dimensional bodies.

SPACE-TIME, In the monistic theory of S. Alexander, the ultimate evolutionary principle or stuff of the world; it has in the beginning no quality except the spatio-temporal quality of motion, but subsequently everything 'emerges' from it into the world we know.

SUBSTANCE. In a scientific sense, an element or chemical compound; in a philosophic sense, a being whose nature it is to exist in itself and for itself, needing no other subject in which to inhere in order to exist.

SUBSTANCE, COMPLETE. A substance which exists in such a manner that its nature demands no further union with a substantial co-principle.

SUBSTANCE, COMPOSITE. A substance which consists of incomplete substantial parts, entitatively distinct among themselves, in such a manner that their union results in a single, unitary nature.

SUBSTANCE, INCOMPLETE. A substance whose nature demands that it be conjoined with some other substantial co-principle, so as to constitute a complete substance.

SUBSTANCE, SIMPLE. A substance which does not consist of entitatively distinct substantial parts.

TELEOLOGY. The doctrine which holds that final causes are operative in nature, that things act according to a definite purpose or design.

TIME. The number of movement according to before-and-after; movement considered in its succession according to before-and-after.

TIME, ABSOLUTE. The time which is the sum of all real and possible (ideal) time considered as one.

TIME, IDEAL. See TIME, POSSIBLE.

TIME, IMAGINARY. Absolute time, pictured by the imagination as a kind of receptacle or stream in which all individual times, actual and possible, have a place.

TIME, POSSIBLE (IDEAL). The time involved in the movements and changes which could, but actually do not, occur in nature.

TIME, REAL. The time involved in the movements and changes which actually occur in nature.

UBICATION. The presence of a body in a place, in so far as a body is precisely in one place rather than in another.

VACUUM. The total absence of a material, three-dimensional substance in the universe.

VACUUM, ABSOLUTE. The total absence of all ponderable and imponderable matter.

VACUUM, RELATIVE. The total absence of all ponderable matter.

VALENCE. The combining capacity of atoms in forming chemical compounds.

THE WHOLE MAN

PSYCHOLOGY

Nihil obstat: IGNATIUS MCCORMICK, O.F.M.CAP.

August 28, 1943

Nihil obstat: THOMAS AQUINAS HEIDENREICH,

O.F.M.CAP., PH.D. September 13, 1943

Imprimi potest: CLEMENT NEUBAURE, Q.F.M.CAP.,

Minister Provincial September 20, 1943

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AUTHOR'S PREFACE

This book is intended as a text on philosophical psychology for the undergraduate student. It should give him a fairly thorough acquaintance with this department of philosophy.

Since psychology is here treated as a department of philosophy, only those facts and laws of scientific psychology have been incorporated into the text which have a bearing on the philosophical understanding of the ultimate nature of man. Precise laboratory techniques, statistical tables, and mathematical formulae have therefore been omitted as irrelevant to the purpose in view. A general survey of the positive findings of scientific research suffices as a background for the student who is taking an elementary course in philosophical psychology. The scientific material, however, could not be eliminated entirely, because in most cases the undergraduate approaches psychology without any preliminary knowledge of the pertinent scientific facts. Just what scientific data should be taken into the text, is a debatable question; the author hopes he has struck a satisfactory medium.

Bearing the mental equipment of the undergraduate in mind, so that he will derive the greatest benefit from the

text, special attention has been given to the arrangement of the material and to the form of its presentation.

Many psychologists overemphasize the distinctness of the mental functions of man and underemphasize the fundamental unity of man. As a consequence of this attitude man appears as an aggregate of functions and processes. In reality, of course, man is an integral organism expressing himself as a unit in many ways, and the student should never lose sight of this important fact. The integrality of man as an organism consisting of diversified structures, powers, and functions operating as a unit is the leading theme stressed throughout the book. This thought is brought home to the student in the treatment of *The Whole Man* as a vegetant-sentient-rational being.

Some might question the position of the chapters on consciousness and extra-normal mental states in the general arrangement of the material in the book. One must remember, however, that consciousness is an over-all mental state affecting every sensory and rational phenomenon; as such, consciousness cannot be properly understood until all the sensory and rational functions have been described and discussed. Similarly, the extra-normal states of hypnosis, clairvoyance, telepathy, etc., cannot be appreciated in their true significance until the normal sensory and rational states have been described and discussed.

Again, some instructors will miss an extensive treatment of aristotelian hylomorphism in connection with the problem of the union of body and soul. From a psychological standpoint, it is necessary to prove the existence or

nonexistence of a vital principle or soul in the human organism. The theory of hylomorphism, however, is a general interpretation of the constitution of all natural bodies, inorganic and organic, and belongs properly to cosmology. The author has treated the theory extensively in his "*From Aether to Cosmos*," and there seemed no need to repeat the matter in this book.

As for the form of presentation, it has been the endeavor of the author to use non-technical language wherever possible and advisable, with copious examples and explanations to clarify the meaning of obscure terms or facts. While this method tends to make the style somewhat diffuse, the method should enable the student to grasp the difficult subject matter more fully and effectively, and that, after all, is the purpose of every basic text.

It is the fond hope of the author that his psychology text will receive the same kindly acceptance that was accorded his texts in logic, epistemology, ontology, and cosmology.

December 8, 1944

C. N. BITTLE, O.F.M.CAP

Chapter 1

NATURE AND SCOPE OF PSYCHOLOGY

TO JUDGE FROM THE FREQUENCY OF THE USE OF THE TERM IN ordinary conversation, in magazine articles, and in books, there is hardly any form of human endeavor to which the term 'psychology' is not applied. People speak of the 'psychology' of education, of business, of war, of social classes, of religion, of adolescence, of crime, of individualism, of dictatorship, of football, 'of labor unions, of fashion, and so on. Needless to say, such an application of the term is very broad and loose.

For the psychologist and philosopher, psychology is a special department of human knowledge, a *science*. As such, it has its own proper *subject matter* and its own proper *method of investigation*. It is a science in the strict sense of the word, different from other departments of human knowledge. Unfortunately, however, there is perhaps no other science in which such a divergence of views exists as to what is the proper subject matter and the proper method of investigation as in psychology. The reason for this situation is twofold. On the one hand, man, who is the main object of investigation, is so complex a being, that psychologists cannot seem to agree as to how much of his

being shall be included in the general subject matter of psychology. On the other hand, psychologists are greatly influenced in their decision by the particular type of philosophy which they uphold; it makes a considerable difference, for instance, whether they are materialists or idealists in their outlook on the world.

Subject Matter of Psychology

Considered from the standpoint of its etymological derivation, *psychology* (Gr., *ψυχή*, soul, and *λόγος* discourse, treatise) is the *science of the soul*. Now, the soul, or psyche, is considered to be that in virtue of which an organism lives, the principle of life in plants, animals, and men. Aristotle, the greatest of the Greek philosophers, already conceived it in this manner, namely, as the principle giving life to the body of the organism. Viewed this way, the subject matter of psychology is everything that pertains to the *life of the organism*, whether it be a plant, an animal, or a man. Psychology, therefore, should investigate vegetative, sensory, and rational phenomena as found in plant life, animal life, and human life. Some authors do this, but their number is small.

Most modern psychologists balk at defining psychology as 'the science of the soul.' They consider the 'soul' as a reality which smacks of theology; at best, they contend, its existence cannot be presupposed, and it should, therefore, be excluded as the proper subject matter of psychology. Many prefer to define psychology as the *science of the mind*. The 'mind' is the seat or principle of such phenomena

as seeing, hearing, feeling, desiring, thinking, and willing; in other words, the mind is generally understood to be the ultimate principle or, as others prefer to view it, the sum-total of all the powers, processes, and states found in the sensory and rational life of man. Vegetative functions are not 'mental,' and their investigation does not belong to psychology. Hence, only the 'mental' phenomena characteristic of *animal* and *human* life should be included in the study of psychology.

Others object to the term 'mind.' The term seems to imply something which is the underlying 'bearer' of mental phenomena; it would be merely another name for the questionable reality of a 'soul.' Hence, they prefer to speak of psychology as the *science of consciousness or of the conscious states*. Since some psychologists are convinced that both animals and men possess consciousness, the mental life of *animals and human beings* are the subject matter of psychology. Not all, however, agree with this. They maintain that it is impossible for us to know whether animals are really 'conscious.' Consequently, psychology should restrict itself to the study of the conscious states of *man*. But even this is not entirely satisfactory. Many vital activities of man belong to the 'mental' order, though they are performed subconsciously or unconsciously, as will be seen later; these belong properly, they claim, to the field of psychological investigation. There is, then, no definite agreement among professional psychologists as to the exact subject matter of their science.

Among professional philosophers, too, one finds a division of opinion on this score. Those of the older school of

thought were inclined to look upon psychology as the *philosophy of organic life*; correspondingly, they included the nature of plants, of animals, and of men as integral parts of the subject matter of psychology. Modern philosophers, however, restrict their investigations to the *nature of man*. If they bring the vegetative life of the plant and the sensory life of the animal within the scope of their studies, it is for the purpose of comparison, in order to illustrate some point in connection with the life of man. Most authors omit the discussion of vegetative functions almost entirely, stressing the *sensory and rational* activities of man as the proper field of psychological research. And so it has come to pass that psychology, in its historical development, has narrowed down its subject matter to a great extent.

One must distinguish between two types of psychology — *scientific* psychology and *philosophic* psychology. The attitude of science and of philosophy toward psychological problems is quite different.

Psychology as Science and Philosophy

When we speak of *scientific psychology*, or psychology as a science,' we place it on a par with other positive and exact sciences, such as physics, chemistry, astronomy, biology, etc. It is then considered as a department of knowledge which seeks to discover all pertinent facts by means of observation and experiment, to describe these facts in their proper order, and to establish the general laws according to which these facts occur. Science, so far as possible, uses

quantitative measurements in all its findings and formulates its laws in terms of quantitative measurements.

It is characteristic of the scientific attitude to investigate phenomena by means of immediate observation and controlled experiments, so that everything is based on experience and not on speculative reasoning. The scientist does not inquire into the hidden 'nature' of things; he is satisfied to analyze the phenomena, classify them, and determine their *proximate causes*. Applying these principles of scientific research to psychology, the scientist examines the mental phenomena of sensations, perceptions, emotions, acts of the intellect and will, and so forth, and endeavors to reduce them to their simplest and most fundamental elements or laws. That is why scientific psychology is also called *empirical and experimental psychology*.

Philosophical psychology, or psychology as 'philosophy,' is a branch or department of philosophy and takes its place beside the departments of logic, epistemology, cosmology, ontology, theodicy, and ethics. Philosophy is the science of beings in their *ultimate reasons, causes, and principles*, acquired by the aid of human reason alone. Philosophy endeavors to penetrate beyond the surface of phenomena and uncover the nature and essence which gives rise to such phenomena; thereby it hopes to understand and explain things in a more thorough and satisfying manner. Philosophy accepts the legitimate findings of scientific (empirical, experimental) psychology and then pushes its investigation still farther into the regions of the unknown, thereby attempting to widen the boundary line of

knowledge. Philosophic psychology is thus the extension and completion of scientific psychology.

The scientific psychologist touches many vital problems which he refuses to discuss; the philosophic psychologist finds these problems to be of absorbing interest and cannot resist the desire to solve them. The scientist takes life for granted. But what is life? Whence does it originate? Is it fundamentally distinct from the chemical elements that constitute the body? Is it merely a peculiar kind of material force? Is it the result of a substantial principle? Experimental psychology makes a special study of man's mind in all its moods, states, and operations. However, what is 'mind'? Is it material or immaterial? Is there such a thing as a 'soul'? If the soul exists, is it mortal or immortal? Is there an essential distinction between man and the brute? And what is the origin and destiny of man? No one can say that such problems are unimportant; on the contrary, the solution of these and similar problems are of tremendous importance to man.

The philosopher has no quarrel with the scientist. Both are driven in their research by the same unquenchable thirst for knowledge. If the scientist wishes to restrict the subject matter of his science to the immediately observable phenomena of mental life and their proximate causes, that is his privilege. The philosopher, however, wishes to disclose, if possible, the unobservable *nature* of man manifested by mental phenomena. Who would dispute the right of the philosophic psychologist to delve into the nature of man through the use of his reasoning powers? Reason is just as much an instrument of knowledge as are the senses.

In fact, more so. The scientific psychologist, when he makes an experiment with a subject, uses his senses as instruments of experience to find out the facts of mental life occurring in the subject; and he also utilizes the knowledge of mental facts occurring in his own person. Facts, however, need *interpretation*; they are not self-explanatory. And he interprets these facts by means of his 'reason.' Reason, therefore, is indispensable for the proper understanding of all facts, even in scientific psychology. Hence, the philosophic psychologist is justified in his endeavor to go beyond the limits of scientific psychology by using the powers of speculative or deductive reason for the solution of the deeper problems cast to the surface by scientific investigation.

Man is simply not satisfied with an analysis and classification of the proximate causes of mental facts. The deeper problems of psychology demand a solution, and man cannot help inquiring into the *ultimate causes* which lie behind and beyond the proximate causes. Among all the objects in the universe, the object of greatest interest to man is man. The scientific psychologist should refrain from investigating these ultimate realities in man's being, but the philosophic psychologist must use every means at his disposal in the attempt to arrive at a solution of the fundamental problems which lie in the core of man's innermost nature. He hopes to achieve success in his undertaking by bringing these problems before the piercing scrutiny of reason. Because reason plays such a dominant part in this research into the mysterious nature of man's mental life, philosophic psychology is frequently

referred to as *rational psychology*. Strictly speaking, the terms 'empirical psychology' and 'rational psychology' are misnomers. Both types of psychology are based on experience and as such are 'empirical'; both use reason and as such are 'rational.' It would be better to drop the terms 'empirical' and 'rational' psychology and speak only of 'scientific' and 'philosophic' psychology.

The Method of Psychology

The *general method* employed by psychology in its investigation can be summarized in three words: observe, assume, and prove. It is the method employed by every science.

When a problem presents itself to the psychologist, he must first seek to marshal all the available facts pertinent to the subject matter under investigation. He submits them to careful 'observation,' either by means of personal experience or by means of experiments with various kinds of appropriate instruments. These facts are carefully analyzed, described, and classified. He then makes an 'assumption' or 'hypothesis' as to the possible causes which produce them and the laws which govern their operation; this assumption or hypothesis is provisional in character and subject to revision and modification.

If the hypothesis, when applied to more and more cases of a similar character, gives a good explanation of all the facts, it becomes a 'theory.' The theory becomes a 'law' when it is able to explain invariably all cases, even the apparent exceptions, because a complete explanation is

‘proof’ that the original assumption or hypothesis is the correct explanation of the phenomena in question.

The procedure just described is termed *induction or analysis*, and it is defined as the legitimate inference of universal laws from individual cases. It passes from the particular to the universal, from the complex to the simple, from the phenomena to the underlying general law, from the effect to the cause. The natural sciences are predominantly inductive and analytic in their method of research. The reverse method is *deduction or synthesis*. It is defined as the legitimate inference from the more general to the less general, from a law or principle to a particular instance falling under the law or principle. It proceeds from the universal to the particular, from the simple to the complex, from the logical whole to the logical part, from the general law to the individual cases, from the cause to the effect. The mathematical and philosophical sciences are predominantly deductive and synthetic in their method. No science, however, is exclusively inductive or deductive. Both methods must be used, depending on the circumstances. Psychology, in its empirical and experimental portions, uses the inductive method, while it uses the deductive method largely in its philosophical portions.

There is a *special method* employed by psychology, and it is twofold in character: subjective and objective.

The *subjective* method is that of *introspection*. Introspection is the method of studying mental phenomena by means of the internal observation of experience on the part of the individual person. Conscious mental states exist

in the mind, and they can be observed and examined only by the mind turning its attention upon its own states. This immediate observation and examination of one's own internal mental states and activities is what is meant by 'introspection.' I alone am capable of knowing what sensations, emotions, ideas, and volitions are present in my mind, so far as actual observation is concerned. Even when the scientific psychologist makes use of instruments and other experimental devices, in the final analysis he must rely on introspection, because he must interpret the facts in the conscious mental acts of his own mind.

The *objective* method is the method employed to gain information about the mental states and processes of man through means other than introspection. More is needed for the building of a science than the information acquired from a single individual's mental experiences; this personal information must be supplemented by data obtained from outside sources.

Among these outside sources, a few are of special value to the psychologist. First of all, he can study the information of *other minds*, whether communicated to him in spoken or written words, and thereby compare their observations and experiences with those of his own mind obtained through introspection. The study of the various *languages* may contribute appreciable data, because language is the external expression of mental processes and ideas. *Animal psychology*, too, can be very helpful. Animals, as will be established later, are sensory beings pure and simple, while man is partly sensory and partly rational. The study of animal behavior should enable us to draw a sharper line of

distinction between the sensory and rational activities and powers in man; the knowledge gained should assist us indirectly in acquiring a better knowledge of man himself. There are many things in *biology* and *physiology* which are useful in understanding the psychical activities in man, because sensory functions are vital processes depending on specific organs. Man has a body as well as a mind, and the two are closely united in everything man does. An extensive knowledge of the nervous system should be a considerable aid in acquiring a better knowledge of how man's mind can come into contact with the physical world. *Abnormal psychology*, since it is based on pathological conditions, shows by contrast what the normal conditions are. Oftentimes, the absence of a particular function, because of disease, enables us to distinguish clearly between one mental power and another. *Psychiatry*, especially, throws a strong light on many psychical processes. Information of a most valuable kind is obtained from the experimental science of *psycho-physics*, that branch of psychology which studies the relations between mental and physical processes by investigating the response to stimuli and the perception of physical magnitudes. Such experiments are conducted in various psychological laboratories.

No single method is perfect. The combination of various methods, so far as they can be applied, will enable the psychologist to arrive at a substantial body of facts which can be molded into a real and reliable science.

Psychology and Cognate Sciences

It is usual to distinguish between the 'material' and the 'formal' object of a science. The *material object* of a science is the general object with which it occupies itself in its investigation. The *formal object* of a science is that special phase or aspect of the general object which forms the subject matter peculiar to this particular science and which distinguishes it from all other sciences.

The 'material' object may be the same for a number of sciences. The bodies existing in the world are the material object of the sciences of astronomy, physics, chemistry, crystallography, etc.; each of these sciences, however, studies the same bodies from its own characteristic standpoint. Organisms, or living bodies, are the material object of biology, botany, zoology, and psychology; nevertheless, these sciences are distinct from one another, because each one views and treats this general object under a different aspect. The various sciences thus have much in common, but they also differ among themselves. It is necessary, therefore, to distinguish psychology from a number of kindred sciences.

Among the *natural* sciences which have much in common with psychology we find biology and physiology. There is, however, a difference. *Biology* treats of life in general, as found in all organisms; psychology treats mainly of the 'mental' life of organisms, particularly of man. *Physiology* studies the functions of life present in the organs, tissues, and cells of living beings, exclusive of mental functions; psychology studies the mental life of organisms, while physiological matters are brought into the discussion only incidentally.

Among the *philosophical* departments, logic, epistemology, cosmology, and ethics have a certain kinship with psychology. Due to their formal object, however, they are distinct sciences. *Logic* examines the intellectual activities of the human mind from the standpoint of correct thinking; psychology studies the entire field of human mental states and activities, including sensation, perception, emotion, intellection, and volition. *Epistemology* is concerned with the validity or truth-value of human knowledge; psychology, with the nature of the human mind and its various operations. *Cosmology* investigates the constitution of bodies in so far as they are natural physical bodies; psychology treats of the human body only in so far as it is an integral part of the nature of man. *Ethics* examines human actions as qualified by the attributes of right or wrong and thus restricts itself to voluntary actions; psychology examines human action in all its manifestations of mental life.

We thus see that the same material object is the general subject matter of a number of sciences, making them more or less related. From the standpoint of their formal object, however, they vary to a considerable degree.

The Whole Man

The confusion of opinions about the proper 'subject matter' of psychology makes it difficult to formulate an exact definition of psychology. Everything depends on the viewpoint of the individual psychologist or of the school of psychology to which he belongs. No matter what viewpoint

anyone takes, there is bound to be objections against it from many sides.

There is also a difference of opinion as to the proper 'method' to be employed in psychological investigations. The school of *behaviorism* claims that introspection is not a legitimate method. It rejects or ignores 'mind' and 'consciousness' altogether and contends that psychology should restrict itself exclusively to the study of the external behavior of animals and men. This is an extreme view which is rapidly passing out of the picture of psychology. Most modern psychologists admit that the objective method of studying behavior can and does contribute valuable data, but they are convinced that introspection must always be the main method of psychological investigation.

Notwithstanding this confusion, the psychologists of all shades agree, both in theory and in practice, that the *chief purpose* of psychology is the better understanding of *man*. Historically, psychology had its origin in the study of man as a part of philosophy; only in relatively recent times has psychology divorced itself from the philosophical study of man in general and become a science in its own right. It was a misfortune that a sharp line of demarkation was drawn through man's being, separating body and mind in such a fashion that they were considered to be opposing realities. This division should never have been made.

Irrespective of all philosophical theories, man is a *single, unitary being*. He is a single, unitary, *living* being. And it is the distinctive feature of man that he comprises within his being the vegetative functions of plant life, the sensory functions of animal life, and the intellectual and volitional

activities of rational life. Though we observe in man three distinct types of life, these three types are merged together into an *integral organism* which assimilates, grows, senses, feels, thinks, and wills. Man, as each of us knows from personal experience, is one.

Psychology, as a branch of philosophic science, should not cut man into segments and study one or the other segment exclusively. To treat man in this manner is to do violence to man as an integral organism. *The whole man* should be studied in all the phases of his life and being. Only in this way will it be possible to obtain a full and comprehensive knowledge of what man really is, and that should be the ultimate purpose of the psychological study of man.

Philosophy seeks to bring every kind of being within the scope of its investigation. Cosmology treats mainly of inorganic beings. *Organisms*, beings endowed with organic life, should be treated in a special department of philosophy, because inorganic and organic substances are the two natural divisions of bodies existing in the universe. The organisms are represented by the three great classes, plants, animals, and men. In as much, however, as man possesses the vegetative life of plants and the sensory life of animals, it is logical to include the peculiarities of their type of life in the treatment of man as the embodiment of all three types of life in a single organism. Man, especially in his mental life, will be the *chief object* of psychological investigation, but plant life and animal life should not be pushed aside entirely.

Hence, *the whole man*, both in his activities and in his fundamental nature, is here proposed as the *primary object* of study for the psychologist who is also a philosopher. As for the method of investigation, any and all methods are acceptable, provided they furnish us with data which throw light on man's complex being and enable us to grasp in some measure the workings of his inner constitution. The modern scientific psychologists will in all probability disagree with us. In as much, however, as these same psychologists cannot agree among themselves as to what should be considered the proper subject matter and method of psychology, we feel justified in taking the position here indicated.

If we now attempt a *definition* of psychology, we may define psychology as the *philosophic science of the life of the human organism*. It is a 'science,' i.e., a reasoned body of truths arranged into a system of knowledge. It is a 'philosophic science,' i.e., a science which, based on the established findings of empirical and experimental psychology, draws conclusions as to the ultimate principles, reasons, and causes which account for the proximate causes of phenomena. It is the philosophic science of 'the life of the human organism,' i.e., it studies the life of the whole man as an organism, especially in its sensory and rational features, so as to arrive at an understanding of the inner constitution and nature of man.

In using the terms 'life' and 'organism,' we accept them in the meaning given to them in the biological sciences. This meaning is, of course, only provisional for the present. Everybody admits the fact that man, like the plant and

animal, is an 'organism' and that he possesses 'life.' The precise philosophical meaning of these terms will become clearer in the course of our study.

The Value of Psychology

Without question, man is the noblest and most intelligent being on earth and, so far as we are able to judge, in the universe. Since every kind of knowledge is of value in some form or other, the knowledge of man should be the most valuable of all. It should be far more valuable than the knowledge of nonliving beings and of plants and animals. Hence, psychology is more important than chemistry, physics, mathematics, astronomy, geology, biology, botany, and zoology, and other natural sciences. We are speaking here, of course, of the knowledge about created things in the visible universe.

Psychology studies the *knowledge process* step by step in its development, from the reaction of the sense organs to the external stimuli, in its passage through the internal senses, and in its transition over into the intellect, until it reaches its completion in the formation of ideas, judgments, and acts of reasoning. The various *mental powers* active in the acquisition of sensory and intellectual knowledge will be studied in detail. A knowledge of these powers will be of great value for all the *sciences*, because they are the result of the knowledge process of man's mind. Similarly, such an acquaintance with the knowledge process and the powers of the human mind is essential to the entire system of

education, for without it proper methods of education cannot be devised.

The psychological study of the *will* and of voluntary action is of paramount value for *law, ethics, and sociology*. Our treatment of individual responsibility, of domestic and social relations, and of international rights and duties will have to undergo essential modifications, if we must come to the decision that the human will is not truly free.

From a *personal* standpoint, the question of the existence, spirituality, and immortality of the *individual soul* is of vital interest to everyone, depending on whether the question must be answered in the affirmative or negative, because the answer will influence the direction of each one's entire life.

The first part of the book follows the general lines of empirical and experimental research. The second part seeks to determine the ultimate nature of man as an organism.

Summary of Chapter I

Psychology is a science, with its own proper subject matter and method of investigation.

1. *Subject Matter of Psychology.* Etymologically, psychology means 'the science of the soul.' Many modern psychologists look upon psychology as 'the science of the mind'; others, as 'the science of consciousness.'

Among philosophers, some consider psychology to be 'the philosophy of organic life,' including within its subject matter the life of plants, animals, and men. Others restrict the subject matter to the nature of man in his vegetative, sensory, and rational life. Some restrict it entirely to man's sensory and rational life.

2. *Psychology at Science and Philosophy.* As a science, in the modern sense of 'scientific psychology,' it analyzes mental phenomena, classifies them, and determines their *proximate causes*. 'Philosophical psychology' seeks to penetrate beyond the surface of phenomena to the *ultimate reasons, principles, and causes*, so as to uncover the nature and essence which gives rise to such phenomena.

Scientific psychology is also termed 'empirical' and 'experimental,' while philosophic psychology is often called 'rational.'

3. *The Method of Psychology.* The general method employed is induction, or analysis, and deduction, or synthesis. Both must be used, but scientific psychology is predominantly inductive and analytic, while philosophical psychology is largely deductive and synthetic.

The *special method* is twofold, subjective and objective. The *subjective* method of introspection studies mental phenomena by means of the internal observation of experience on the part of the individual person. The *objective* method seeks information about the mental states of man through means other than introspection. Such pertinent information is supplied by other minds, languages, animal psychology, biology, physiology, abnormal psychology, psychiatry, and psycho-physics.

4. *Psychology and Cognate Sciences.* We must distinguish between the 'material' and the 'formal' object of a science. The *material* object is the general object with which it occupies itself; the *formal* object is that special phase or aspect of the general object which forms the subject matter peculiar to this science and which distinguishes it from all other sciences. Since the material object may be common to a number of sciences, psychology is related to the natural sciences of biology and physiology and to the philosophical sciences of logic, epistemology, cosmology, and ethics. It differs from them, however, in its formal object.

5. *The Whole Man.* The *chief purpose* of psychology is the better understanding of *man*. Man is an *integral organism*, comprising within his being vegetative, sensory, and rational life. Hence, the whole man is here proposed as the primary object of study. We may therefore *define* psychology as *the philosophic science of the life of the human organism*.

6. *The Value of Psychology.* The study of the knowledge process and of man's mental powers is of value for all

sciences and for the entire system of education. The study of the will is of paramount value for law, ethics, and sociology. The question of the existence, spirituality, and immortality of the individual soul is of vital interest to everyone.

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Chapter 2

MAN: AN ORGANISM

MAN IS AN ORGANISM. LITERALLY, AN 'ORGANISM' IS A BEING which consists of, or possesses, organs, and by an 'organ' we understand a part or structure adapted for the performance of some specific function or functions. Biologically, an *organism* is an individual constituted to carry on the activities of life by means of parts or organs more or less separate in function but mutually dependent. It is in this biological sense that man is an 'organism.'

Man is, therefore, a living bodily being, just as a plant or an animal is said to be a living bodily being. Men, animals, and plants form the three great kingdoms of living beings in our universe, so far as our knowledge goes, and, since they possess life, they are radically distinguished from inanimate, or nonliving, beings, such as chemical elements and chemical compounds.

All these types of being have much in common. Chemical functions are found in plants, animals, and men; the functions of plants are found in animals and men; and the functions of animals are found in men. It will be advisable, therefore, to analyze and compare these various types of

being, in a factual manner, and thereby obtain at least a summary knowledge of man as an organism.

Living and Nonliving Matter

It is not our purpose here to introduce a philosophical discussion on the difference between living and nonliving matter. The difference between these two types of being is recognized by all to be a fact beyond dispute. Without going into elaborate details, the *main characteristics of living matter* are as follows:

First, *organization*. Living matter is organized. Living beings possess organs or structural parts distinct from one another, each of which has a specific function to perform. Organization is found in unicellular as well as in multicellular plants and animals. An amoeba, for example, possesses diverse structures within its single cell-body, and these various structures (organs, organelles) perform diverse functions.

Second, *irritability*. Living matter responds to changes in the environment (such changes are called 'stimuli') by change in shape, production or cessation of movement, or other activities of their organs or parts. Living matter does not receive the influences of surrounding objects and energies in a passive manner, but reacts to them in a specific way, each plant and animal reacting differently to the same stimulus.

Third, *metabolism*. In biology and physiology 'metabolism' is the technical term which designates the processes in plant and animal cells involved in the

construction and destruction of living tissue during the course of the activities of life; it consists of the chemical changes occurring in living cells, by which the energy is furnished for carrying on vital activities and new material is assimilated for the maintenance and repair of the individual plant or animal. The essential processes of life are produced in and by the 'protoplasm.' Protoplasm is the physical basis of life. It is the essential substance constituting the body and nucleus of the cells of plants and animals. Ordinarily, protoplasm is a practically colorless, semi-fluid substance, filling the body of the cell and containing a large amount of water in which fine granules are suspended. Its physical structure is not well known, though it is now recognized by all biologists to be heterogeneous in character and is considered to be different in different types of cells and in different types of organisms. Chemically, it is an extremely complex compound, the composition of which is still obscure.

Metabolism has a twofold aspect. The one is constructive, and is termed 'assimilation' or 'anabolism'; the other is destructive, and is called 'disassimilation' or 'katabolism.' *Anabolism* is a synthesis, a building up of the living protoplasm through the absorption of nutritive materials and the changing of these materials into the living substance of the cell; the simple elements are thereby united into complex organic compounds, and in this chemical process energy is stored for future use. *Katabolism* is a destruction, a breaking down of the protoplasmic material; the protoplasm is decomposed and oxidized, the energy necessary for the activities of life is

thereby liberated, and the waste is excreted. In this double process, therefore, dead matter is first changed into living substance, and then living substance is changed back again into dead matter.

Fourth, *growth* and *reproduction*. By 'growth' we understand the progressive development of a cell, organ, or organism from its earliest stages to full maturity. No cell, or organ, or organism comes into existence complete and fully matured in size and structure. It develops gradually through the intussusception of nutritive material. By 'reproduction' we understand the process by means of which cells produce new cells and plants and animals produce new plants and animals of the same kind. Even in the case of new plants and new animals, however, they originate from single cells, so that all reproduction is ultimately a matter of cell reproduction. Ordinary cell reproduction in multicellular plants and animals (for example, in a tree or a cat) is simply 'growth' of the individual. In unicellular plants and animals (for example, in a *gloeocapsa* or an *amoeba*) this cell reproduction always results in the generation of a new individual. In the higher forms of plants and animals the reproduction of new individuals requires specialized cells whose sole function is the generation of offspring. All reproduction, whether of cells in ordinary growth or of individuals through generation, is thus the result of some form of cell division. In order to grasp the significance of these facts, it is necessary to understand the nature of the cell and of cell division.

Notwithstanding their many differences, all cells have certain features in common, which makes them fundamentally alike. It is thus possible to give a diagrammatic representation of a *generalized cell*.

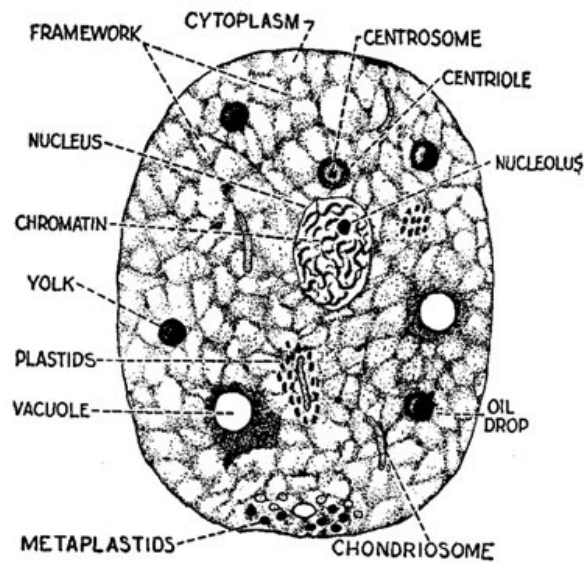


Fig. 1. Generalized Cell. The two main parts are the nucleus and the cytoplasm. The cytoplasm is the protoplasmic body of the cell, as distinguished from the nucleus. — The nucleus with its contents is the essential organ of the activities of metabolism, growth, and reproduction of the cell; in most cases, the nucleus is a well-defined body, but in some types of cells its contents are distributed throughout the cytoplasm. — The nucleolus is a small nucleus usually found within the body of the regular nucleus. — Chromatin is a deeply staining nuclear material which is the physical basis of heredity; it appears in the nucleus as a network of irregular arrangement. — The framework is a sort of semisolid protoplasmic network distributed throughout the cytoplasm of the cell. — Vacuoles are cavities or vesicles containing a watery fluid. — Plastids are small bodies of specialized protoplasm, active in metabolic changes. — Metaplastids are lifeless undigested particles or waste material. — A chondriosome is a semifluid body. — Oil drops and yolk globules are nutritive material. — The centriole is a specialized mass of protoplasm which develops into an aster or starlike figure in cell division. — The centrosome is a minute protoplasmic body lying in the centriole.

Not all cells contain all the parts shown in the illustration. Essential, however, to every cell is the *nucleus*;

it is the bearer of vital activity, and without it the cell would die. Among the structural elements of the nucleus, the 'chromatin' material plays an important part in the life cycle of the cell. When a cell is about to divide, whether for the purpose of growth or of generation, this chromatin material assembles itself into a strip or thread and then breaks up into separate particles called 'chromosomes.' These chromosomes contain the 'genes' which are the main factors in heredity. During cell division, each chromosome splits evenly into two portions, temporarily doubling the number of chromosomes; one half remains with the parent cell, the other half goes to the daughter cell. Since the total number of chromosomes is constant and specific for each type of plant or animal (for example, the drosophila, or fruit fly, has eight chromosomes in each cell), every cell in the body has the same number of chromosomes. The entire process of cell division is termed mitosis ('the formation and movement of threads') or *karyokinesis* ('movement of the nucleus'). (See Fig. 2.)

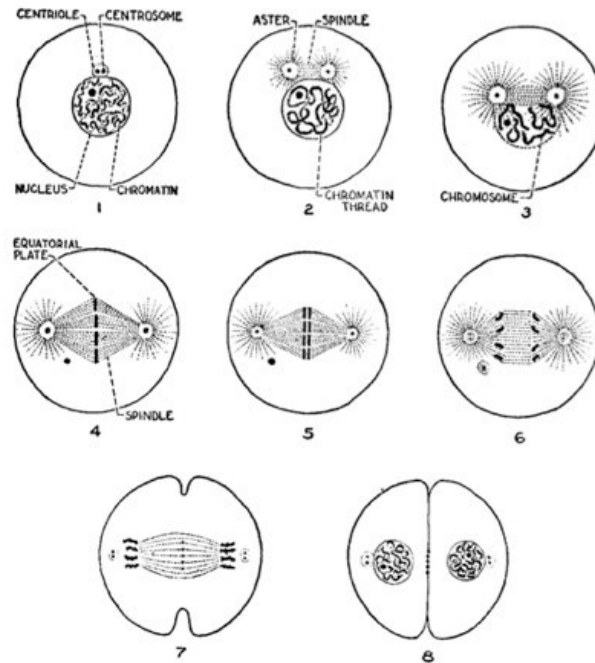


Fig. 2. Mitosis, or Cell Division. 1. The cell in its resting stage. — 2. The beginning of mitosis. The two centrosomes separate and move apart, each enclosed in an aster or starlike figure. A spindle of protoplasmic filaments is formed between the two asters. The chromatin arranges itself into a thread. — 3. The chromatin thread breaks up into loops, the chromosomes. — 4. The chromosomes are caught up by the spindle and arranged circularly in the equatorial plate. — 5. The chromosomes divide longitudinally, doubling their number. — 6. One half of the chromosomes are drawn toward one aster, the second half toward the other aster. — 7. The cell body begins to divide. — 8. The chromosomes dissolve into chromatin. The cell body has undergone a complete division so that the original cell now consists of two daughter cells. For the sake of simplification, the diagram represents but four chromosomes.

In the *generation* of new individuals, a portion of the parent's body is separated or set aside, and this portion then develops into the offspring. When the offspring originates from a single parent, it is an 'asexual' reproduction; examples are cleavage ('fission') and budding

(‘gemination’). Most multicellular plants and animals, however, especially those of a higher type, generate their offspring by means of ‘sexual’ reproduction, in which the new individual originates from the union of the female egg cell and the male sperm cell; these sex or germ cells are called ‘gametes.’ If these eggs and sperms retained their full number of chromosomes and passed them on to their offspring, the latter would have a double number of chromosomes in each body cell. Thus, the first drosophila, or fruit fly, would transmit 16 chromosomes to its offspring; the second generation would receive 32; the next, 64; and so forth. In the long run this would be disastrous to the individuals and the species. As a matter of fact, of course, this multiplication of chromosomes does not occur. It is avoided by a particular kind of cell division in the gametes, called maturation division.’ In maturation division one half of the number of chromosomes of the germ cell pass out of the body of the cell and form a so-called ‘polar body.’ In this manner the number of the chromosomes of both the egg cell and the sperm cell of the parents is halved; and when these two cells unite to constitute the fertilized ovum, the original number of chromosomes is restored, so that the first cell of the offspring contains the same number as the cells of the parent bodies. From this point on, the first cell of the offspring divides and multiplies according to the process of ordinary mitosis. (See Figs. 3 and 4.)

Fifth, *individuality*. Every organic being consists of heterogeneous parts — elements, chemical compounds, cells, tissues, organelles, and organs. Each part has its own peculiar function. All parts and all functions, however, are

not there for their own sake, but for the sake of the organism as a whole; they are mutually dependent and conspire toward the welfare of the individual plant and animal as a totality, a unit. It is the individual which counts, not so much the parts. All functions are, strictly speaking, functions of the individual, and the parts and organs are merely the means through which the individual carries out its varied activities. The individual plant and animal is, in all truth, much more than the sum of the parts which make up its body. This distinctive and constant individuality is the reason why scientists are able to make such a complete classification of plants and animals into varieties, species, genera, etc.

These are the main characteristics of living substance in general. Nothing similar to organization, irritability, metabolism, growth, reproduction, and individuality is found among the combinations of elements and compounds in inorganic nature.

The Cell and the Crystal

Some have argued that the cell is but a type of crystal, or, at any rate, that the crystal is so similar to the cell that there is no fundamental difference between them. A resemblance exists, but it is altogether superficial. A comparison between the crystal and a unicellular plant, which is the lowest form of life, should prove fruitful in establishing the *great difference* between living and nonliving matter.

First of all, the *composition* of crystals is very different from that of cells. The material of crystals consists either of

pure elements (for example, carbon or sulphur) or of chemical compounds which are found everywhere in nature (for example, sodium chloride or potassium sulphate); and the whole crystal is composed entirely of such elements and compounds. Not so the cell. There is a considerable diversity of material in the cells; organic compounds of various types are present; and this material is not distributed uniformly throughout the body of the cell, but is different in different parts.

Then, there is a difference of *structure*. A crystal is formed by the symmetrical juxtaposition of the atoms and molecules along geometrical lines and sharp angles; it is a latticework, each part of which is a constant repetition of every other part; and it is characterized by extreme rigidity. The cell, however, possesses a body made up of distinct parts, heterogeneous in structure, none of which is a mechanical repetition of another; its nucleus manifests great complexity of structural detail; the protoplasm shows a manifold differentiation; the entire cell material is relatively soft, pliable, and rounded in contour.

Again, the *growth* of a cell is radically diverse from that of a crystal. A crystal grows through the mere superposition of layer upon layer of identical material upon the outside surface, leaving the interior of the crystal untouched and unchanged. The cell, on the other hand, grows by means of intussusception and assimilation of foreign material, and this material is broken down and remade into organic compounds, the like of which is found nowhere in nature except in the organism.

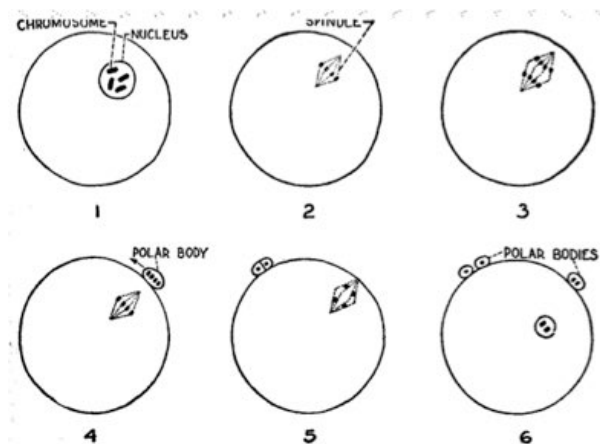


Fig. 3. Maturation Division of Gamete or Germ Cell. 1. The germ nucleus moves toward the periphery of the cell. — 2. The chromosomes arrange themselves into a spindle. — 3. The chromosomes divide. — 4. One half (4) of the chromosomes pass out through the cell wall and form the first polar body. — 5. A new spindle is formed. The remaining chromosomes arrange themselves in pairs. — 6. One pair of chromosomes passes out and forms the second polar body. Only two chromosomes (one half of the original number) are left in the mature gamete. — For the sake of simplification, the diagram represents but four chromosomes.

Furthermore, there is a difference of *activity*. The only activity which occurs in a crystal is the atomic and molecular activity which builds the crystal and retains its geometrical shape; the crystal as a whole has no activity. The cell, however, is definitely active throughout the period of its existence; metabolic changes take place at all times. The cell reproduces itself, giving rise to new cells and to new individuals, something a crystal never does. The cell produces many by-products, such as alkaloids, essential oils, and many other organic substances, while the crystal never produces anything.

Finally, the *duration in existence* is totally different for the crystal and the cell. The crystal is a rigid and

permanent thing and, if left to itself, will remain indefinitely in existence as a crystal; some crystals are, without doubt, thousands and probably millions of years old. A crystal can be dissolved and recrystallized, and this reversible process can be repeated times without number. The cell, as a cell, has a definite span of existence; after a certain length of time, it ceases to exist of its own accord and decomposes.

A superficial comparison might show a resemblance between a crystal and a cell, but a closer scrutiny reveals the fact that they are totally different: the crystal is simply dead matter, while the cell is a living being.

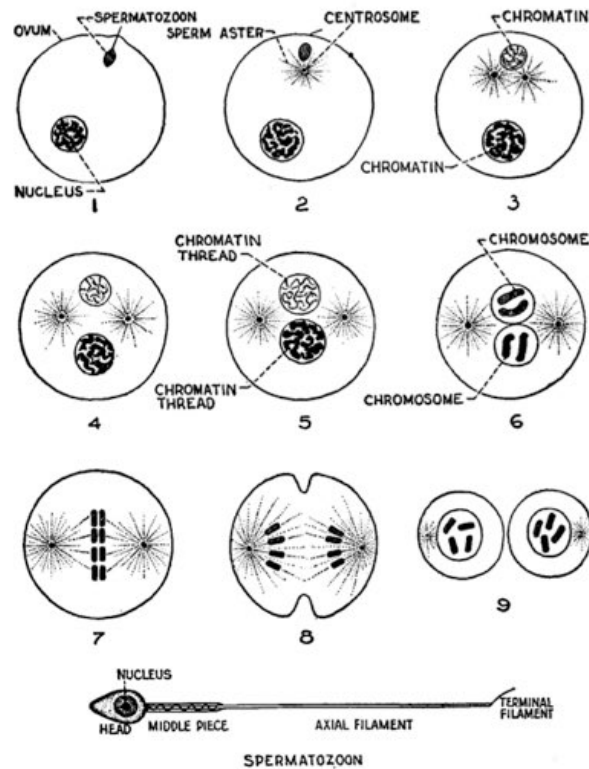


Fig. 4. Fertilization. 1. The spermatozoon (sperm, male gamete) enters ovum (female germ cell, female gamete). — 2. The centrosome of the spermatozoon becomes visible. An aster is formed. The head of the sperm cell swells, and the nucleus of the ovum grows larger. — 3. The chromatin framework of the sperm nucleus becomes visible. The centrosome doubles. — 4. The centrosomes move apart, each to opposite sides of the cell. The chromatin material of the sperm nucleus has completed its framework stage. — 5. The nuclei of the spermatozoon and of the ovum are now equal in size and condition. — 6. The chromosomes are formed in the two nuclei, alike in number. (The chromosomes of the spermatozoon nucleus are shaded, while those of the ovum are in solid black.) — 7. The spindle is complete, and the chromosomes divide longitudinally and equally. — 8. Four chromosomes (two paternal and two maternal) move toward the left aster, and four to the right aster. The cell body begins to divide. — 9. The division is complete. Two cells are formed, each containing four chromosomes (two paternal and two maternal), the original number found in each of the ordinary body cells (somatic cells). Multiplication of cells now occurs through regular mitosis. — For the sake of simplification, the diagram represents but four

chromosomes.

Man: A Vegetant Organism

Plant life is the lowest form of life known on the globe. Negatively, a plant is a living being devoid of cognition; no organs, which might serve for perception, are discernible, and no functions manifest real knowledge of any kind. Positively, a plant is an organism which possesses the functions of *nutrition, growth, and propagation*. Although the plant has many diversified functions, they are subservient to these three, which are characteristic of a plant as such. Since nutrition, growth, and propagation are vegetative activities, a plant is a vegetant organism pure and simple.

Man, too, is a vegetant organism, because man, like a plant, feeds himself, grows, and propagates.

The *elements* used in the process of human nutrition, in the main, are: oxygen (O), hydrogen (H), carbon (C), nitrogen (N), iron (Fe), calcium (Ca), sulphur (S), phosphorus (P), magnesium (Mg), sodium (Na), chlorine (Cl), manganese (Mn), copper (Cu), and potassium (K); some others are also found occasionally. These elements and their compounds serve a double purpose in the organism: the production of energy and the maintenance of the various tissues and organs throughout the body. These elements, when used as food by man, come in the form of *organic compounds* and are supplied by plants and animals. The three main groups of food substances are the carbohydrates, the proteins, and the fats. Certain mineral

substances, too, are necessary, and also vitamins and hormones.

Before these organic substances can be used for energy or maintenance, they must be broken down and transformed through chemical change. This transformation is carried out in the *gastro-intestinal tract* through the agency of various secretions, elaborated by the salivary glands and the glands of the stomach, of the liver, of the pancreas, and of the intestinal walls. The enzymes, 'present in these secretions, perform an important function in this connection. They are organic catalysts. A catalyst is a substance which by its mere presence among other substances changes the rate of chemical reactions, without itself undergoing a change in the process. Some organic compounds are manufactured by chemists in the laboratory, but such reactions are obtained only by using high temperatures and pressures; in the organisms the enzymes bring about such reactions with utmost ease and speed. The chemist, for example, cannot change glucose to galactose, but the body does this readily with the help of enzymes. The action of enzymes is specific for certain types of substance; they may either decompose or synthesize compounds.

After the transformation of the food is complete, it is ready to be assimilated. *Resorption* occurs primarily in the small intestine. The liquified food particles, now broken down into very small molecules, pass through the intestinal wall. Most of this material is carried by the portal vein to the liver and from there by means of the hepatic veins to the inferior *vena cava*, near the right auricle of the heart, where it enters the blood stream; the rest is carried by the

lymph channels through the thoracic duct to the subclavian vein, where it also enters the blood stream. In this manner the food particles become a part of the blood, flow to the heart, and are pumped to all tissues of the body. Each cell, tissue, and organ then assimilates whatever it needs for its own particular purpose.

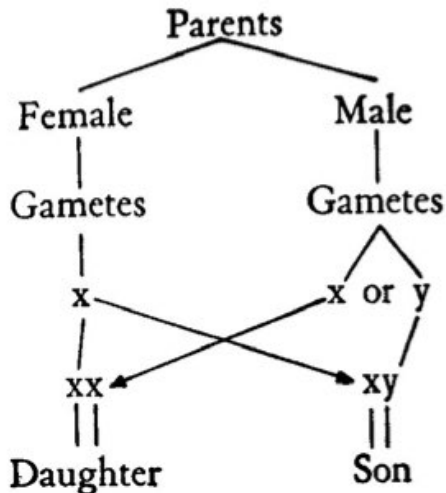
Until an organism reaches the full stature of its maturity, it is in a condition of *growth*. Man, too, as a vegetant organism, is subject to growth. He begins life as a single cell, the fertilized ovum, which normally attaches itself to the wall of the uterus of the mother, and then receives nourishment from the maternal blood. During the period of gestation, practically all the members and organs of the child are completely formed. Man's body is thus 'fearfully and wonderfully made,' before it sees the light of day in birth. The body continues to grow and develop until the early twenties. During all this time the ordinary processes of life continue uninterruptedly: energy is stored, used, and restored in an endless cycle; cells and tissues are built, torn down, and rebuilt in unceasing activity; and all the while the growth of the body goes forward to full maturity. From that point on maintenance of bodily structure is the chief function of metabolism.

Reproduction in man, as in all living beings, is a marvel of activity and structural design. The conception of the child occurs when the gametes or germ cells, namely the female ovum and the male sperm, fuse so as to bring about a union of the chromosomes of the two gametes. The specific number of chromosomes in the somatic, or body, cells of man is 48. In order that the child, beginning life with the

fecundated ovum, have this same number of chromosomes in each cell of its body, it is obviously necessary that the number of chromosomes in the parent germ-cells be reduced to one half, or 24. This is accomplished in each by means of a maturation division.

Maturation division takes place in both gametes, but not in the same manner. The female germ cell possesses 46 ordinary chromosomes and a special pair called 'X' chromosomes; the male germ cell contains, besides the 46 ordinary chromosomes, a pair consisting of one 'X' chromosome and a much smaller one designated the 'Y' chromosome. In the development of the *male* gamete, maturation division proceeds in the following manner. Forty-six chromosomes form 23 pairs of chromosomes, but the 'X' and 'Y' chromosomes do not form a real pair. The 23 pairs divide vertically (not longitudinally, as in ordinary cell-division); 'X' and 'Y' remained unchanged. The male gamete now divides into two cells, one cell having 23 chromosomes and the 'X' chromosome and the other 23 chromosomes and the 'Y' chromosome. These two cells again divide, but this time the chromosomes divide longitudinally without pairing. We now have four cells, and the result of this division is: two cells each possessing 23 ordinary chromosomes and an 'X' chromosome, and two other cells possessing 23 ordinary chromosomes and a diminutive 'Y' chromosome. Of these four sperm cells one develops and grows to full size to become the spermatozoon, or mature male fecundating cell, while the other three degenerate and disappear. The *female* ovum also undergoes a maturation division, in order to reduce the 48 chromosomes

to 24; however, no further division takes place, and the result will always be that the mature ovum contains 23 ordinary chromosomes and one chromosome.



SINCE EVERY FEMALE HAS AN 'XX' pair of chromosomes in its cells and every male an 'XY' pair of chromosomes in its cells, biologists have constructed a theory to determine the sex of the child. The surviving spermatozoon may contain either an 'X' or 'Y' chromosome. Depending on the nature of this chromosome, the child will be

either female or male: if it is an 'X' sperm, it will be a daughter; if a 'Y,' a son.

According to this theory, it will be seen, the sex of the child is already determined at conception; later developments merely bring out the characteristics of the respective sexes.

These are, in basic outline, the chief features of life in man as a vegetant organism. In reality, of course, the vegetative activities taking place in man's body are immensely varied and complex.¹

Man: A Sentient Organism

An animal is radically different from a plant, both anatomically and functionally. A plant is restricted in its functions to the vegetative activities of nutrition, growth, and reproduction. The animal body exercises these activities, modified to suit its type, but over and above these vegetative activities it possesses a nervous system of some sort with an activity peculiarly its own. Man is an animal organism and as such has a nervous system and performs nervous functions.

The *basic unit* of the nervous system is the neuron, or nerve cell. The neuron has a number of parts. The 'cell body' consists of nerve protoplasm and takes care of the nutrition of the entire neuron. The 'nucleus,' like the nucleus of every other kind of cell, has its location in the cell body and is the functional center of all nerve activity in the neuron; it also is the bearer of the specific characteristics of the neuron. The 'axon' is a prolongation of the body of the nerve cell, typically single and long, terminating in short branches relatively far from the cell body; the axon, together with its coverings, forms the nerve fiber, and the axon is the axis cylinder of such a nerve fiber. The 'dendrites' are protoplasmic structural processes of the neuron; they branch repeatedly and taper rapidly, terminating near the cell body. As a rule, dendrites conduct nerve impulses toward the cell body, while axons conduct nerve impulses away from the cell body. The 'end brushes' are the many minute fibrils which extend from the axons. The 'neurilemma' is the outer sheath enclosing a nerve fiber. Some axons are enveloped in a sheath of myelin, or fatty

tissue, and this is called the 'medullary sheath' or 'myelin sheath.'

Every nerve cell, or neuron, possesses the properties of *excitability and conductivity*. The nerve tissue is 'excitable' or 'irritable,' that is to say, it has the property to react to a stimulus; and a stimulus is the influence of free energy (chemical, thermal, radiant, mechanical) applied to irritable tissue. In response to a stimulus, an impulse is transmitted along the nerve fiber; the property of a nerve fiber to transmit such an impulse is termed 'conductivity.' This impulse may travel from the periphery inward to the central portion of the neuron; then we speak of a 'receptor neuron,' and such fibers are 'sensory' or 'afferent' fibers. Or, the impulse may travel from the central portion of the neuron to the periphery; this is an 'effector neuron,' and fibers of this type are 'motor' or 'efferent' fibers. Since the nerve impulse can travel in only one direction, depending on whether a nerve fiber is of the afferent or efferent type, nerves are said to possess 'polarity.' The endings of afferent nerves, specially adapted to the reception of peripheral stimuli, are called 'receptors'; if these endings terminate in definite organic structures, such as the eye or ear, they are termed 'receptor' or 'sense organs.' The endings of efferent nerves terminate in glands or muscular tissue, effecting a stimulation there, and such nerve endings are styled 'effector organs.'

EVERY NEURON IS A DISTINCT ANATOMICAL UNIT; HENCE, NERVE cells, in relation to each other, are not continuous, but

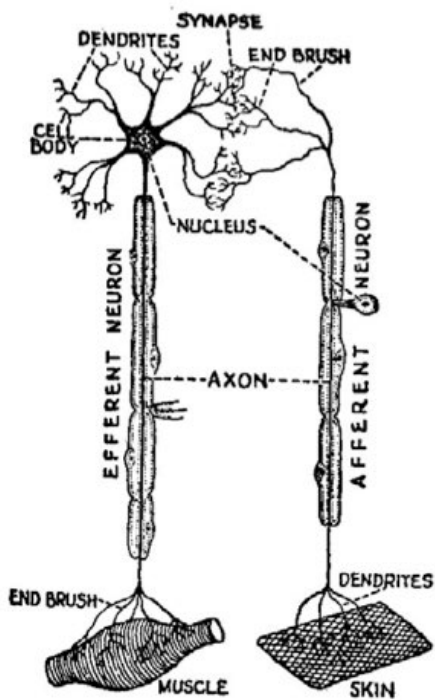


Fig. 5. Synapse of Afferent (Sensory) Neuron and Efferent (Motor) Neuron.

contiguous. Contact with other neurons is made by junctions or *synapses*, and the stimulation of one neuron by another is through the synapse from end brush to dendrites. The synapse is therefore defined as the place at which a nervous impulse passes from the axon of one neuron to the dendrites of another. Whether or not an impulse shall pass from one neuron to another depends on the momentary state of the synapse. It is assumed that the resistance to the conductivity of the nerve impulse is greater in the synapse than in the neuron,

and this resistance varies with conditions. Since the axons act as a stimulating apparatus and the dendrites as a receiving apparatus, the nerve impulse can travel only in one direction, namely, from axon to dendrite; this is the so-called *Law of Forward Conduction*. Whenever a neuron is stimulated, it either does not respond at all, or it responds with the maximum output of which it is capable, no matter what the strength of the stimulus; this is the *All-or-None Law* of nerve activity.

The rate of speed with which the impulse travels through a nerve is about 100 meters per second. The nature of the *nerve impulse* is not definitely known. All nerve action,

however, is accompanied by *electra-chemical* phenomena. For this reason many biologists consider the nerve impulse to be entirely and solely electro-chemical in nature, in the sense that chemical changes in the tissues produce electrical pulsations of varying frequency and regularity in the nerve fiber. It must be noted, however, that the rate of speed of the nerve impulse, being far below the speed of electricity, militates against such a view. Whatever the nature of the impulse itself, electrical phenomena are always present. Attaching the two electrodes of a galvanometer to a nerve fiber and stimulating the nerve end, the needle of the instrument swings first to one side and then to the other; this fact indicates that an electrical current has passed. At the same time it is noticed that the active part of the nerve tissue is electro-negative, as compared with the part which is inactive. The frequency of these pulsations differs with the intensity of the stimulation, but all have the same magnitude in a given fiber. These pulsations are called 'action currents or 'action potentials' of the nerve.

After a nerve has been stimulated, a certain interval of time must elapse before another reaction can set in, just as if the nerve were a battery that had been discharged and must recuperate by recharging. During the period of recuperation the nerve resists stimulation, and this period is styled the 'refractory phase.' When this refractory phase is passed, there follows a brief period, called the 'phase of hyper-excitability,' in which the nerve reacts to a stimulus of minor strength. From a *chemical* standpoint, nerves in action consume oxygen, give off carbon dioxide, and

produce heat. Nerves, therefore, become fatigued through activity and demand rest periods after prolonged stimulation.

While it is true that each neuron, or nerve cell, is a physiological unit, independent of the other neurons, it is also true that these neurons do not stand and operate in isolation. By means of synaptic junction points the nerve impulses travel over a multitude of paths from fiber to fiber. In this manner the nerves together form a complete and integral *nerve system*. Spread throughout the whole extent of the body, fibers form nerves, nerves combine into trunklines, trunklines unite into minor systems, and minor systems merge into one grand system which services the entire sentient organism. In man there are two main systems of nerves: the *cerebrospinal system* and the *autonomic system*. Since the student should have at least a rudimentary knowledge of these systems, a summary of their structures and functions will be given in the next chapter.

NERVE ACTION CULMINATES IN *SENSE KNOWLEDGE*. THIS KIND OF cognition is a property of animal life. The animal organism possesses certain structures which mediate a knowledge of the conditions within the animal body itself and of conditions and things external to the body. Such structures are termed sense organs or 'receptors.' Various types of *sense knowledge* occur in man.

Man, by means of the *tactual or somesthetic sense*, experiences pressure, temperature, pain, hunger, thirst,

nausea, bodily equilibrium, bodily movements, and combinations of these states. The knowledge acquired thereby enables him to safeguard the health and integrity of his body. Since the messages are conveyed by the nerve fibers connected with end-organs located in the skin, in the viscera, and in the muscles, joints, and tendons, man obtains a fairly accurate mental picture of the relative position and condition of his members. The sense of *taste* acquaints him with the savors of various objects, and the sense of *smell* with their odorous qualities. While a certain amount of pleasure is derived from taste and smell, fundamentally these senses are protective in character; they enable man to recognize and distinguish things which are useful or harmful for his well-being. Through the sense of *hearing* man perceives sounds emanating from objects in the outside world. Distant objects hereby come within the range of man's cognitive powers. Some sounds have a purely natural significance, such as the voice of wind and water, the calls of birds and animals; others receive a meaningful significance through man's own contriving, like the music of an orchestra, a song, or human speech. Perhaps the most distinctively external cognitive sense of man is that of *sight*. Practically the whole world becomes a picture book to man's mind through his eyes. He sees the colored panorama of the earth by means of his unaided sight, while with the aid of microscope and telescope he penetrates into the mysteries of the infinitesimally small and of the immeasurably vast.

Besides these so-called 'external' senses, man has *internal* senses. His *central or synthetic sense* [historically

called *the common sense* - ed.] combines the data of the various external senses into a composite perception. Not only does he experience the activity of the separate senses, but he can localize them in his body. He perceives the yellowish color and spherical shape of a certain object with his eyes, feels its soft and rough texture with his hands, tastes its sweet flavor with his palate, and smells its fragrant odor with his nostrils; his central sense unites these distinct and mutually independent data into a harmonious sensory whole and calls this thing of diversified qualities an 'orange.' Even when the objects which stimulate his senses are absent, he can make them present again in an image within his mind, reproducing in an imaginal way their many qualities by means of his *imagination*. Past events are recalled and recognized as past, so that their exact position in time and place is located and dated; recognition is the work of his *sensory memory*. Finally, man experiences certain unlearned tendencies or drives or dispositions toward or away from certain specific objects or activities in given situations; these drives are the *instincts*, and they are directed mainly toward the preservation of the individual and of the race.

Appetition is the second main activity of man's sensory life as an animal organism. It follows sensory knowledge. Man does not only 'know' objects in a sensory way; he also desires them and strives for them, fears them and flees from them, loves them and hates them. Emotional states, such as joy, sadness, hope, despair, courage, and anger, are involved in appetite; also feelings, as pleasure and displeasure.

There is a very important point to be noted in this connection. Man's body consists ultimately of ordinary chemical elements and compounds. But his body is not just a mass of lifeless, inert chemicals, because these elements and compounds are transformed into living, organized materials which thereby become an integral part of the body in its vegetative functions of nutrition, growth, and reproduction. Nor do the vegetative functions run an independent course in man's body, as if man as a vegetative being and as a sensory being performed vegetative and sensory functions separately along parallel lines. On the contrary, the vegetative organs not only carry out their proper functions of nutrition, growth, and reproduction like a plant, but also build, feed, repair, and reproduce nerves, nerve tissues, and organs of the body as a sentient organism. On their part, the nerves, nerve tissues, and organs stimulate and control the vegetative organs in their respective functions for the general welfare of the body as a unified whole. And the same chemical elements that are utilized in the vegetative organs and functions are also utilized in the sensory organs and functions. Man is, therefore, *one being with an integration* of materials, structures, and functions, with activities of a chemical, vegetative, and sensory character, all welded into a *vital unit organism*.

Man: A Rational Organism

Man is a *rational organism*. Man is 'rational,' because he possesses reason. Rationality, in man, implies *cognitive and*

appetitive powers.

Intellectual cognition manifests itself in a threefold function: the formation of ideas, of judgments, and inferences.

Ideas are the intellectual representations of things. Ideas of things are quite different from the sense images of these same things. Sense images are concrete, particularized, individualized; ideas are abstract, generalized, universalized. An example will clarify this. I see a man and note that he is tall and slender, has a height of six feet two inches, weighs 190 pounds, with a white skin, brown eyes, and brown hair. All these features and attributes are concrete, particularized, individualized; and they are different for different human beings. On the other hand, my idea of 'man' is that he is a 'bodily, living, sentient, rational substance'; in other words, this man is a 'rational animal,' and the definition fits not only this man but every human being, whether infant or adult, whether male or female, whether white or black, whether tall or short, whether heavy or light, etc. Ideas are, therefore, class ideas, universals. The sense perceives a man in all his *concrete individuality*, with all the peculiar traits and characteristics which make him to be 'this' man and differentiate him as an individual from every other. The intellect, however, in its idea apprehends him in those essential attributes which he has *in common* with all other human beings, leaving aside all the individualizing and differentiating marks peculiar to himself. so that the content of the idea is *universal*, applicable to the individual and the whole class of individuals.

A judgment is an act of the intellect affirming or denying one idea of another. I compare, for example, the idea 'tree' with the idea 'plant' and recognize the fact that they agree; I then pass the affirming judgment, 'A tree is a plant.' Or, I compare the idea 'tree' with the idea 'animal' and see that they disagree; thereupon I pronounce their disagreement in the judgment, 'A tree is not an animal.' If my affirmation or denial in the judgment corresponds to reality, it is a true judgment; if not, it is false. Judgments, therefore, contain *truth or error*. Just as ideas are intellectual representations of 'things,' so judgments are intellectual representations of 'facts': they claim to express the truth about reality as it actually is in itself.

A *reasoning* process or *inference* is used when the mind does not perceive the agreement or disagreement between two ideas by a direct comparison of the two, so that it can make an immediate judgment about them. In order to judge that 'The sky is cloudy,' all that is necessary is that I look at the heavens and see the clouds. 'Can diamonds burn?' Looking at a diamond, or comparing the ideas 'diamond' and 'burn,' will not settle the question. If, however, I can bring in a third known idea with which, upon comparison, I find the two ideas to agree, then I am justified in saying that they agree with each other. Casting about for an idea which could mediate between the ideas 'diamond' and 'burning,' I find that 'carbon' is the substance of which diamonds are made and also that carbon burns. I now argue: 'Carbon is combustible; a diamond is carbon; therefore, a diamond is combustible.' Inference or reasoning is defined as the mental process by which, from certain truths already

known the mind passes to another truth distinct from these but necessarily following from them.

Volition is another phase of man's rational life. *Rational appetite* follows intellectual knowledge, just as sense appetite follows sense knowledge. The power of rational appetite is called the *will*, and the exercise of this power is volition or willing.

It is characteristic of human volition that an intellectual *motive* must precede its exercise. The intellect views a certain object or course of action under the aspect of something 'good.' This 'good' to be acquired is the motive which influences the will to determine itself to act. We experience the fact of *choosing* in the exercise of our will. There is the choice between action and non-action, between one type of good and another type of good, and between various sets of means to attain the same end. The good desired may belong to the physical order, as food and sense pleasure; but it may also belong to the intellectual and moral order, as truth and virtue. One of the most important features of rational volition is that of moral right and moral wrong and the consciousness of personal *responsibility* in choosing between the two. It is the conviction of mankind that the will possesses the liberty of self-determination in such matters, so that man is said to have a *free will*.

Man: An Integral Organism

Man is a living being or organism. He is, similar to the plant, a vegetant organism. He is, similar to the animal, a sentient organism. He is also — and this is a prerogative

peculiar to himself — a rational organism. From each viewpoint, he possesses distinct types of functions. It would, however, be a serious error to draw too sharp a line of demarkation between these types of functions, so as to consider man as a composite being consisting of three organisms somehow united into one. On the contrary, man is an *integral organism*, a single unitary substance which possesses vegetative, sensory, and rational functions.

It has already been pointed out that the selfsame substance performs vegetative and sensory functions. The nerves and senses support and control the vegetative organs in their functions, and the vegetative organs supply the foods which nourish and sustain the nervous system. And so, too, the same organism, which is both vegetant and sentient, is, in the case of man, also rational. There is a complete *integration* of the three types of life — vegetative, sensory, and rational — in man as a single organism.

That man is not three organisms united into one, but a single integral organism with three distinct types of vital functions, is evident from the testimony of our *consciousness*. Nothing is clearer to us than the facts manifested to us by our consciousness. Man is aware that he has a 'body' and a 'mind.' He is aware that he has intellectual knowledge and rational volition. He is aware that he has perceptions of sight, hearing, etc., and that he has sense appetitions and emotions and feelings. Finally, he is conscious of *self*, of his own *Ego*, in all these functions, and he recognizes his own self as the *subject* of these functions, as the agent who performs them and in whom they occur. He is also aware that these functions differ

among themselves, while he, in whom they take place and in whom they inhere as their subject, is *integrally one and indivisible*. These facts are expressed by him in phrases which leave no place for doubt, like the following: 'I think,' 'I will,' 'I see,' 'I hear,' 'I feel,' 'I am hungry,' 'I experience pain,' 'I have pleasure,' 'I eat,' 'I am growing,' 'I am losing weight,' 'I am healthy,' 'I am ill,' 'I walk,' 'I am lying down, and so forth. The same Ego, therefore, considers itself to be the one underlying subject of vegetative, sensory, and rational functions.

It is most important to bear the integrality of man in mind during all subsequent discussions. It will be necessary to treat of the various mental activities of man as if they were isolated entities; but one must never lose sight of the fact that all are *interconnected and mutually interdependent*, and that they are merely various closely related functions of one being, one substance, namely, of man as an *integral organism*.

Summary of Chapter II

Man is an *organism*, i.e., an individual constituted to carry on the activities of life by means of parts or organs more or less separate in function but mutually dependent.

1. *Living and Nonliving Matter*. There is a fundamental difference between living and nonliving beings. Living substance manifests *organization, irritability, metabolism, growth, reproduction, and individuality*. None of these features are found in nonliving matter.

The Cell and the Crystal. Though there exists a superficial resemblance between them, they differ radically in composition, structure, method of growth, activity, and natural duration in existence.

2. *Man: A Vegetant Organism*. Like the plant, man feeds himself, grows, and propagates. *Nutrition* is the preparation and assimilation of nourishing materials in the gastro-intestinal tract. Until he reaches the full stature of maturity he is in a condition of *growth*; growth takes place through the multiplication of the cells through mitosis. The *reproduction* of man by propagation occurs when the gametes or germ cells, after a maturation division has reduced the number of chromosomes by one half, unite to form the fertilized ovum.

3. *Man: A Sentient Organism*. The animal, as distinct from the plant, has a *nervous system* with *sensory functions*. The basic unit of the nervous system is the 'neuron'; it possesses excitability and conductivity. There are 'sensory' or 'afferent' nerves, and also 'motor' or

‘efferent’ nerves. The endings of afferent nerves, terminating in definite organic structures for reception of external stimuli, are called ‘receptors or sense organs’ (eyes, ears, etc.). In man there are two main systems of nerves: the *cerebrospinal* system and the *autonomic* system. *Sense Knowledge and Appetition*. There are various types of sense knowledge in man: tactual or somesthetic, taste, smell, hearing, sight; central or synthetic sense, imagination, memory, and instinct. *Appetition* is the striving toward or away from objects. It is accompanied by various emotions and feelings.

4. *Man: A Rational Organism*. Rationality implies intellectual cognition and rational appetite. *intellectual* cognition manifests itself in a threefold function: the formation of ideas of judgments, and of inferences. The power of *rational appetite* is the ‘will,’ and the exercise of this power is ‘volition’ or ‘willing.’ The object of the will is the ‘good.’ An important feature of rational appetite is that of ‘moral good’ and ‘moral wrong’ and the consciousness of ‘personal responsibility.’ This is based on the conviction of mankind that man has a ‘freewill’ possessing the liberty of self-determination.

5. *Man: An integral Organism*. Man is a living being or organism. He is, similar to the plant, a vegetant organism. He is, similar to the animal, a sentient organism. He is also rational organism. He is, however, not three organisms some how united into one, but an *integral organism*, a single unitary substance which possesses vegetative, sensory, and rational functions.

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1 For a detailed description of these activities, the student should read some standard book on human physiology.

Chapter 3

THE NERVOUS SYSTEM

PSYCHOLOGY IS MAINLY INTERESTED IN THE MENTAL LIFE OF man, whether it be on the intellectual or sensory level. Since the intellectual operations are based to a very great extent on the sense operations, and since the latter are dependent on the nervous system, it is imperative to give at least a cursory description of the nervous system. The latter consists of two main subsystems: the *cerebrospinal system* and the *autonomic system*. Though independent of each other to a certain degree, they are organically one.

The Spinal Cord

The *spinal cord* is a mass of neurons and nerve fibers, enclosed in the skeletal housing of the vertebral column or spine, and extends from about the base of the skull to the end of the spine. The brain and adjacent organs are but the natural extension and amplification of the cord.

Through indentations on the ventral and the dorsal side, the cord is divided into two connected segments, the *right and left segments*. The inside of each segment consists of gray matter containing the nerve cells, while on the outside

each segment consists of white matter composed of bundles of nerve fibers emanating from the cells.

Two *pairs* of nerves emerge from the cord between each of the vertebrae, one from the right side and one from the left. One part of such a pair comes from the dorsal side, and the other part from the ventral side, of the cord; both parts unite, after going separately a short distance, to form a single bundle of fibers. The part emerging from the dorsal side of the cord consists of *afferent* (sensory) nerves; the ventral part consists of *efferent* (motor) nerves. After uniting into a single bundle, the afferent and efferent nerves travel together to various parts of the body and then separate to terminate in their respective organs. There are thus two opposing *conduction paths* from the periphery of the body (i.e., the region in which nerves terminate) to the spinal cord, and *vice versa*: afferent (sensory) nerves send impulses (sensory messages) from the peripheral organs to the spinal cord, and efferent (motor) nerves send impulses (motor messages) from the spinal cord to the peripheral organs. The *intercommunication center* is the cord itself, where a synaptical contact is made between the sensory

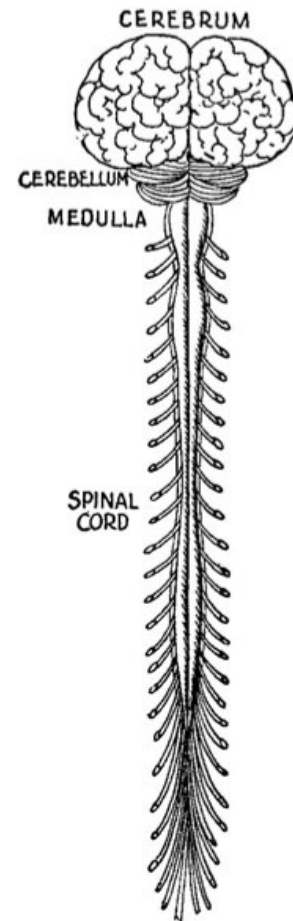


Fig. 6. Cerebrospinal Nervous System.

The figure shows the relative position of its major parts.

and motor nerves. The two sets of fibers (afferent and efferent), upon juncture in the spinal cord, are also in contact with all other fibers of the spinal column and of the brain by means of *connecting* fibers extending from the brain down the entire length of the spinal cord.

The cell bodies of the efferent (motor) nerves are located in the ventral horns of the cord. The afferent (sensory) nerves show a marked difference in this respect; their cell bodies are not located in the cord itself, but are massed together as *ganglia* outside the cord and at a short distance from it.

The *function* of the cord is clear. It serves as a communication center between receptors and effectors coming from, and leading to, the various parts of the body, and also between them and the higher centers of knowledge and control situated in the brain. A linkage is thus established between the autonomic and cerebrospinal systems.

The Autonomic System

As the name indicates, this system of nerves is 'independent,' 'a law unto itself,' 'self-acting.' While it is not true that this system is completely independent of the central nervous system as a whole, its independence of function is sufficient to warrant the name. The connection between this system and the spinal cord and brain is mainly indirect. The *autonomic system* is that part of the peripheral nervous system regulating responses not directly under voluntary control, especially responses

concerned with digestive, circulatory, respiratory, and reproductive activities.

Numerous ganglia of this system are connected with the central nervous system through the mediation of *preganglionic fibers or white rami*; they are medullated neurons, and their cell bodies are located in the brain stem and cord. Other fibers are the *postganglionic fibers or gray rami*; they are unmedullated neurons, whose cell bodies are located in the autonomic ganglia, and whose fibers activate various organs in the body. These fibers are efferent, not afferent, in their functions.

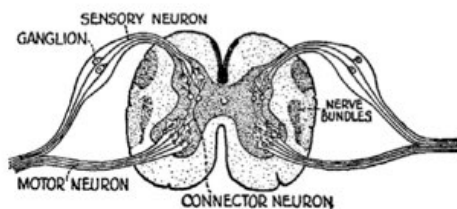


Fig. 7. Cross Section of the Spinal Cord.

The autonomic system is made up of two mutually antagonistic sections: The *sympathetic* (vegetative, visceral) system and the *parasympathetic system*. The sympathetic system is situated in the thoracic and lumbar regions. The parasympathetic consists of two parts: the *cranial*, located in the cranial or head portion of the spine, and the *sacral*, located in the sacral or extreme lower portion of the spine. (See Fig. 8.)

It will be noted that the sympathetic and the parasympathetic systems send fibers to the same visceral and glandular organs; they also innervate the smooth (non-voluntary) muscles of the body. While the one type of fibers acts as an 'accelerator' for some organs, the other type acts as a 'retarder' or 'brake' for the same organs, depending on whether the one type or the other is in the ascendancy.

Under normal conditions, each type has the dominant control over certain portions of the bodily mechanism, but gives way to the other type under particular circumstances. Ordinarily, the activities of both systems are balanced, so that their co-ordination provides a stable, harmonious functioning of the entire organism.

The *parasympathetic or craniosacral* section of the autonomic system regulates the digestive and eliminative processes and the reproductive functions. These operations are accompanied by the more gentle states of feeling and emotion. The *cranial* fibers affect the pupil and lens of the eyes, the circulation in the head glands, the secretions of saliva and gastric juices; they retard heart action, promote the contraction of bronchial tubes, and in general stimulate the muscles of the alimentary tract in their regular functions. The *sacral* fibers control the processes of the rectum, the bladder, and the generative organs in their non-voluntary functions. The parasympathetic nerves are dominant when the organism is mostly in a state of repose.

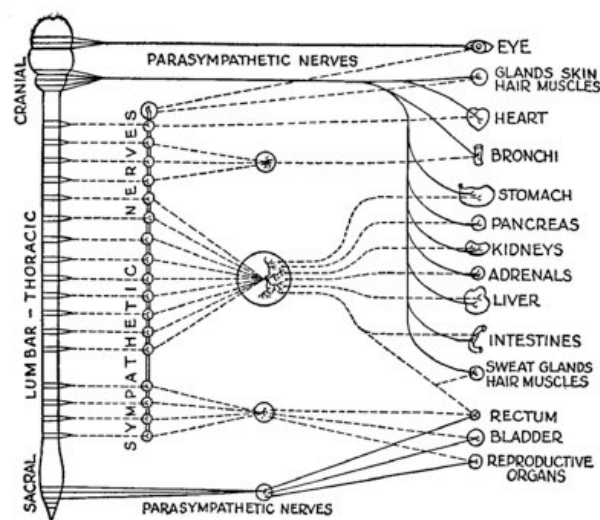


Fig. 8. Diagram of the Sympathetic and Parasympathetic Nervous System.

The *sympathetic* section of the autonomic system is more in the nature of an 'emergency' mechanism, when danger is imminent or when injury has been sustained, and its operations are accompanied by strong emotions and feelings. In the presence of danger the organism must either flee or fight; in either case energy must be released freely and liberally, and fatigue products must be eliminated quickly. This condition demands that certain processes be accelerated, that endocrine secretions be poured into the blood stream, and that the blood itself flow rapidly and fully to the peripheral organs, leaving the digestive processes in abeyance for the time being. The effects of the sympathetic, therefore, involve the following phenomena: the heart movement is accelerated, the bronchioles of the lungs are dilated in order to furnish a larger supply of oxygen through deeper breathing, the smooth muscles of the intestinal organs are slowed down in their action and their blood vessels are constricted, the secretion of adrenalin and the secretions of the sweat glands are noticeably increased, and sugar is released from the liver and discharged into the blood for the production of more energy.

The autonomic system is made up of nerve fibers and ganglia. Two chains of ganglia, like strings of beads, lie on either side of the spine, interconnected among themselves and also connected with the spinal cord. From both these trunks of ganglia fibers ramify to the periphery, some uniting in other ganglia before reaching the visceral organs and others going directly to their destination.

Emotional states greatly influence the activities of the sympathetic and parasympathetic sections of the autonomic

nervous system. On the other hand, such activities, when pronounced, are reflected in various moods of a psychic character.

The Brain Stem

The *brain stem* is a prolongation and amplification of the spinal cord. It comprises a number of distinct organs. Starting from the upper end of the spinal cord and ascending into the skull to the brain proper, these organs are: the medulla, the pons, the cerebellum, the midbrain, and the thalamus.

The *Medulla Oblongata* or *Bulb* begins just above the first spinal nerve and is an enlargement of the spinal cord. The medulla is about two and one half centimeters in length. Structurally it is similar to the cord, except for the fact that it contains much more gray matter or nerve nuclei than the cord, due to the origin of a number of nerve tracts in the medulla itself. These tracts lead outwardly to peripheral receptors and effectors and upwardly to higher centers of the brain. Some ascending nerve paths of the cord pass through the medulla to upper portions of the brain; others end in the medulla and form synaptic junction points with centers located here. The medulla, therefore, acts to a great extent as a relay center between cord and brain. It is also the main 'decussation' or crossing point of the sensory and motor paths which come from below and enter the brain. Fibers from the left side of the body cross over to the right hemisphere of the cerebrum (large brain), while fibers from the right side cross over to the left

hemisphere. Some nerves, however, such as the facial nerves, enter the brain above the medulla and do not decussate. It thus happens that an injury to the left hemisphere will paralyze the left side of the face and the right side of the body. The medulla plays an important part in regulating the rhythmic processes of circulation, digestion, respiration, etc., and it also serves as the correlating center for reflexes between certain sense organs and muscles.

The *Pons Varolii* (named after Varolio, an anatomist living in the 16th century) is a further enlargement of the brain stem, situated immediately above the medulla. It consists of the projection fibers which pass through the medulla upward to the large brain (cerebrum) and also of a large number of commissural or connecting fibers which lead to the two hemispheres of the small brain (cerebellum). For a long time it was assumed that the function proper to the pons was to serve as a connection between the two hemispheres of the cerebellum; hence the name 'pons' or 'bridge.' The function of the pons is more extensive. It has a role in the innervation of autonomic nerves and also in the innervation of the facial muscles. Most important is its function of linking the cerebellum with the controlling centers of the cerebrum.

The *cerebellum* is located above the medulla and behind the pons. It is divided into two parts, called the 'hemispheres,' by a medial fissure, and it is composed of gray and white matter. The gray matter contains the cell bodies; the white matter, the axons. The gray matter is situated at the outer surface or 'cortex' of the cerebellum,

while the white matter is inside and underneath. The cortex has numerous fissures and convolutions. The cerebellum receives sensory impulses from the tendons, muscles, and joints of the body, and also from the organs of postural equilibrium located in the inner ear. It is thus the center, to a large degree, of equilibrium reactions and of coordination in the execution of complex movements which require training and skill. Its general function, therefore, is muscular tonus and coordination. The activities of the cerebellum do not enter consciousness.

The *Midbrain* and *Thalamus* occupy the topmost position of the brain stem and are thus located in the center of the entire brain between the hemispheres of the cerebrum. The *midbrain*, the smallest portion of the brain in man, has four 'colliculi' or protuberances on its dorsal side and cerebral 'peduncles' or fiber bundles on its ventral side. The interior portion of the midbrain is composed of numerous nuclei and is called the 'tegumentum.' The colliculi probably control auditory and visual reflexes. In general, the midbrain is concerned with instinctive bodily impulses of various kinds. The *thalamus*, a bilateral organ with parts to the right and left of the stem, has three distinct portions, the dorsal thalamus, the hypothalamus, and the sub-thalamus. The dorsal thalamus is a center for the reception and relay of sensory impulses; its nuclei are associated with all the sense organs (smell, probably, excepted), passing their impulses on to the cerebral centers. Not much is known of the functions of the hypothalamus and sub-thalamus, but they are probably of a motor or efferent character. The general function of the thalamus seems to be the regulation

of reflex connections for emotional responses through association with visceral reactions. Many authorities consider the thalamus to be the primary center of pain sensitivity.

The brain stem, as will be seen from these few remarks, is an important complexus of organs. Its position between the spinal cord and the cerebrum is indicative of its function in the general scheme of the nervous system as a whole; it is a midway station for sensory and motor impulses traveling to and from the cerebrum from all parts of the body.

The Cerebrum

The *cerebrum*, or large brain, is the structure of the central nervous system which lies above the brain stem. It represents the final enlargement and amplification of the spinal cord and brain stem and fills out the greatest portion of the skull. More nerve matter is found in the cerebrum than in all the rest of the body. Its weight is approximately 50 ounces, consisting of nerve nuclei, dendrites, and axons. It is estimated that the number of neurons in the cerebrum runs literally into the billions.

The full number of neurons or nerve cells is already present at *birth*. Many of these, however, are not fully developed, but are embryonic in character; these embryonic neurons are called *neuroblasts*. The neuroblasts must be developed into mature neurons before they can function as integral parts of the nervous system. No doubt much of this development occurs as the result of the natural

growth of the organism; but it is very probable that development of neuroblasts into neurons also results from the conscious effort of mental activity, and this development proceeds up to middle life and even far beyond. The number of neuroblasts, however, is so large that only a portion of them reach maturity in any human being.

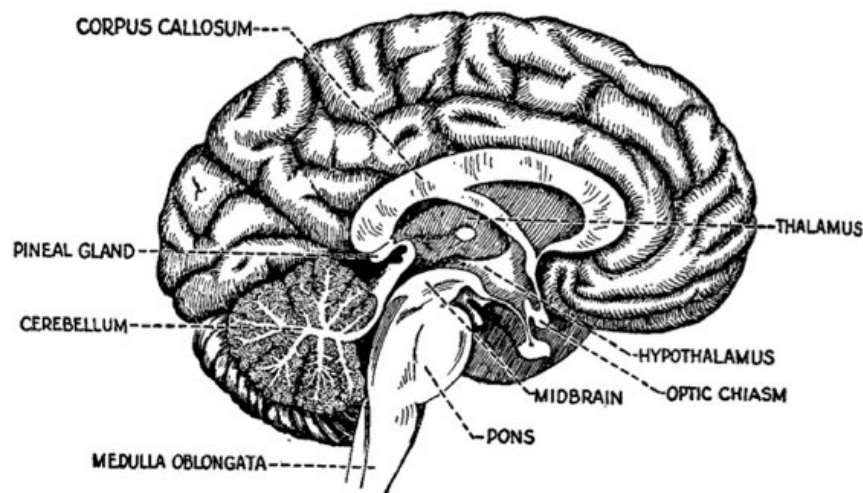


Fig. 9. Mesial Section of the Human Brain.

The *structure* of the cerebrum is very complicated. It consists of *gray* and *white* matter. The gray matter is composed of nerve cells and forms the outer surface of the cerebrum; this outer surface is termed the *cortex*, and its depth does not exceed 4mm. The white matter is composed of nerve fibers and forms the tissue beneath the cortex. The cortex has a remarkably large surface area (about 20,000 sq. mm.), because it is furrowed by many fissures (*sulci*) and convolutions (*gyri*), Which provide a maximum of area in a minimum of space.

There are three relatively large and important *fissures*.

The *median* fissure divides the entire cerebrum from front to back, and the two resulting symmetrical halves are the right and left 'hemispheres.' The fissure of *Sylvius* extends horizontally just above the ear. The fissure of *Rolando*, or central fissure, begins at the center on top and runs downwards and laterally in front of the fissure of Sylvius. This division enables us to distinguish four roughly definable regions or *lobes*: frontal, parietal, occipital, and temporal. The frontal lobe is situated in front of the Rolandic fissure; the *parietal* lobe, immediately behind the Rolandic fissure; the *occipital* lobe, at the back of the cerebrum; the *temporal* lobe, below the fissure of Sylvius.

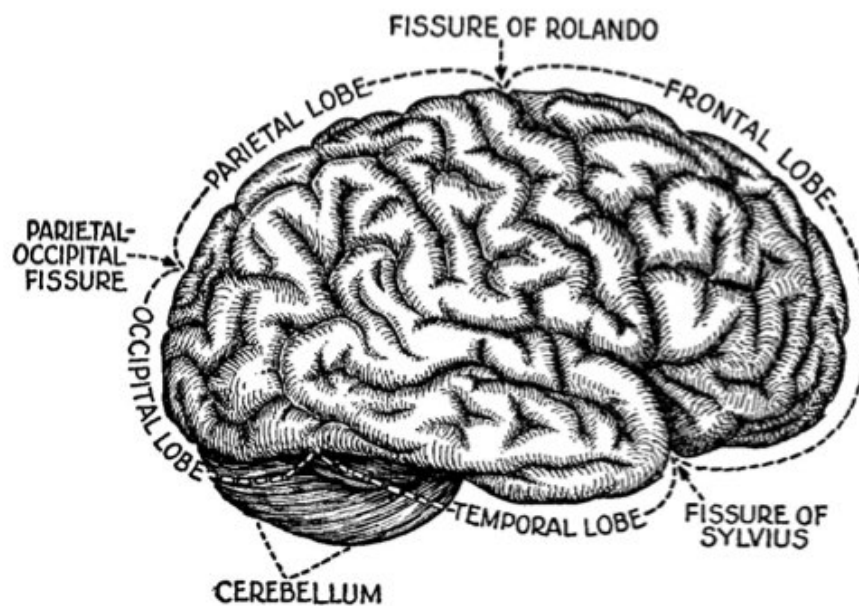


Fig. 10. Side View of the Right Hemisphere of the Human Brain.

The cerebral *cortex* or *neo-pallium*, as it is also called, consists of a number of *layers* in its structure of gray

matter. These layers are not actually separated from one another; they form an uninterrupted mass of cells, but these cells are of different kinds, and a stratification among them is noticeable. The outermost layer is composed of terminal filaments, dendrites, and nerve cell bodies; then follows a layer of pyramidal cells (cells which have the shape of 'pyramids'); then, a granular layer; the latter is followed by a layer of large pyramidal cells; and, finally, situated at the bottom of the cortex, a layer of cells of various sizes and shapes, called polymorphic cells. The layers above the granular section are presumably associated with psychic functions, and those below with organic functions.

Three types of nerve fibers are found in the brain. There are various motor and sensory areas in each of the cerebral hemispheres. Masses of nerve fibers reach out in complicated patterns, connecting all such areas with one another. These fibers are the *association* fibers. The two hemispheres are symmetrical in structure, each practically a duplicate of the other. They do not act in isolation, but in conjunction; and, in order to effect this conjunction, the motor and sensory areas of the one hemisphere are interconnected by fibers with the corresponding motor and sensory areas of the other hemisphere. Such fibers are called the *commissural* fibers. Where they meet in crossing, a dense body or mass of fibers is formed between the hemispheres, serving as a sort of bridge, and this mass of fibers is termed the '*corpus callosum*.' A third type consists of the fibers of *sensory and motor nerves*. The sensory nerves come from the spinal cord and brain stem and

ascend into the cerebrum, making connections between the sense organs and the cortex. The motor nerves leave the cortex and descend into the brain stem and spinal cord, and from there pass out to the musculature. These ascending and descending nerve fibers are the *projection* fibers. Not all fibers pass down into the spinal cord; some of them, the twelve cranial nerves, leave the base of the brain directly and terminate in various parts of the head. Among them are the nerves of smell, sight, and hearing.

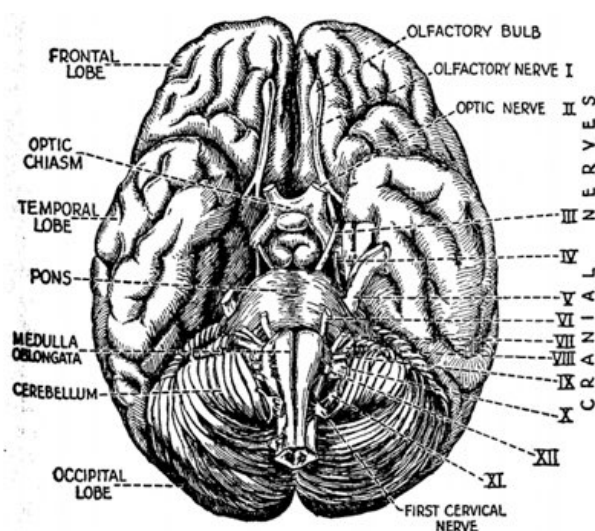


Fig. 11. Bottom View of the Human Brain.

The structure of the cerebrum indicates very plainly that it is a marvelously complicated mechanism of nerve cells and fibers, designed as the supreme organ of coordination and correlation for the entire organism. And such is, indeed, its purpose and function.

Localization of Function

It has always been known that injuries to the brain affect sense knowledge and motor reactions. Gradually the fact was recognized that definite areas of the cerebrum control definite functions. The phrenologists used this fact to develop the theory that every function is located in a specific area of the brain. While this theory of *phrenology* has been definitely disproved, it is true that certain *areas* of the brain are the *localization centers* for sensory and motor functions. It would be erroneous, however, to locate such functions exclusively in these centers or areas. The structure of the brain, with its many sensory and motor nerves connecting various parts of the cortex, in itself is a strong presumptive argument that such functions are distributed, even though certain areas are the regular centers of control. The fact is now established that oftentimes, when a part of the brain is damaged, another area will take over the functions usually controlled by the part that has suffered injury. The cerebrum thus acts as an *integrating organ of coordinated function*, each part being involved to a certain degree in the functioning of every other part.

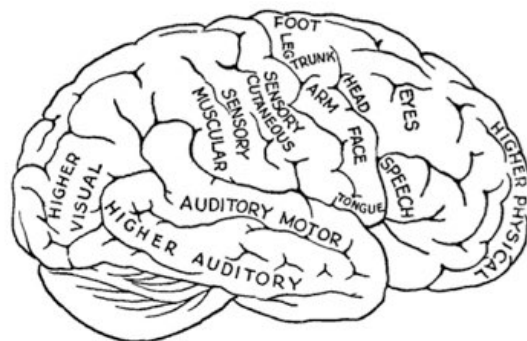


Fig. 12. Diagram of the Right Hemisphere
With Localization Areas.

The actual centers of sensory and motor functions comprise a relatively small portion of the total area of the cortex. The major portion of the cortex is apparently concerned with the coordination and association of sensory and motor impulses and with the mental processes of conscious knowledge and behavior.

The *functional* areas of the brain (see Fig. 12) are fairly well known. In the main, they are as follows. The frontal lobe contains the *motor area*. It is located anterior to the central fissure of Rolando. Beginning from the top of the cerebrum and moving downward, toward the ear, we encounter the motor centers, respectively, of the legs, the trunk, the arms, the head, and the tongue and mouth. Immediately posterior to the central fissure lies the *somesthetic area* which responds to sensory impulses emanating from various conditions of the body in general. The *visual area* is located in the occipital lobe or rear portion of the cortex. The *auditory area* is situated in the temporal lobe, below the fissure of Sylvius. The *olfactory* and *gustatory areas* (smell and taste) have their general location centrally at the base of the brain. All these motor and sensory areas merge into *association areas*; the function of the latter consists in the correlation of the impulses received in the various motor and sensory areas, thereby enabling the brain to effect complex responses involving intelligent and adaptable activities.

Cerebrospinal Function

The cerebrum is the organ which is the physical and neural instrument of activities which result in *conscious* sensory and motor behavior. Of all the complex activities which occur in the brain, only a minimum actually enters into consciousness; most functions are performed without our being aware of their existence.

We open our eyes, for example, and see a building. The light rays reflected by the building enter the eyes, fall upon the retina, and there activate the receptor cells. The stimulus inaugurates a nerve impulse which travels along the optic nerve to the visual center of the cortex, and the end result of the process is the perception of the building. It is this end product which becomes conscious to the mind; the intermediary process remains unconscious throughout. And if we desire to move the eyes, so as to see another object, we consciously and deliberately direct the movements of the eyes toward the object we wish to see. Somehow, then, we are able to stimulate the motor center which controls the muscles regulating the movement of the eyes. But how we are capable of selecting and stimulating the right cortical cells, and how the motor impulse travels from the cortex to the muscles, turning the eyes in a definite direction, we do not know; the process itself does not become conscious. A large amount of neural activity must take place in the brain between the start and finish of an apparently simple function, but we are unaware of its presence.

Consciousness is a state of the mind in which we are aware of our experiences, and these experiences may pertain to motor, sensory, or rational functions. Items of

conscious experience, for example, are the facts that I am walking, moving my arms, seeing the objects situated along the street, feeling the cold, thinking about the weather, desiring a ride in an automobile, etc., and I am presently aware of these items of experience. It is when I am wide awake and know what is happening to me and around me, that I am said to 'be conscious' or to 'have consciousness' of something.

Many functions of man are subject to conscious control; many are not subject to conscious control at all; and many are subject to conscious and unconscious control.

The higher functions, those of a *rational* character, are always subject to *conscious* control. To this category belong the formation of ideas and judgments, and the acts of reasoning and volition. How far these operations may be dependent on neural and cortical conditions, need not concern us at present. It is sufficient to state that they are under direct conscious control. Many *sensory* activities are also under direct or indirect conscious control. The sense organs, when exposed to a stimulus, will always react to the stimulus, irrespective of our wishes and desires; the open eye, for instance, cannot but respond to the stimulus of light, and the ear must hear the loud report of a gun discharged in its vicinity. We have, however, conscious control over the organs of sense to a certain

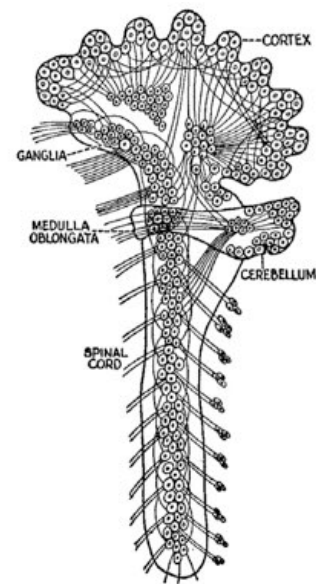


Fig. 13. Diagram of Cerebro-spinal Function.

(After Mercier). The figure shows the general paths of the sensory and motor nerves.

extent, in as much as we can direct these organs toward, or away from, definite stimuli. We can, for example, turn the eyes in this or that direction or close them entirely; we can sniff a flower or clamp the nose with our fingers; we can pinch our skin and feel the pain or refrain from such an action.

There are two kinds of muscles in the body, the smooth and the striped. The smooth are not under conscious control; the striped are. We are capable of intentionally flexing the arm or leg, turning the head, bending the body, manipulating an object, etc. All complex actions which require skill and are the result of 'learning' are consciously controlled actions. Such are walking, swimming, dancing, playing a musical instrument, writing, speaking, operating a machine, and so forth. Practice may make such activities semi-automatic, but they are always, in the last instance, under conscious control.

A large number of actions and functions in the human body are *not under conscious control*. Many of these never enter consciousness at all. Such actions and functions are usually controlled by the *brain stem* and *spinal cord*. If connecting fibers extend from the nerve centers of the stem and cord to the cortex of the cerebrum, we will, or at least may, become conscious of their presence; otherwise not. We are never conscious, for example, of the contraction of the iris of the eye under the stimulus of a bright light, nor are we aware of the modification of the curvature of the lens of the eye in focusing. On the other hand, if someone tickles us, we respond by shrinking away from the stimulation, but we are conscious of the process. Such actions are 'reflexes.'

Reflex Actions

A *reflex action*, or a *reflex*, is an act performed automatically and involuntarily, as a response to a stimulus, by a partial mechanism of the nervous system. The stimulus excites an afferent nerve; the impulse is transmitted along the afferent nerve fiber to a motor center, either by means of a synaptic connection, or by means of a single connecting fiber or a series of connecting fibers; the motor center is stimulated; the motor impulse travels along the efferent nerve fiber to a gland or muscle; upon reaching the gland or muscle, the end organ responds with the performance of its characteristic function. This sequence of neural activity is the so-called 'reflex arc.'

Reflexes are not learned; they are a *native endowment* of the organism's nervous system. Hence, they are inherited, and not the result of experience or practice or habit; they are localized in a definite set of nerves; they are not dependent on the action of the will, but on the influence of external stimuli. How little, at times, reflexes are dependent even on the life of the organism as a whole, can be seen in a disemboweled and decapitated frog; an electrical stimulus will induce a reflex action in the legs.

There are various *kinds* of reflexes. Some are *motor* reflexes, others *secretory*. 'Motor reflexes' have to do with contractions of the muscles. If I touch unknowingly a hot object with my hand, the hand jerks back automatically; if a bright light strikes the eyes, the pupils contract automatically. Here we have two distinct types of motor reflexes. The muscles of the hand and arm are striped

muscles and as such are under Conscious control, so that I can flex the arm and hand voluntarily; under the conditions just mentioned, however, the action is an involuntary reflex action. In the case of the pupillary light reflex, however, the muscles involved are smooth muscles and beyond the direct control of the will; the action of the pupils is always a reflex. 'Secretory reflexes' control glands and their secretions. When food is placed into the mouth, saliva is released; and when the food passes into the stomach, juices flow from the gastric glands. A few reflexes are *cortical*. Their centers lie in the cortex of the cerebrum; such are the reflex actions of coughing and sneezing. Most reflexes, however, as was stated above, are controlled by the *spinal cord* and the *brain stem*. A typical example of the former is the knee-jerk, effected by striking the tendon of the muscle just below the knee. The normal rhythm of the heart beat is an example of the latter. Besides the reflexes which induce a movement, there are *inhibitory reflexes* which stop a movement or hinder it from occurring. By relaxing the diaphragm one can often stop the hiccough reflexes, and by painfully pressing the upper lip against the teeth one can inhibit the tendency to sneeze. We have already noted how the sympathetic and parasympathetic sections of the autonomic nervous system counteract each other. Again, many reflexes are *regulative*, while others are *protective*. The entire autonomic system can be viewed as a vast system of motor and secretory reflexes, designed to regulate the processes of digestion, circulation, respiration, generation, and excretion; and many of its functions are also protective in character, as can be seen when germs and dangerous

elements enter the organism and are destroyed or eliminated. The closing of the eye lids when objects approach and the shedding of tears when a dust particle enters the eye, are instances of protective reflexes; so, too, are vomiting, coughing, withdrawal of the foot when stepping on a piece of glass, etc.

While reflexes are by nature automatic and involuntary, an *indirect conscious control* is possible, both in a *facilitating* and *inhibiting* manner. In many instances relaxing a muscle tends to interfere with the usual reflex; holding the leg out straight makes the knee-jerk

reflex almost impossible. Similarly, concentrated attention upon the expected reflex, e.g., the knee-jerk, inhibits the action. Contrariwise, conscious attention may reinforce or inhibit a reflex, as in coughing, sneezing, swallowing, vomiting, and so on; we can check or facilitate these reflexes to some degree according to our desire. We can also offset one type of reflex by counter-stimulation, as when we stop a spasm of sneezing by rubbing the nose or inhibit the winking reflex of the eyelids by holding the eyes wide open. Sometimes the forceful contraction of the muscles will prevent a reflex; thus, although normally the hand would reflexly withdraw upon contact with a hot object, we can force the hand to grasp the object firmly, thereby hindering the withdrawal reflex from operating.

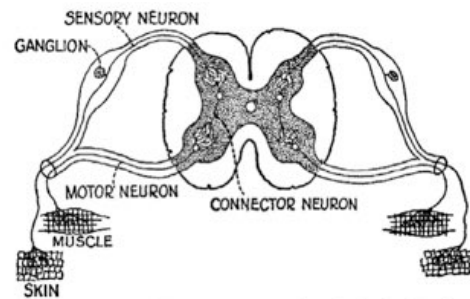


Fig. 14. Reflex Action in the Spinal Cord.

Conditioned Reflexes

A conditioned reflex is the reflex response of a neural mechanism to a stimulus which has been substituted for the natural stimulus normally evoking this particular reflex action. An example will make this rather technical definition clearer.

The natural stimulus for the secretion of saliva is the presence of food in the mouth; the secretion of the saliva under such circumstances is a natural reflex of the neural mechanism in the presence of the food. This reflex, however, can also be evoked by a stimulus which, as such, bears no resemblance to food but is substituted for it. Some food is placed before a hungry dog. A bell is sounded for a few seconds, and then the food is given to the dog. After a short interval the process is repeated. This bell-and-food combination, after being made a dozen or two dozen times, has the peculiar effect that the saliva in the dog's mouth will begin to flow at the sound of the bell. Continuing the procedure for some days, it is observed that the saliva is secreted, even though no food is present, simply at the sound of the bell. Normally and naturally, the sound of a bell is not a stimulus for effecting the reflex action of salivation. Under the conditions given, however, it becomes a substitute stimulus for the presence of food in the mouth, so that the dog reacts as if he had taken food. The reflex of salivation is now 'conditioned' to the sound of the bell, and we have a 'conditioned reflex' in place of the natural or unconditioned reflex in the presence of food.

Pavlov began his experiments on the conditioned reflex around 1900, and since that time scores of psychologists have continued the work and extended the field of research among animals and men. A number of interesting facts were disclosed.

Conditioned reflexes can be acquired quite *naturally* through the *experience of life*. Through experience the animal soon learns to associate the sight of food with its taste. After a while, the sight alone is sufficient to elicit the salivation reflex. We say that the sight of food 'makes our mouth water.' Whether acquired through natural or artificial association, conditioned reflexes will readily sink into a state of *suspension or extinction*, if the natural stimulus, for which it is substituted, remains absent for any length of time. Thus, in the bell reflex mentioned above, if food is withheld from the dog through a number of experiments with the sounding bell, the amount of flowing saliva decreases gradually, until it reaches zero. In the animal's mind the bell stimulus is no longer associated with food, and the salivation response ceases. Then, if food is again given with the bell stimulus, the conditioned reflex receives a quick *restoration* to its full vigor. If the experiments of the conditioned reflex are omitted for a prolonged period, the animal simply reverts to the normal procedure of the natural stimulus, and the conditioned reflex is lost entirely. Such experiments show that the conditioned reflex is nothing more than a *temporary adjustment* to environmental circumstances; as the circumstances change, the conditioned reflexes change.

Almost *any* kind of stimulus can be substituted for the natural stimulus in conditioning a reflex. Various kinds of auditory, visual, and tactual stimuli have been used, and all have been successful. The main thing, of course, is that a combination or association must be established between the natural and the conditioning stimulus.

It is remarkable to what a degree a *differentiation* between stimuli of the same kind can be maintained by animals in their conditioned reflexes. Animals, for example, soon learn to differentiate between the sound of one bell and the sound of another, if the one stimulus is reinforced with food and the other not. If the reinforcement by food was delayed for a regular interval of time after the stimulus was given, say for a minute or so, the animal learned to adjust himself to the situation, so that the salivation reflex was delayed accordingly.

Conditioned reflexes have also been established in *human beings*. Experiments have been successfully performed on infants with a feeding bottle and a light or sound stimulus. As early as the third month of life, children distinguished between one sound and another. *S. P. Marquis* (1931) was successful in his attempts to bring about a conditioned reflex in newborn children after a few days, by using a buzzer signal just prior to feeding; at the sound of the buzzer the infants immediately commenced the oral movements of sucking. In *adults* the conditioned reflex is far more difficult to recognize, due to the conscious co-operation of the subject. Many experiments have been made, attempting to condition the reflexes of salivation, hand-withdrawal through shock, winking of the eyelid, and

knee-jerk. Quite a number of psychologists are convinced that conditioned eyelid and knee-jerk reflexes have been obtained. Others are not so sure. A reflex is almost always the response of a partial neural mechanism controlled by some lower motor center. The eyelid and knee-jerk responses due to conditioning, however, seem to lack the sharp, quick, spontaneous throw so characteristic of the natural reflex. Apparently, then, there is a certain amount of cortical participation in the new response; and, if that is the case, it would be more of an indication that the organism, through its higher centers, has learned to adjust itself to a new situation. In the case of human adults, therefore, it is still not clear whether true conditioned reflexes can be obtained. If consciousness and volition play a part in the final results of the response, it can hardly be a reflex action in the strict sense of the word.

Watson and the *behaviorists* generally look upon these and similar experiments as showing that all human behavior can be explained in terms of conditioned and unconditioned reflexes. According to them, a study of reflexes is the proper study of psychology; consciousness can be eliminated as a factor in human behavior, and introspection should be omitted as a legitimate method of investigation in studying mental phenomena. A conditioned reflex of the iris of the eye seemed particularly important to *Watson* as strengthening the foundation of behaviorism, because this would show that such a muscle, which is definitely not under voluntary control, could be positively conditioned in its reflex without the influence of conscious activity. *Cason* made experiments on this pupillary reflex

with a light-and-bell combination and found that the pupil contracted more under the stimulus of this combination than under the stimulus of light alone. However, as T. V. Moore points out, "a pupillary reaction, in spite of its involuntary character, is nevertheless indirectly subject to voluntary control. Every act of attention dilates the pupil. Every emotion does the same. Looking at a far point dilates it; looking at a near point or wrinkling the forehead contracts it. It is very likely that, as Hamel suggested, many of the experiments that were supposed to demonstrate conditioned pupillary reactions merely manifested the effect of apprehension on the size of the pupil."¹ And thus we see that conscious factors influenced the action of the pupil throughout the experiments, contrary to the supposition of Watson. Hence, consciousness cannot be eliminated as a factor in human behavior on the basis of conditioned reflexes.

Conscious factors are also present in animal experiments. It is difficult in many instances to distinguish between a true reflex controlled solely by an unconscious motor center and a sequence of behavior due to the conscious recognition of the necessity of an adjustment to new circumstances. After all, even a dog has reactions which manifest a conscious knowledge of his surroundings. If, then, he obtains food at the sound of a bell, he comes to expect this food at the sound, and this conscious expectation causes the saliva to flow; this reaction will continue until he realizes, after a change in the experiment, that food is no longer forthcoming at the sound of the bell, and then the flow of saliva progressively decreases and

eventually ceases altogether. The *apprehension and expectation* of food are conscious, psychic factors which must not be overlooked in these experiments. They rob the conditioned reflex of much of its mystery, and they show what little support behaviorists can derive for their theory from conditioned reflexes.

Our brief description of the nervous system and its functions in the human organism emphasizes the fact that man is a unit, a completely *integrated organism*. The complexity of the nervous system in its structural details and in its functions is beyond conception and description. Nevertheless, every single part, both in structure and function, is linked with every other part so intimately and effectively, that the result is a unified totality of marvelous compactness and activity.

Summary of Chapter III

The nervous system of man consists of two main subsystems: The cerebrospinal and the autonomic.

1. *The Spinal Cord.* It is a mass of neurons and nerve fibers, enclosed in the skeletal housing of the spine, and extends from about the base of the skull to the sacral region. The inside of the spinal cord consists of gray matter containing the nerve cells; the outside consists of bundles of nerve fibers. Two pairs of nerves emerge from both sides of the cord between each of the vertebrae. *Afferent* nerves emerge from the dorsal side, *efferent* nerves from the ventral side.

Connecting fibers unite these nerves among themselves and also with the brain.

2. *The Autonomic System.* It is that part of the peripheral nervous system regulating responses concerned especially with digestive, circulatory, respiratory, and reproductive activities. It is composed of two mutually antagonistic sections: the *sympathetic* (vegetative, visceral) and the *parasympathetic*. The latter section consists of two parts, the 'cranial' and the 'sacral.' The sympathetic section is more in the nature of an emergency' mechanism.

3. *The Brain Stem.* It is a prolongation of the spinal cord and is situated at the upper end of the cord. It comprises the *medulla oblongata* or bulb, the *pons*, the *cerebellum*, the *midbrain*, and the *thalamus*.

4. *The Cerebrum.* The cerebrum is the final enlargement of the spinal cord and brain stem. The *cortex* is the outer

surface and consists of gray matter, i.e., nerve cells; the inner portion consists of white matter, i.e., nerve fibers. The brain is furrowed by many fissures and convolutions. Three fissures are large: the median fissure, the fissure of Sylvius, and the fissure of Orlando. *Three types of nerve fibers* are found in the brain: sensory and motor fibers, association fibers, and commissural fibers. The cerebrum is the supreme organ of co-ordination and correlation for the organism.

5. *Localization of Function.* Certain areas of the brain are the localization centers for sensory and motor functions. The frontal lobe contains the motor areas. The somesthetic area lies behind the central fissure. The visual area is located in the occipital lobe. The auditory area lies in the temporal lobe. The olfactory and gustatory areas are situated centrally at the base of the brain. All these motor and sensory areas merge into association areas.

6. *Cerebrospinal Function.* The cerebrum is the organ which is the physical and neural instrument of activities which result in conscious sensory and motor behavior. Consciousness is a state of the mind in which we are aware of our experiences, and these experiences may refer to motor, sensory, or rational functions. Conscious control originates in the cerebrum. Many actions and functions are not under control, and these are usually controlled by the brain stem and the spinal cord.

7. *Reflex Actions.* A reflex action, or *reflex*, is an act performed automatically and involuntarily, as a response to a stimulus, by a partial neural mechanism of the nervous

system. Reflexes are an inherited native endowment of the organism's nervous system.

There are various *kinds* of reflexes: motor and secretory; inhibitory; regulative and protective; cortical and those controlled by the brain stem and spinal cord. Over many of the reflexes we have an *indirect* conscious control.

8. *The Conditioned Reflexes*. A conditioned reflex is the reflex response of a neural mechanism to a stimulus which has been substituted for the natural stimulus normally evoking this particular reflex action. Example: the salivary reflex evoked at the sound of a bell associated with food. Such reflexes can be suspended, extinguished, and restored. They are a *temporary adjustment* to environmental circumstances. Conditioned reflexes have been experimentally established in infants; in adults the success is doubtful, due to the conscious factors of adjustment.

Behaviorism hails these experiments as showing that all human behavior can be explained in terms of conditioned and unconditioned reflexes, thereby eliminating consciousness as a factor in human behavior. Their view is wrong, because both men and animals are conditioned in their reflexes through apprehension and expectation, and these are psychic factors.

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Chapter 4

THE SOMESTHETIC SENSES

TO PSYCHOLOGY, THE BIOLOGICAL AND PHYSIOLOGICAL processes, even those of the nervous system, are of only secondary importance. Of primary importance are the *mental processes*. Man is a sentient organism. The term 'sentient' implies 'sensing,' and sensing has to do with sense cognition, sense knowledge. Sense cognition is followed by sense appetition, sense striving. These are the *two main types* of sense function: *sense cognition* and *sense appetition*. In these psychology is vitally interested, and they will be discussed in the following chapters.

Sense cognition is the first main phase of man's mental life which the psychologist and philosopher is called upon to investigate. Sense cognition is mediated through various bodily structures called the *receptors or sense organs*. Through these man obtains a knowledge of conditions present in his own body and in the world around him. The receptors are activated by stimuli which impinge on them and thereby convey information to the mind by means of the act of sensation.

Sensation and Perception

By a sense we understand a specialized mechanism or function by virtue of which an animal organism is receptive and responsive to a certain class of physical stimuli, resulting in *knowledge of some sort*. By *sensation* we understand a *conscious experience aroused by the stimulation of an organ of sense*. Certain receptor nerves terminate in specialized organic structures, like the ear, the eye, etc., peculiarly adapted to receive the excitation of a definite stimulus. The physical stimulus which arouses the sense organ to activity may be mechanical motion, heat, sound, light, electricity, or a chemical reaction. The stimulus itself, therefore, is some form of energy and resides in, and proceeds from, some object.

The *process of sensation* is as follows. On the *physical* level there is the stimulus. Aether vibrations, for example, affect the eye; air waves affect the ear. The stimulus now produces effects in the terminal elements of the receptor nerves, and these effects are *physiological and neurological*; a nerve impulse is set up and travels along the sensory nerves up to their respective center in the cortex of the brain. In the cortex the process ends on the *psychological or mental* level; man's consciousness is modified, so that he has a conscious experience of the stimulation of the organ of sense. He experiences, for example, color and sound in a conscious manner; in other words, he has a 'sensation' of color and sound. It is essential to the concept of 'sensation' that the final result be a *conscious* experience, a modification of consciousness. Not

all sensory impulses have this final result. In very many instances these impulses remain on the purely neurological level, traveling only as far as the spinal cord or brain stem, where they are shunted over to a motor center; the result, then, is a motor reflex which does not enter consciousness at all, and such a response is not a 'sensation.'

Depending on the attributes of the stimulus, a sensation also has various recognizable *attributes*. One of them is 'quality.' Color, for example, has a particular shade; sound has a particular tone. There is also 'intensity.' There is a more-or-less in the brilliance of color, in the loudness of a sound. Another attribute is 'duration.' A flash of lightning is not seen as long as the light of the desk lamp while reading; the report of a pistol is heard for a shorter period of time than the noonday whistle of a near-by factory. Quality, intensity, and duration are common attributes of all sensations. Primarily, these are the attributes of the stimuli; however, in as much as sensations are directly dependent on the stimuli, they are also the attributes of the sensations themselves.

The student must distinguish well between *sensation* and *perception*. In common parlance the distinction is seldom made, but modern psychologists are very emphatic on this point. 'Sensation' has just been defined. By *perception* we understand *the cognizing of the object which produces the sensation*. Sensation has reference solely to the stimulus; perception has reference always to the object furnishing the stimulus. In sensation I become conscious of the stimulation of a sense organ purely as such; in perception I become conscious of the object presently and actively

engaged in the stimulation of a sense organ. Consider the following situation. There is a green blotter on my desk, and on the blotter is a sheet of white paper. In the dark I see nothing; but as soon as I turn on the light, I begin to see. Just what do I see? From the standpoint of a 'sensation,' I am conscious of seeing a patch of 'white' and a patch of 'green'; the stimulus of light has produced in me the conscious experience of 'white' and 'green.' From the standpoint of 'perception' I see 'an oblong sheet of white paper against the background of a green blotter.' In this process of perception, therefore, I refer the sensation 'white' and 'green' to the 'paper' and the 'blotter' and include also the 'relation' of the one to the other. The mere fact of seeing 'white' and 'green' does not tell me at all that they refer to 'paper' and a 'blotter'; that knowledge was acquired before through some other process of knowing, and so I now refer the 'white' and 'green' to these known objects in the present act of sight. Another illustration. Someone holds an object to my nose, requesting me to smell, and asks "What do you smell ?" If I answer, "Something fragrant," I declare my sensation; but if I answer "A rose," I declare my perception. A final illustration: If through my hearing I am aware 'of sounds following one another,' I have merely a sensation; if, on hearing these same sounds, I am aware of 'hearing a robin sing,' I connect the sensation with the object furnishing the stimulus and have the far more complex perception.

Perceptions always involve past sensations of the same and of different kinds and combine them in the *recognition of the object* which caused them. The stimuli come from

objects and thereby convey to the mind items of information regarding the objects themselves. It is the inherent purpose of stimuli to acquaint us with these objects, whether these objects are *within* our own organism or are *external* to our body. Hence, we seldom stop at the primitive experience of the sensation itself, but immediately pass on to the experience of the object causing the sensation. Thus, we rarely speak of merely 'an ache' but of a stomach ache,' and we are practically never conscious only of a patch of 'blue' but rather of a 'bluebird.' In everyday life, therefore, we occupy ourselves with perceptions, not with pure sensations. The ordinary man is not interested in sensations as such; since, however, perceptions are elaborations of sensations and sensations are the underlying units of perception, the research psychologist is interested in the fundamental distinction between the two kinds of mental experiences. The student should know the distinction.

The Senses

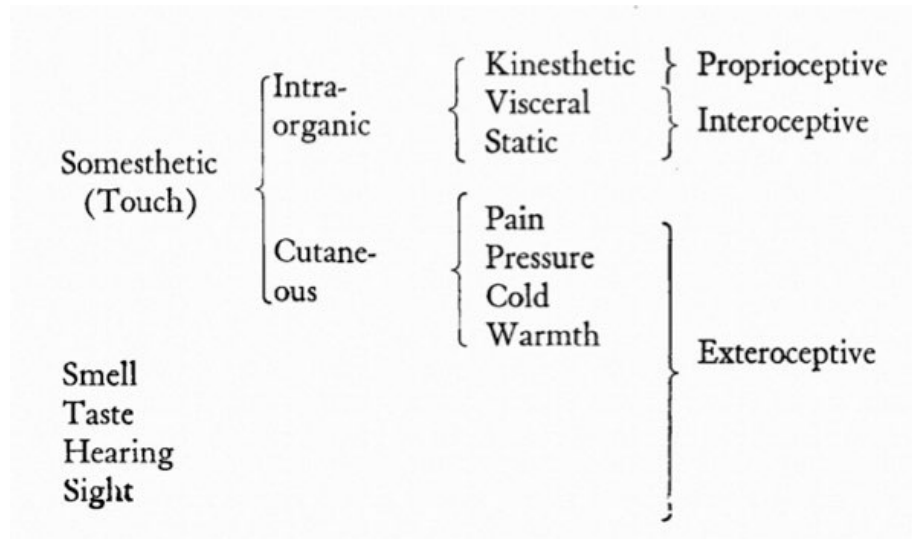
Man possesses a number of senses. A classification can be made according to a variety of standpoints. A classification, based on common experience and in vogue for over 2000 years, is the division of the senses into *external* and *internal*. The external' senses were subdivided into sight, hearing, taste, smell, and touch; the 'internal' senses, into the central sense, imagination, sense memory, and instinct.

Modern psychology accepts the external senses as enumerated, but insists that the sense of 'touch' really is composed of a number of distinct senses, namely, the sense

of warmth, of cold, of pressure, of pain, the kinesthetic sense, the visceral sense, and the static sense. Of these, only the sense of pressure should properly be designated the sense of 'touch.' As a matter of mere convenience and methodology, these senses are often grouped together under special headings; there is, however, no uniform practice among psychologists in this regard. Usually, this entire 'touch' group is referred to as the *somesthetic* or *body senses*, or still more simply as the somesthetic or body sense. The senses of warmth and cold are often spoken of as the 'temperature sense.' Again, the senses of pressure, pain, and temperature are called the 'cutaneous' or 'skin senses, while the visceral, kinesthetic, and static senses are termed the intra-organic senses.

Another classification of the external senses is based on the *origin of the stimulus*, consideration being given to the *kind of objects* of which they convey information. Viewed from this standpoint, psychologists speak of *exteroceptive, interoceptive, and proprioceptive* senses. An 'exteroceptive sense' is one which is activated by stimuli originating outside the organism. The senses which belong to this class are sight, hearing, taste, smell, the senses of warmth, cold, pressure, and pain; their stimuli originate from objects which lie outside the organism itself. An 'interoceptive' sense is one which is activated by stimuli originating within the viscera and within the vestibule of the internal ear. The visceral and static senses belong to this class. The 'proprioceptive' sense is the sense which is activated by stimuli originating within the organism by movement or tension in its own tissues. This is the kinesthetic sense.

For the purpose of correlation and clarification, the different classes of senses can be ordered as follows:



External Senses

Internal Senses

Central or synthetic sense

Imagination

Sensory memory

Instinct

The main division of the senses into 'external' and 'internal' is named this way in deference to history, because these are the designations handed down through the centuries. The terms, however, must not be taken too literally. In particular, the term 'external' is to some extent a misnomer. The intra-organic senses are not really 'external' or 'exteroceptive,' because their stimuli originate within the organism itself; for this reason they should, perhaps, be

classified as 'internal.' Nevertheless, we retain the nomenclature for want of more appropriate terms.

After these preliminary definitions and classifications, it will now be necessary to study the senses and their functions more in detail. Since the intellect depends, as will be shown later, on the internal senses for the preparation of its material and the internal senses depend on the external senses for the preparation of their data, the logical procedure will be to begin with the external senses. Among the external senses the element of cognition is expressed in unequal measure — most in sight and hearing, less in taste and smell, least in the somesthetic senses. Beginning with the lowest and progressing upward to the highest, the somesthetic senses will be considered first in the order of treatment. They are the subject matter of this chapter.

The Cutaneous or Skin Senses

A number of the somesthetic or body senses are located in the *skin region*. The skin is the protective covering of the human body and is composed of two main layers: the outer skin or *epidermis* and, underneath the epidermis, the *dermis* or *corium*. These layers rest on a tissue of subcutaneous fat. This region is the seat of the sense organs grouped together under the term 'cutaneous senses,' namely, the senses of *pressure, pain, warmth, and cold*.

Experimental research in psychological laboratories soon brought out the fact that stimuli applied to the skin did not evoke the same response over all areas. It also brought

out the very important fact that the different responses represented sensations of totally different types, so that a number of senses had to be accepted instead of the one general sense of 'touch.' It is now generally recognized that the sensations of pressure, pain, warmth, and cold originate in structurally different parts or organs. Just what these organs were, remained obscure for a long time; and even to this day physiologists and psychologists are still much in doubt as to the exact nature of the organs and their function.

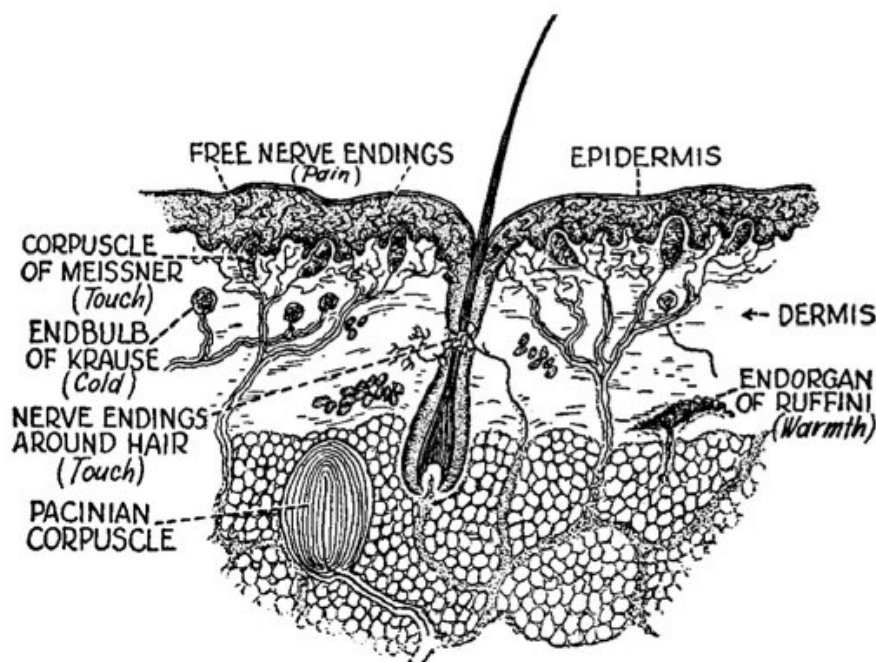


Fig. 15. Cross Section of the Skin.
Various organs of the cutaneous senses are shown.

The skin contains various types of nerve endings associated with the cutaneous sensations. Some of these have a distinctive anatomical structure. There are capsules or sheaths of fatty tissue, richly supplied with minute blood

vessels and a network of nerve endings. Prominent among these capsulated organs are the *Paenian and Meissner corpuscles, the Krause bulbs, and the end organs or Ruffini*. The *hair follicles* also play their part in cutaneous sensation. The root of the hair is encircled by numerous nerve endings. Most frequently present throughout the skin area of the body are *free nerve endings*. They are the terminal branches of nerves and have no specific organic structures as receptor organs; they themselves receive the stimuli and transmit the sensory impulse. These nerves are distributed quite freely in the skin, but the distribution is rather uneven for the individual types. It is the presence or absence of one or the other of these types of nerve endings in definite skin areas which has enabled experimenters to connect them with certain types of sensations. The *method* commonly employed is the use of a stylus or bristle, applied point by point to a localized area of skin surface. This punctiform method of investigation brought out the startling fact that the skin is not uniformly sensitive, but consists of *sensitive spots*. These spots differ in the character of their sensitivity, so that we are able to distinguish pressure spots, warmth spots, cold spots, and pain spots.

The Sense of Pressure

During the years from 1883 to 1885 three physiologists, Donaldson, Blix, and Goldscheider, proved by experimental evidence that the sensations of pressure, warmth, and cold resided in spots or points of the skin. A decade later (1894)

von Frey furnished the proof that the pressure and pain senses were distinct and were localized in different spots. Beginning with the fact that light pressure or contact does not elicit the sensation of pain, while strong pressure does, he drew the conclusion that the phenomenon could be explained only on the grounds that pressure and pain were separate senses and responded to different stimuli. He thereupon engaged in a series of systematic experiments to prove his hypothesis. He used as his investigating instruments straight hairs, graduated according to thickness and strength, and measured their pressure on the skin by a delicate balance scale. The standard used was the gram per square millimeter. His computations showed that pressure and pain have different thresholds, the threshold for pressure being the lower and that for pain the higher. He also discovered that some areas of the skin are sensitive to pressure only, while others are sensitive to pain only. He thus proved his hypothesis.

Experiments show that a considerable *variation* exists in the sensitivity of the skin toward pressure. The tip of the tongue and the tips of the fingers are very sensitive; the abdomen and the back of the forearm possess a much reduced sensitivity; the thickened skin of the soles of the feet has very little sensitivity. Much depends on the thickness of the skin and the number of pressure or touch spots in a particular region. This number differs appreciably in different parts of the body. It is estimated that there are approximately 5 to 10 pressure or touch spots per square centimeter, as an average, on the arm or leg, 30 on the chest, 50 on the forehead, 100 on the lips and

fingertips, and 120 on the ball of the thumb. A few restricted areas seem to lack pressure spots almost entirely; such is the case with the mucous membrane lining the inner surface of the eyelids, which is extremely sensitive to pain but scarcely registers pressure at all. On the hairy portions of the body, the pressure or touch spots are located to windward of each hair, that is to say, close over the hair follicle.

The *stimulus* for pressure sensation is anything which, upon contact, alters the even surface of the skin. Pushing against the skin, or lifting it, or bending it aside, is a stimulus exciting the pressure sense. Any such modification of the surface must affect adjacent and underlying tissues and thereby stimulate the pressure receptors.

It is certain that the hair follicles serve as the receptors of pressure in those parts of the body where hair is present. However, not all parts are covered with hair, though they are sensitive to pressure; for example, the lips, the tongue, the palm of the hand. It is fairly certain that the *Meissner* corpuscles and perhaps also the *free nerve endings* serve as pressure organs in these and other portions of the skin.

Some interesting *phenomena* are associated with the experience of pressure. In some instances, depending on the region stimulated, pressure is experienced as a mere 'contact,' in others more distinctly as 'pressure,' and again in others as a 'tickle.' Another phenomenon is that of 'adaptation.' When a stimulus is applied steadily to the pressure organs, they adapt themselves to the situation, and the sensation of pressure gradually fades and then vanishes. When the stimulus is changed, the sensation

reappears. Such experiences are common. After a brief period of time, we no longer feel the clothes on our body, or the hat on our head, or the shoe on our foot, even though they fit tightly and press with some force against the skin; we become insensitive to the pen or cigarette held quietly between the fingers; we do not notice the pressure of the chair on which we are sitting or of the bed on which we are lying, until we change our posture. The sensation of pressure and touch is diminished or ceases temporarily.

The Sense of Pain

Of all the cutaneous sensations, that of pain is the one most unpleasant and most dreaded. More than any other, the pain sense serves as a protection safeguarding the integrity of the organism against injurious agencies. The presence of pain is always a warning signal.

The *stimulus* producing the sensation of pain is some object or condition which injures or nearly injures nerve tissue. The pain *receptors* are undoubtedly the 'free nerve endings.' They are known to be present wherever pain is felt. These free-branching nerve endings are distributed over the entire surface of the body, and pain can be elicited everywhere. In the center of the cornea of the eye the only sensation present is that of pain, and in this area we find only free nerve endings. From these facts of distribution physiologists conclude that the free nerve ends are the true pain receptors. Notwithstanding its great physiological importance, the pain sense is the most primitive of all,

because it lacks anything resembling an 'organ' proper, consisting merely of the terminal branches of nerves.

This very lack of structural specialization, however, makes the pain sense peculiarly adapted to report injuries, because even a pin prick or slight scratch of the epidermis will immediately attack the tissue of the nerve endings themselves.

As for the *distribution* of the pain spots, they are more numerous than those of the other cutaneous senses. This distribution is, like that of the other sensitive spots, uneven in the different portions of the body; much depends, too, on the constitution of the individual. In general, though, the respective areas of the skin are practically the same in all human beings, so that it is possible to give a statistical average of the number of pain spots present in a particular region of the skin. Taking as a standard the number of spots per square centimeter, it has been estimated that there are about 45 pain spots on the tip of the nose, 60 on the ball of the thumb, and close to 200 on the back of the hand, the chest, and the inner forearm. Kiesow states that a small patch of membrane, situated opposite the second molar tooth on the inner surface of the cheek, is entirely devoid of pain spots.

One of the *phenomena* of pain sensation is its 'latent period.' It takes more time to arouse this sensation than it does in the case of the other cutaneous senses, and it also takes more time for the effect to disappear. The pain sense is relatively slow in its operation. The pressure sense is relatively fast, and this difference in reaction time is another indication that these senses are distinct. The pain

sense possesses a certain amount of 'adaptation' to the steady application of a stimulus, demanding intervals for recovery to full efficiency. From a psychological standpoint, the 'quality' of pain varies from a sharp sting to a dull ache. Pain originating from the internal organs of the body is always pathological in character.

Contrary to what might be expected, there are no sensitive spots for pleasure, although pleasure is usually considered to be the counterpart of pain as much as cold is the counterpart of warmth. Evidently, then, pleasure is a condition of the organism totally different from that of pain. Pleasure will be considered in a later chapter.

The Temperature Sense

Physiologists and psychologists often speak of the 'temperature sense' in the singular, as if there were but a single sense for warmth and cold; then again, they often refer to the 'sense of warmth' and the 'sense of cold,' as if they were two separate senses. Many, perhaps most, of these scientists favor the two-sense view, but there is always a note of uncertainty in their expression.

Up to date, the *experimental evidence* is neither clear nor conclusive, notwithstanding the great amount of research work done in the laboratories. It has been found that the cold spots of the skin far outnumber the warmth spots; and it has also been discovered that there are regions where cold spots are present while warmth spots are absent, and vice versa. There is also good evidence in support of the view that the cold receptors are close to the

skin surface, while the warmth receptors lie deeper; when the skin is cocaineized, the cold sensation disappears first and the warmth sensation later. This evidence argues for the two-sense view.

Offsetting this evidence is the fact that these spots do not seem to be stable; the location and the number of spots shift about to a certain extent from experiment to experiment with the same subject. Besides, when the stimulus is increased, namely, by using a somewhat warmer or colder stimulus than was used before, the number of sensitive spots is also increased; this fact does not seem to conform with the theory of fixed receptors of warmth and cold with a punctate form of distribution. It may be, of course, that some spots are more sensitive than others, and that an increase of the stimulus produces its effect over a wider area with a corresponding involvement of more spots.

If it were possible to identify definitely two distinct types of receptor organs for the sensations of cold and warmth, the problem would be solved. Investigators associate the sensation of cold with the *end bulbs of Krause* and the sensation of warmth with the *end organs of Ruffini*. There is some experimental evidence which points to these structures as being the organs of cold and warmth, but this evidence is also not conclusive. Von Frey had already observed that the conjunctiva of the eye is very sensitive to cold, and this area abounds with the Krause bulbs. Strughold and Karbe, using a very ingenious method of mapping the cold spots, confirmed the findings of von Frey; every cold spot of the conjunctiva was found to correspond to a Krause bulb located at the spot. There is thus little

doubt that the Krause end bulbs are cold receptors or at least are associated with them. The problem, however, is still left unsolved. Cold spots are very numerous in the skin and are freely distributed over the entire surface of the body; and yet, despite repeated efforts, investigators have failed to discover the presence of these end bulbs in the skin where the cold spots are located.

Another phenomenon which seems to militate against the two-sense theory is the fact that very intense stimulation of the temperature spots is sensed as a 'burning.' It is commonly known that contact with an extremely cold object is experienced as a 'burning' sensation and not as cold. If the cold and warmth receptors were specifically distinct as senses, this fact is, to say the least, disturbing.

Due to these apparently conflicting facts, some scientists look for the true stimulus source of cold and warmth in the *blood vessels*. A 'dilation' of the vessels would be the stimulus for the sensation of warmth, a 'constriction' of the vessels for that of cold, and a 'spastic constriction' the stimulus of the burning sensation which is aroused by extreme excitation. There is, however, little positive evidence for this theory.

And so there is still uncertainty whether we have a single common temperature sense or a distinct sense for warmth and another for cold. Future investigation may settle the question. Leaving this matter aside, we will now give our attention to factual information concerning the sensations of warmth and cold.

The *distribution* of the cold and warmth spots is rather variable. The cold spots far outnumber the warmth spots, considered as a whole, although in some restricted areas the warmth spots predominate. Striking an average from the results obtained by a number of investigators, von Stramlik¹ gives the following averages per square centimeter of skin surface. Cold spots: forehead, 8; tip of nose, 13; chest, 9; volar side of forearm, 6; back of hand, 7. Warmth spots: forehead, 6; tip of nose, 1.0; chest, .3; volar side of forearm, .4; back of hand, .5; Sommer estimated that the entire body surface contains about 250,000 cold spots and 30,000 warmth spots, with an average of 12—13 cold spots and 1—2 warmth spots per square centimeter.

Warmth and cold have no absolute values, but are relative in character. Whether a *thermal stimulus* will or will not arouse the sensations of warmth and (or) cold, depends upon the temperature of the skin to which it is applied. If the temperature of the stimulus is higher than that of the skin, it is experienced as 'warmth'; if the temperature of the stimulus is lower, it is experienced as 'cold'; and if the temperature of the stimulus is the same as that of the skin, neither warmth nor cold is experienced. Warmth and cold are simply modalities which are relative to the temperature of an organism. The skin temperature is termed *physiological zero*, because that is the temperature to which the organism is 'indifferent.' Various portions of the skin may have different physiological zeros, in as much as one portion may be warmer or colder than another. On a very cold day the physiological zero of the exposed parts, such as the hands and face, will be lowered with respect to

the covered parts; on a very hot day, or when exposed to a fire, it will be raised. It then happens that the same thermal stimulus will be experienced as warm and cold when applied to different parts of the skin.

One of the phenomena connected with the temperature sense is that of *paradoxical cold* and *paradoxical warmth*. Of the two, paradoxical cold is obtained more frequently. Paradoxical cold results under a special set of conditions when a hot stimulus is applied to the skin and there arouses, not a sensation of warmth, but a sensation of cold instead. If a temperature of 45° C. is applied for a short time to the front of the forearm and then a contact is made with a stimulus of 48° C., a sensation of cold will be experienced. The explanation given is, that the warmth receptors have adapted themselves to the temperature of 45° C. and do not respond immediately to the increased temperature of the second stimulus; the cold receptors, however, are able to respond to this stimulus by a cold sensation, since they have not been weakened by the temperature stimulus of 45° C. and can respond in full force.

The *reaction time* for the sensations of cold and warmth is different. When a cold spot is stimulated, the sensation in all its intensity is experienced at once, but the sensation of warmth reaches its full intensity only gradually. This difference in reaction time probably receives its explanation in the fact (if it is a fact) that the warmth receptors are situated in the deeper tissues.

The sensation of *heat* (not mere warmth) is peculiar. The stimulation of warmth spots alone will never arouse the

sensation of heat. Intense stimulation will produce the sensation of warmth or pain (pain will ensue, because of the injury to nerve tissue), but not 'heat.' In order that 'heat' be experienced, it is necessary that both warmth and cold spots be present in the stimulated area. It is therefore assumed that heat is not a simple sensation, but a blended sensation of warmth and cold resulting from the simultaneous stimulation of adjacent warmth and cold spots. That it is a blended sensation is born out by the heat-grill experiment. The grill consists of small tubes placed in parallel a few millimeters apart, warm and cold water alternating in the parallel tubes, so that warm stimuli affect warmth spots and cold stimuli affect cold spots in the same general area. Although no real heat is applied in this experiment, the subject, by placing his hand or forearm on the grill, soon experiences 'heat' without pain. Psychologists call this 'synthetic' heat,' in contrast to real heat. When 'burning heat' is experienced, due to the application of an extremely hot or cold stimulus, pain receptors are also involved in the stimulus pattern.

Adaptation to stimuli is noticeable to a marked degree in the temperature sense. Under steady stimulation of moderate warmth or cold the skin adapts itself by a corresponding shift of the physiological zero. The surface temperature of the exposed parts of the body is usually between 30-32° C. (86-90° F.). If the left hand is placed in a jar of water with a temperature of 20° C. and the right hand in water of 40° C., the left hand will at first have the sensation of cold and the right hand of warmth; soon, however, both hands will have no sensation of cold or

warmth at all, because of adaptation to the two temperatures. On placing both hands then in a jar of water with a temperature of 30° C., the sensation for the left hand will be that of warmth and for the right that of cold: the same temperature appears cold and warm at the same time. The *limit of adaptation*, according to experimenters, ranges from about 16° C. to about 40-42° C. As a rule, adaptation is impossible below this minimum and above this maximum temperature; in other words, in most individuals, anything below 16° C. will always be experienced as cold and anything above 42° C. as warm, without a physiological zero being established.

This description concludes our examination of the cutaneous senses of pressure, pain, cold, and warmth. They are *exteroceptive* senses. Next in line among the somesthetic senses are the *intraorganic senses*.

The Visceral Senses

There are two main types of intraorganic senses, the interoceptive and the proprioceptive. Two kinds of senses are *interoceptive*: the visceral senses and the *static* sense. They are called 'interoceptive,' because in their case the stimulus is not furnished by objects outside the organism but by organs lying far beneath the skin in the *interior* of the body. Through them we become aware of sensations aroused by stimuli originating within the body itself. One set of stimuli has its source in the *viscera*, or, generally speaking, in the vegetative organs. Sensations arising from this set of stimuli acquaint us with the condition of our

internal organs. The senses mediating these sensations are termed the *visceral senses*. The other set of stimuli has its source in the inner ear. Sensations produced by this set make us conscious of the equilibrium present or absent in the position of our body; hence the term static sense. The visceral senses will be described first.

Perhaps the best way to treat the visceral senses is to describe the *various kinds of visceral sensations*. 'Visceral sensations' are those which are aroused through changes of the inner organs and have the purpose of acquainting us with the condition of our organism, particularly with the *disturbed functions of vegetative life*. These sensations are many and diverse.

Some pertain to the musculature. Among these may be mentioned the sensation of fatigue, of freshness, of strength, of weakness, of relief after bodily strain in work, etc.

Others pertain to the nutrition system. The sensations of hunger and thirst stand out prominently. *Hunger* comes from the need of solid food. It is localized in the mouth, the throat, and the stomach. It manifests itself as a sort of dull pressure in the region of the stomach, but it may eventually turn into a painful sensation. *Thirst* is a sensation expressing the need of fluids in the system and is localized in the soft palate. It is assumed that a deficiency of lymph causes the membrane of the palate to shrink, thereby causing a stimulation of touch corpuscles present in that region. *Nausea* is a pronounced disgust or loathing of food, often accompanied by the vomiting reflex; nausea is primarily localized in the throat.

Functional disturbances of the *digestive* tract manifest themselves in a variety of sensations, ranging all the way from the dull discomfort of a general malaise to the sharp, spastic pains of griping, etc. These sensations may be only generally localized in the abdomen or sharply localized in a definite area, depending on the affected organs and the degree of functional disturbance. When the organs perform their operations in a normal manner, we are unconscious of their presence.

Then, there are sensations arising in connection with the *respiratory* and *circulatory* systems. In violent exertion, we experience a Constriction of the chest; in asthmatic conditions, a sensation of suffocation; after shock or a fast run, a painful contraction of the heart, etc. Associated with the functioning of the circulatory sensations are shuddering, itch, 'goose flesh,' and tingling, etc.; these are blended sensations in which pressure, pain, and other sensations are mixed.

In general, it should be noted that the organic sensations convey *little cognitive information*, but involve strong feelings. Their purpose is the *protection* of the organism in its vital functions, demanding imperatively our attention so as to obtain a correction of functional or organic disorders. Hence, pressure, pain, warmth (fever), and cold (chills) play such an important part in the pattern of visceral sensations.

For a long time the opinion was prevalent that the internal organs are insensitive to external stimuli. This belief was based on the statement of surgeons. Even severe handling of the internal organs do not seem to produce any definite sensory reactions. However, experimentation under

favorable conditions shows that sensibility to chemical, thermal, mechanical, and electrical stimuli is present, and positive reactions result in practically all regions, if not to all stimuli, then at least to some. Exact localization is usually difficult to determine, since the vegetative organs as a whole have only a very indirect connection with the conscious centers of the cortex.

It is very *doubtful* whether any *special senses* participate in visceral sensations. No unusual anatomic structures have been discovered so far which might be construed as being new sensory organs, different from those already described in cutaneous reactions. Apparently, the receptors of pressure, pain, cold, and warmth combine in the viscera in various patterns and thus give rise to different visceral sensations.

The *static sense* is an intra-organic sense, the end organs of which lie in the internal ear and are stimulated by the pull of gravity and by head movements. It is also termed the 'labyrinthine,' 'vestibular,' and 'equilibrium' sense. The name 'static' or 'equilibrium' sense is used, because this sense acquaints us with the position of our body in rest and motion. The name 'labyrinthine' or 'vestibular' sense is used, because the 'labyrinth' and 'vestibule' refer to the internal ear where this sense is located.

The *organ* of the static sense consists of a number of specialized parts: *the semicircular canals, ampullae, utricle, and saccule*. The semicircular canals are filled with a liquid and stand roughly in the directions of three planes placed at right angles to one another, like the floor and the two joined walls of a room. At the base of each canal the

structure bulges out into a vase-like formation, the ampulla. A vestibule or chamber unites the canals in the region of the ampullae. The ampullae have cells with hair-like endings which are mechanically stimulated by the pressure of the liquid, or endolymph, present in the canals and ampullae. The utricle and saccule contain otoliths which are minute crystals of carbonate of lime. The entire structure is frequently called the 'labyrinth.'

The *functions* of these parts are presumed to be as follows. The *semicircular canals* are directly concerned with *rotary movements of the head* and indirectly thereby also with rotary movements of the body, provided the head and body act as a unit and have the same

movement without changing their position relative to each other. No matter in what plane the head rotates, the liquid of one or the other of the canals will be affected by the movement. The liquid, or endolymph, presses against the cell hairtips of the ampulla, bending them out of their normal position. These hairtips stimulate the receptor cells in which they are rooted, and these receptor cells respond with a nerve impulse which results in the sensation of rotary movement. As the rotary movement continues, the endolymph adjusts itself, and the hairtips return to their normal position, the stimulation ceasing. As for the functions of the *otoliths*, it is assumed that an inclination of the head in any direction causes these little stony particles

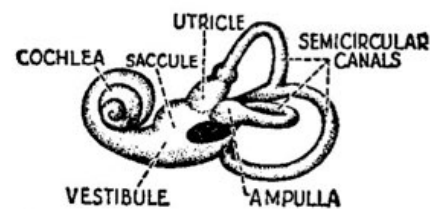


Fig. 16. Vestibular Organ of the Static Sense.

to sag and thereby bend the hairs in which they are embedded, producing a stimulation of the receptor cells. This stimulation continues as long as the head (and body) deviates from its normal *position*. The static sense, therefore, is a sense of positional equilibrium and orientation in head movements.

The position of the vestibular organ in the interior of the head makes experimental *verification* of these assumptions very difficult. Whatever evidence there is, confirms the assumptions. Pressure on the canals, anesthetization, inflammation, resection, partial or total destruction of the labyrinth, etc., show effects of interference with the equilibrium of the bodily members just as happens in change of movement and position. An example. When normal people rotate around the axis of their body and come to a stop, they experience the illusion of rotation for some time and have the feeling of dizziness. Those deaf-mutes, however, whose vestibular organ is destroyed, experience no dizziness after rotary movement and proceed to walk without the staggering gait observed in normal people; on the other hand, it is claimed that they lack the sense of orientation when immersed under water with closed eyes. Ordinarily, like other people, deaf-mutes are able to know and maintain their body positions through visual cues, body pressure from surrounding objects (e.g., the pressure of the earth against their feet when standing, or the pressure of the bed against their body when lying down), and gravitational pull. When these factors are more or less neutralized (as through immersion under water with closed eyes), their sense of positional equilibrium is lacking,

due to the absence of the vestibular organ. When the otoliths of a fish have been removed, it also lacks body equilibrium and is indifferent to position.

Impulses from the vestibular organ are transmitted to reflex centers of the brain stem and cerebellum, producing compensatory adjustments of the head and limbs and oscillatory movements of the eyes (nystagmus). 'Sea-sickness,' 'train-sickness,' 'car-sickness,' 'elevator-sickness,' and 'plane-sickness' are visceral reflex reactions sometimes originating from vestibular impulses. A considerable amount of *adaptation* is possible, as can be seen in the case of acrobats, whirling dancers, and aviators; they adjust themselves quickly after violent movements.

The Kinesthetic Sense

The last of the somesthetic senses is the *kinesthetic sense*. It mediates sensations of the *position* and of the active and passive *movements* of the *bodily members* in relation to one another. By 'active' movements are meant movements of our limbs which we execute voluntarily, through our own effort; by passive movements, those movements of our limbs executed through someone else, as when someone lifts our hand without active participation or resistance on our part.

A number of different *sensations* must be considered with reference to the kinesthetic sense. There are sensations with regard to the *position* of the members in *bodily posture*. We know, for example, even without looking, whether the arm is raised or lowered, whether our knees are flexed or straight, whether our fingers are clenched or

relaxed, etc. Again, we experience sensations acquainting us with the *movements* of our limbs. In passive movements these sensations are localized apparently in the joints; in active movements they are localized more in the tensed muscles. Then, we have the sensation of *resistance*. In pushing against a solid wall, we not only experience touch and pressure on the surface of the hand, but also resistance in the joints of the hand, elbow, and shoulder. Finally, there is the sensation of *weight*, localized in the joints, tendons, and muscles.

Sensations seem necessary for *voluntary* movements. Such movements are apparently impossible whenever sensations are excluded. In the cases of organic loss of sensibility, where no sensory impulses reach the cortex of the cerebrum from the limbs themselves, patients cannot voluntarily move these limbs, even though the motor centers and nerves be intact, nor are they conscious of any passive movements executed by others. But if they can see their limbs, they can perform voluntary movements without any difficulty, provided the motor centers and nerves be intact. In normal persons such movements are possible even with the eyes closed. These facts indicate that in normal, voluntary movements sensory impulses must travel from the muscles to the brain in order that such movements can be executed.

There is uncertainty in the minds of physiologists as to the particular *organ* which serves as the reception for kinesthetic stimuli. For a long time the *muscles* were considered to be the anatomical substrate for this sense, and accordingly it was named the 'muscle sense.' This view,

at least in this exclusive and simple form, had to be abandoned. In some pathological cases, where the muscles had degenerated and were totally inactive, the patients preserved the sensations of posture and resistance and recognized the passive movements of their limbs. The muscle, as such, therefore, is not the organ of the kinesthetic sense. Others sought to reduce the kinesthetic sensations to *skin pressure* or to the *feeling of innervation* of the muscles. It was found, however, that the pressure sense could be destroyed, while the sensations of active and passive movement continued. The feeling of the innervation of the muscles in movements is, no doubt, an important factor in the normal sensing of voluntary movements, but it can hardly be the true kinesthetic sense. Some patients, after an accident, were able to execute movements correctly as ordered, but they did not know, unless they looked, whether they had actually made the movements. They innervated their muscles and were aware of the feeling of innervation, yet they were unaware of the movements themselves.

Perhaps the fundamental form of sensation concerning the position and movement of our members is that of *muscular tension*. Pressure, touch, and the feeling of innervation no doubt play an important part in normal kinesthetic sensation, but there are two structures which seem to have a special significance in this connection: *the muscle spindles and tile end organs of Golgi*.

The *muscle spindle* is a capsulated bundle of muscle fibers (Weissmann fascicle) located in a muscle close to where the fibers of this muscle pass over into tendinous

fibers. The capsule is connected with the tissue of the muscle by an outer layer of connective tissue. Besides the motor nerves which terminate in motor plates on the muscle fibers, a set of sensory nerves enter the spindle and coil around the muscle fibers of the spindle. Any contraction of the ordinary muscle is thus bound to stimulate these nerves of the capsulated muscle spindle and transmit a sensory impulse. The tendons possess similar spindle-shaped structures, the *end organs of Golgi*. Their function must be the same as those of the muscle spindles. There are, then, two special structures in the muscles and tendons situated where they are capable of localizing sensations of position, movement, resistance, etc. The neuro-muscular end organs of the muscle spindles register muscular contraction and thereby enable us to experience the position of our members. The neuro-tendinous end organs of Golgi register intense muscular effort, acquainting us with the resistance offered by objects.

Besides these two special structures, numerous *corpuscles of Ruffini* are located around the tendons, the capsules of the joints, and the periosteum (membrane of connective tissue investing the bones), while *corpuscles of Pacini* are present around the joints. The former probably react to tension, and the latter to pressure. It would therefore seem that they also play a part in the general pattern of kinesthetic sensations as a whole, though a minor one, whereas the muscle spindles and the tendon spindles have the major roles.

The kinesthetic receptors are termed *proprioceptive*, because they are activated by stimuli produced within the

organism by movement or tension in its own tissues.

Kinesthetic sensations are very important for the performance of properly coordinated bodily movements. Impairment brings on serious disturbances. Ataxia, or the inability to coordinate voluntary movements, is an abnormal condition due to impairment of kinesthetic function.

All the somesthetic senses — pressure, pain, temperature, visceral, static, and kinesthetic — have as their primary purpose the *protection and well-being of the organism as a whole*. None of these senses acts as an isolated sensory unit. Their functions are interrelated and interdependent. They serve the organism in performing the normal activities of its vital organs and in safeguarding its integrity against injurious influences from within and from without; at the same time they convey much information about the environment in which man lives. The somesthetic senses show that man is an *integral organism*.

Summary of Chapter IV

Sense cognition is mediated through various bodily structures called the receptors or *sense organs*.

1. *Sensation and Perception*. A *sense* is a specialized mechanism or function by virtue of which an animal organism is receptive and responsive to a certain class of physical stimuli, resulting in knowledge of some sort. *Sensation* is a conscious experience aroused by the stimulation of an organ of sense. *Perception* is the cognizing of the object which produces the sensation.

2. *The Senses*. The *internal senses* are the central or synthetic sense, imagination, sense memory, and instinct. The external senses are sight, hearing, taste, smell, and the somesthetic senses. The somesthetic senses are the cutaneous senses of pressure, pain, warmth, and cold, and the intra-organic senses, i.e., the visceral sense, static sense, and kinesthetic sense. Sight, hearing, taste, smell, warmth, cold, pressure, and pain are *exteroceptive*; the visceral and static senses are *interoceptive*; and the kinesthetic sense is proprioceptive.

3. *The Cutaneous or Skin Senses*. The cutaneous senses are located in the skin region, and they are the senses of pressure, pain, warmth, and cold. The skin contains various types of nerve endings associated with the cutaneous sensations: *capsules, Pacinian and Meissner corpuscles, Krause bulbs, and the end organs of Ruffini*.

4. *The Sense of Pressure*. The stimulus is anything which, upon contact, alters the even surface of the skin.

Hair follicles serve as receptors of touch and pressure; most likely also Meissner corpuscles and perhaps free nerve endings.

5. *The Sense of Pain.* The stimulus is some object which injures or nearly injures nerve tissue. The pain receptors are the free nerve endings.

6. *The Temperature Sense.* It is still somewhat uncertain whether this is a single sense or whether there is a distinct sense of warmth and a distinct sense of cold. Most probably they are separate and distinct senses. Investigators associate the sensation of cold with the Krause bulbs and that of warmth with the end organs of Ruffini; others look for the true stimulus source in the blood vessels. The sensation of 'heat' results from the stimulation of adjacent warmth and cold spots.

6. *The Visceral Senses.* The visceral senses and the static sense are *interoceptive*. The *visceral senses* have the source of their stimuli in the viscera or vegetative organs. There are several kinds of visceral *sensations*: some pertain to the musculature, some to the nutrition system, some to the digestive tract, and some to the respiratory and circulatory systems. It is doubtful whether any special senses participate in visceral sensations; apparently, the receptors of pressure, pain, cold, and warmth combine in various patterns and thus give rise to visceral sensations.

8. *The Static Sense.* It is an intra-organic sense, the end organs of which lie in the internal ear and are stimulated by the pull of gravity and by head movements. The organ consists of the semicircular canals, ampullae, utricle, and saccule. The canals, with their endolymph, acquaint us with

the *rotary movements* of the head. The utricle and saccule, with their otoliths, acquaint us with any deviations of the head and body from their normal *positions*. The static sense is a sense of positional equilibrium and orientation in head movements.

9. *The Kinesthetic Sense*. It mediates sensations of the position and of the active and passive movements of *the bodily members*. We also experience sensations of resistance and weight. The *organs* are probably muscle spindles and tendon spindles. Corpuscles of Ruffini and Pacini, in all probability, also play a part in these sensations.

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¹ See R. S. Woodworth, *Experimental Psychology* (Holt, 1938), p. 457

Chapter 5

SMELL, TASTE, HEARING

SMELL AND TASTE ARE 'CHEMICAL SENSES' BECAUSE THEY ARE activated by chemical stimuli. They are also reckoned, together with the somesthetic senses, among the 'lower' senses, while hearing and sight belong to the 'higher.' Smell and taste have more of a nutritive value, while hearing and sight have more of a cognitive value, and nutrition is of a lower order than cognition. Since the logical procedure is to pass from the lower to the higher, smell and taste must be discussed first, then hearing and sight.

The Sense of Smell

Smell is the sense by which certain properties of bodies (called their smell, odor, or scent) become known through the stimulation of receptors responsive to chemical substances in a gaseous form or to minute particles which reach them normally from a distance and in low concentration.

The *organ* of smell is a brown-yellow spot of the mucous membrane of the nose, about the size of a ten-cent piece, situated in a little pocket above the ordinary nostril

chamber and connected with it through a narrow cleft. Its location places it apart from any direct contact with the inhaled and exhaled air and protects it against dust, insects, etc., and also against sudden changes of temperature. Odorous particles mingle with the air and are inhaled into the nostrils through breathing; they then reach the olfactory spot through diffusion or through eddies in the air currents produced by sniffing. Foods and liquids taken into the mouth also give off odorous particles which are exhaled with the breath; a part or all of this exhaled breath is forced up into the nasal cavities from the rear of the mouth, and in this manner the olfactory receptors are stimulated by the odor of foods and liquids. The receptors are nerve cells situated within the membrane of the olfactory spot; slender nerve endings (dendrites) reach out from the cells peripherally to the membrane surface, while axons of the cells extend inward to the olfactory bulb at the base of the brain, where connections are made with the olfactory center in the cerebrum.

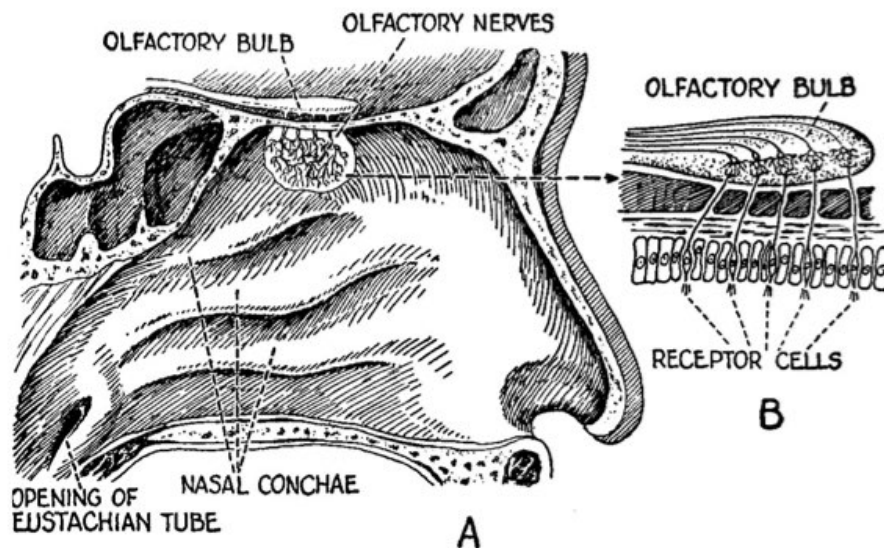


Fig. 17. Organ of Smell.

A. Relative position of the olfactory organ and the nasal cavity. — B. Enlarged cross section of the receptor cells.

The *stimulus* for the sense of smell is a gas in which odorous *particles* are suspended. Formerly it was thought by some that objects send off vibrations to the nose and thereby produce the sensation of smell; and the reason for this view was the alleged fact that certain strongly odorous substances, such as musk, apparently lost no weight even over long periods of time. It is now known that minute particles are released from such substances at all times. The vibration theory has received a positive refutation through the fact that a complete stoppage of the nasal cavities excludes completely the sensation of smell, although vibrations may still reach the interior of the nose. It is now universally accepted that solids and fluids must volatilize before their odorous qualities can be sensed. Usually the minute particles thus liberated mix with gaseous air and thus influence the sense organ. E. H.

Weber filled the nasal cavities completely with eau de cologne and experienced no sensation of smell; eau de cologne must volatilize and diffuse into the air before it can act as a stimulus.

Some vapors and gases are odorous; others are not. It seems that the *chemical constitution* of a substance and the *specific receptivity* of the receptor cells determine whether a particular substance can arouse a sensation of smell and what kind of smell. The pure elements, with the exception of the halogens (fluorine, chlorine, bromine, iodine), are non-odorous. Most odorous substances are carbon compounds. It is estimated that only sixteen elements enter into combinations which emit odors perceptible to man. Arranged according to the chemical families to which they belong, these are: hydrogen; carbon, silicon; nitrogen, phosphorus, arsenic, antimony, bismuth; oxygen, sulphur, selenium, tellurium; fluorine, chlorine, bromine, iodine. Similar compounds within a chemical family usually possess similar odorous qualities. The quality of a substance, determining whether or not it can act as a stimulus for smell, depends apparently upon the atomic or molecular grouping of a substance. In accordance with this view, some scientists have proposed the theory that *electronic oscillation* is the stimulus for the sense of smell; thus Haycraft, Heyninx, and Zwaardemaker. This theory is interesting, but as yet it lacks experimental verification to a considerable degree. It is plausible that the organ of smell is a composite organ, consisting of different types of cells with specific reactions. Rollett induced a total anosmia (lack of the sense of smell) in himself; as the anosmia waned,

smell revived gradually and that in a very definite order. Similarly, when the organ of smell becomes fatigued through overstimulation from a particular odor and responds sluggishly, it will also respond sluggishly to odors related to the first. Partial destruction of the sense of smell occurs, so that certain types of odors are eliminated while others can still be sensed.

Concerning the *classification of odors*, no system has been devised which gives complete satisfaction. Linnaeus (1756) was the first to make an attempt at a scientific classification. He enumerated seven fundamental types of odors: aromatic (typical: carnation), fragrant (lily), ambrosial (musk), alliaceous (garlic), hircine (valerian), repulsive (some bugs), nauseous (rotten meat). Zwaardemaker (1925) added two classes to the list of Linnaeus, placing 'ethereal' odors at the head before the aromatic odors and 'empyreumatic' odors after the alliaceous; ether is an example of the ethereal group, and roasted coffee of the empyreumatic group. He also subdivided the various classes and endeavored to find a place for the odorous compounds of organic chemistry. The four at the beginning of the list are 'nutritive' odors, the rest 'decomposed' odors. Henning (1924), after extensive experiments with no less than 415 odorous substances, arrived at the following classification:

Fragrant — heliotrope, etc.

Fruity — apple, etc.

Resinous — turpentine, etc.

Spicy — cloves, etc.

Putrid — carrion, etc.

Burned — coffee, etc.

Much experimentation with odors has been done, and some phenomena are noteworthy. *Fatigue*, with *adaptation* to the stimulus, is common. Continued exposure to the same stimulus weakens the sensation, if the stimulus is strong; if the stimulus is a mild odor, sensation usually disappears completely. The *mixture* of odor stimuli produces diverse results. In most cases, one experiences a blend of odors; the components are individually perceptible, though the total impression is unitary. In the case of a great dissimilarity between two component stimuli, the usual experience is to sense first the one, then the other, successively. Another phenomenon which occurs, according to some investigators but denied by others, is *compensation* or *neutralization*. Some stimuli, when combined, simply cancel out each other. It is claimed that the stimuli of caoutchouc and wax or paraffin neutralize each other.

One often speaks of odors which are 'sweet,' 'sour,' 'pungent,' 'bitter,' etc. These are, in all probability, not qualities of odors as such. End organs for pressure, pain, cold, and warmth are located in the nostrils and in the rear portion of the mouth, and it is obvious that they, too, are stimulated by odorous gases; combined sensations are the result. If the sense of taste is eliminated, chloroform no longer smells 'sweet'; and if the sense of smell is eliminated, the sweetness of chloroform remains. Taste and smell, due to the close proximity of their end organs and the similarity of their stimulation as chemical senses, are intimately

connected in function, so that the stimulus of the one is frequently referred to the other. In ordinary life, it is practically impossible to separate the two.

The Sense of Taste

Taste is the sense by which certain *qualities* (taste, savor, flavor) *of soluble substances become known by contact with a particular set of epithelial end organs* (taste buds) *located mainly in the papillae of the tongue.*

The *organs* of taste are the *taste buds*, and they are present in great numbers in pimple-like protuberances called papillae. These papillae are found mainly on the tip, sides, and rear portion of the tongue, but some also in the soft palate and in the throat; the middle portion of the tongue is devoid of taste sensitivity.

The *stimuli* are chemical substances which must be *soluble* to some extent; insoluble substances are tasteless. Vapors and gases can be tasted; ordinarily, however, substances enter the mouth in a solid or fluid condition. Upon contact with the tongue, particles in solution seep down from the surface of the tongue through little crevices or canals into the interior of the taste buds and there stimulate the actual *taste cells*. Pressure of the tongue against the roof of the mouth facilitates stimulation by forcing the solution into the taste buds. The brushlike endings of the sensory nerves in the taste buds carry the impulse along the lingual and glossopharyngeal nerves to the gustatory center of the brain.

As in the case of the sense of smell, the sensations of taste very rarely appear alone; they are mixed with those of smell and with those of the cutaneous senses. It is difficult to eliminate these extraneous components; but when they are eliminated, it is found that the *number of sensations* is no more than four: *sour, salty, sweet, and bitter.*

Such, at least, is the general opinion today. There are not even subgroups or variations of these four. Substances of the same concentration always have the same sour, salty, sweet, or bitter taste, whatever happens to be the flavor of these particular substances. When we speak of a 'hot,' 'cool,' 'pungent,' 'astringent,' taste, etc., one or the other or several of the cutaneous senses are certain to be involved as component factors.

The *localization* of the various tastes shows that they are distributed unevenly. While some papillae respond only to sour or to bitter or to sweet, others respond to two or three kinds of stimuli, and many to all four. Definite areas of the tongue are more sensitive to one kind of stimulus than to another. Experimentation proves that sensitivity to sweet is strongest at the tip of the tongue and decreases gradually in strength toward the back; the sensitivity to bitter is strongest in the rear portion of the tongue and becomes gradually weaker toward the front; the sensitivity to sour is strongest at the edges in the middle of the tongue and

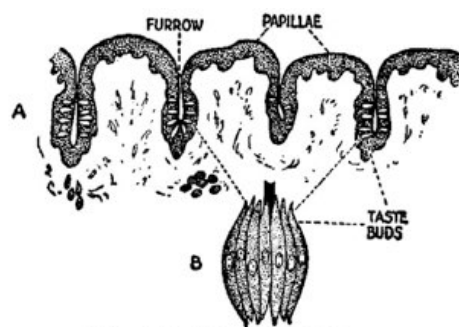


Fig. 18. Organ of Taste.
A. Cross section of the tongue.—
B. Taste bud (greatly enlarged).

weakest toward the front and back; sensitivity to a salty flavor is strongest toward the front and side areas of the tongue. One kind of taste is independent of the other because one kind can be impaired and even lost without affecting the others.

This evidence seems to warrant the conclusion that there are *four types of receptors* in the sense of taste, so that certain receptor cells in the papillae respond only to certain stimuli. Many physiologists assume that the hydrogen ion is the stimulating agent in the sour taste, and the anion in the salty taste, while sweet and bitter substances react with the lipoid (fatlike) substance present in the taste cells. It is a probable theory that the four principal tastes are the result of a chemical reaction between four receptive substances in the cells and the sapid substances placed upon the tongue. That the physiological process is chemical in nature, is without doubt; but the exact details of the process are still very obscure.

Adaptation is a common phenomenon in taste sensations, as everyday experience proves. A sweet solution tastes sweetest at first contact; afterward it tastes less sweet. The concentration of a solution must be increased many times after adaptation before the sensation can be aroused again. Adaptation varies. It is least in the case of sour and salty solutions, greater in the case of bitter, and greatest in the case of sweet.

Individually and in their combination, the senses of smell and taste enable us to recognize many properties of substances and thereby the substances themselves. Their

primary purpose is obviously to supply us with the necessary cues to distinguish between what is good or harmful for the organism in the line of food and drink. Bitter substances, for instance, have lower threshold values than sweet; that is to say, it takes a much smaller amount of bitter than of sweet substances in order to arouse sensation. The majority of bitter substances are alkaloids and therefore frequently poisonous, while sweet substances are usually energy giving and as such beneficial. We shun the bitter and crave the sweet; the difference in threshold value thus manifests biological purposiveness.

The Sense of Hearing

Hearing is the sense by which the *vibrations of certain media acting upon the ear become known as sounds*. The human ear is a marvelous neural mechanism. Consider a symphony orchestra with its manifold types of instruments, its constantly progressing and changing melodies, its shifting keys and chords, its harmonies and dissonances, its slow and rushing tempos, its whispering pianissimos and thundering fortissimos — the ear is capable of detecting, distinguishing, and analyzing all these confusing factors with a nicety and assurance that is truly amazing. A minute piece of organic structure in the head thus reacts selectively to a veritable flood of intermingling air waves emanating from vibrating bodies. It is but natural, therefore, that physicists have made an intensive study of sound waves, that anatomists have subjected the ear to a thorough microscopical examination, that physiologists

have endeavored to trace the function of hearing from start to finish, and that psychologists have conducted innumerable experiments in auditory sensation and perception.

Since the ear is the organ of hearing and hearing is the power or act of detecting sound, it is important to understand precisely what is meant by *sound*, because the physicist and the psychologist attach a different meaning to the term 'sound.' To the *psychologist* 'sound' is a *sensation* caused by the stimulation of the auditory nerves and the auditory center of the brain. To the *physicist* 'sound' is a form of vibrational energy transmitted through an elastic medium (e.g., air) in external nature. The physicist considers 'sounds' to be identical with the 'vibrations' in so far as they proceed from a vibrating or 'sounding' body and travel through a medium, irrespective of whether or not they are heard by an ear. The psychologist, on the other hand, considers 'sound' to be identical with the conscious experience of tonal qualities' resulting from the stimulation of the neural mechanism of the organ of hearing, after the stimulus (the sound wave of the physicist) has acted upon the organ. The viewpoint of the physicist is that of one studying the external objective *agent* which eventually arouses the sensation of hearing, while the viewpoint of the psychologist is that of one examining the internal subjective act of *conscious response* to this external objective agent. Both viewpoints are legitimate. In order to avoid a confusion of ideas, however, it is well to know this difference in meaning. In the following discussion both

meanings occur, and the context shows which of the two is intended at the moment.

It will be necessary to touch on the main features brought to light on the mechanism of the *human ear*, on the nature of *physical sound*, and on the *relationship between the two*.

The Human Ear

The *organ* of hearing is the *ear*. In man the ear consists of three distinct parts: the *outer ear*, the *middle ear*, and the *inner ear*.

The *outer ear* of man is designed to collect sound waves and transmit them to the middle ear. One part of the outer ear is the shell-like or trumpet-like structure, called the *pinna* or *auricle*, which extends outward from the side of the head. Man has muscles in his ears which indicate that he was able at one time, no doubt in the far past, to move them for directional purposes. In the vast majority of human beings these muscles are atrophied, so that the external ears are of little use. More important for hearing is the canal, or *external auditory meatus*, which leads into the interior of the head and permits the air waves to come into contact with the ear drum. The *ear drum*, or *tympanic membrane*, is a membrane which stretches across the external meatus like the head of a drum and thus closes off the inner end of the external meatus and separates it from the middle ear.

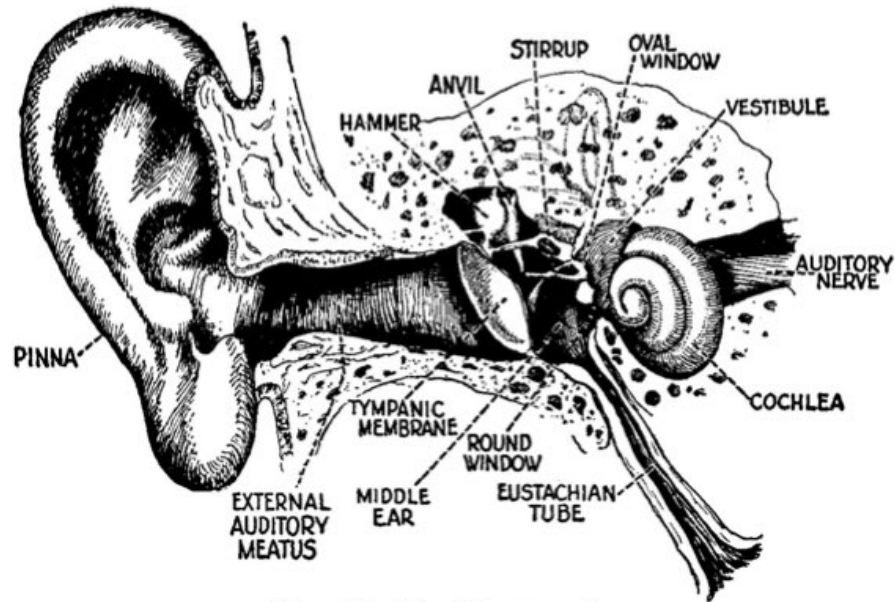


Fig. 19. The Human Ear.

The *middle ear* is an air-filled cavity within the skull, situated immediately behind the tympanic membrane. This membrane, therefore, is the end of the external ear and the beginning of the middle ear. The air waves, passing along the external auditory meatus, strike against the tympanic membrane and produce vibrations in it which correspond to the vibrations in the air. From the tympanic membrane these vibrations are now carried forward by *three small bones*, or *ossicles*, across the cavity of the middle ear. The first of these bones is the *hammer*, or *malleus*. The handle of the malleus extends down toward the center of the tympanic membrane, where it is permanently attached. The second bone is the *anvil*, or *incus*, which is attached to the head of the hammer. The incus has a tapering prolongation, the lower extremity of which is attached to the *stirrup*, or *stapes*, the third bone in the series. The stirrup, on its part, is attached to the membrane of the *oval window*, or

fenestra ovalis, of the internal ear. The arrangement and articulation of these three small bones is an ingenious contrivance of levers, to transmit the vibrations of the tympanic membrane across the space of the middle ear to the inner ear and also to absorb any injurious shocks. The inner ear, the real organ of hearing, is a delicate mechanism. The tympanum is often exposed to explosive shocks of excessively strong air waves, so that a direct contact between the tympanum and the inner ear might do serious harm. The ossicles act as shock absorbers, while serving as vibration communicators between the tympanum and the inner ear. In order to equalize the air pressure on both sides of the tympanic membrane and thus protect it against rupturing, a tubal opening connects the middle ear with the posterior portion of the nasal cavity; this opening is the 'eustachian tube.'

By means of the three ossicles, vibrations reach the *inner ear*. The inner ear contains a number of structures: the semicircular canals, the vestibule, and the cochlea. The semicircular canals have nothing to do with the sense of hearing, but are a part of the static sense; the cochlea belongs exclusively to the sense of hearing; the vestibule belongs to the static sense, but it also has an important function in connection with hearing.

The inner ear is completely surrounded by the bone structure of the head, except for a portion of the vestibule which borders on, and is exposed to, the cavity of the middle ear. All the organs of the inner ear are enclosed in a bony casing. The casing is pierced in the region of the middle ear by two openings which are covered by

membranes: the 'oval window' or *fenestra ovalis*, just mentioned, and the 'round window' or *fenestra rotunda*. The purpose of these two membrane-covered openings will soon be described.

The *cochlea* contains the real organ of hearing. It is a bony casing or housing, shaped spirally like a snail's shell; hence the name. Its spiral has two and one half turns and is built around a conical bony core, the *modiolus*. The cochlea is divided throughout its entire length into two main sections by means of the *basilar membrane* which stretches transversely across the cochlear cavity from the modiolus to the outer casing. The two channels formed thereby are the *vestibular canal* and the *tympanic canal*. The vestibular canal ends at the 'oval window,' while the tympanic canal terminates at the 'round window.' At the upper end or apex of the cochlea, both canals are in communication with each other through a small opening, the 'helicotrema.' The vestibular and tympanic canals are filled with a fluid called *perilymph*. The function of this fluid is evident. When the stirrup communicates its vibrations to the membrane of the 'oval window,' this membrane, in turn, relays the vibrations to the perilymph of the vestibular canal; through the helicotrema these vibrations pass over into the tympanic canal; in this manner the vibrations travel from the base of the cochlea to the apex and from the apex back to the base and to the membrane of the 'round window.' Since liquids are practically incompressible, the membrane of the 'round window' must equalize the pressure exerted upon the membrane of the 'oval window' by the vibrating stirrup

bone. The minute vibrations are thus transmitted through the perilymph with full vigor.

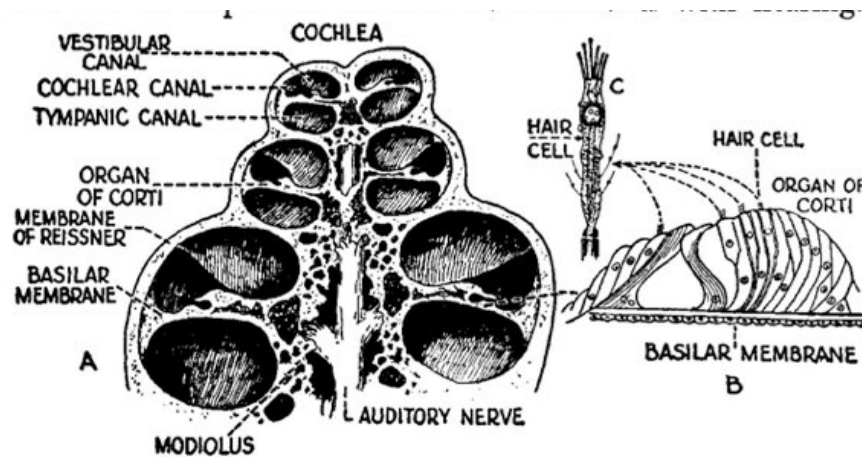


Fig. 20. Cross Section of the Organ of Hearing.

A. Cross section of the cochlea (enlarged).—B. Cross section of the organ of Corti (greatly enlarged).—C. Receptor cell (very much enlarged).

There is, however, a *third canal* in the cochlea, the most important of the three canals. It is triangular in shape and is formed by the *membrane of Reissner*. This membrane runs from the cochlear casing at an angle to the basilar membrane, near the point where the basilar membrane is joined to the modiolus. The base of the triangle is thus the bony casing of the cochlea, and the two sides of the triangle, converging to a point near the modiolus, are the basilar membrane and the membrane of Reissner. A part of the vestibular canal is thus cut off to form this third canal, the *cochlear canal* or *ductus cochlearis*. Its location is between the vestibular canal and the tympanic canal, and it, too, runs through the entire length of the spiral. The cochlear canal is filled with a liquid called the *endolymph*, the purpose of which is to take up the vibrations

transmitted through the perilymph to the Reissner membrane and carry them to the 'organ of Corti.'

The Organ of Corti

The *organ of Corti* is the *neurological organ of hearing*. It is to the ear what the retina is to the eye. All the structures described so far are accessory structures leading the vibrations of the sonorous bodies to the actual organ of hearing, the organ of Corti.

The organ of Corti is situated on the *basilar membrane* in the cochlear canal. Transverse fibers, estimated at about 24,000, are stretched across the basilar membrane; they vary in length, the longest being about three times the length of the shortest. The organ of Corti is microscopical in size. In it are found the *receptor cells* of hearing, resting on the transverse fibers of the basilar membrane. These cells are 'hair cells'; that is to say, certain hair-like terminations protrude from them, and these 'hairs' are embedded in the *tectorial membrane* which extends out into the endolymph nearly halfway across the canal. Whatever vibrations pass through the endolymph bend these 'hairs' back and forth. In this manner the vibrations act as a stimulus for the hair cells; a nerve impulse is produced in the nerves terminating in the cells; these auditory nerves pass through the modiolus, make their exit at the base of the cochlear spiral, form the eighth cranial nerve, and go to the midbrain and from there to the superior gyrus of the cerebral cortex. The result of this nerve impulse is the *sensation of sound*.

From this description of the outer, middle, and inner ear it is obvious that the air vibrations, taken up by the outer ear, never reach the cochlea and the organ of Corti. The air vibrations become vibrations of the ear drum; these become vibrations of the three ossicles, the hammer, anvil, and stirrup; these become vibrations of the membrane of the oval window; these become vibrations of the perilymph in the vestibular and tympanic canals; these become vibrations of the membrane of Reissner; these become vibrations of the endolymph of the cochlear canal; and these vibrations are the proximate stimulus for the receptor cells of the organ of Corti. While the air vibrations are the normal ones to start the chain of vibrations which eventually lead to the hearing of sound, they are not strictly necessary. People whose outer or middle ear is very defective can hear if the vibrations are transmitted to the cochlea through the bones of the head. Vibrations are necessary for hearing, but they need not be vibrations of air.

Sound as Sensation

Upon stimulation of the receptor cells in the organ of Corti, the nerve impulse produced there travels up to the auditory center of the cerebrum. We now *consciously experience sound*; this conscious experience of sound is what is meant by the sensation of sound or *sound as sensation*. In considering sound sensation, we are not interested in the type of vibration which acted as the stimulus for arousing the receptor cells, but merely in our conscious experience

which is the end result of this stimulation; in other words, we are interested in the conscious effect, not in the physical cause.

Viewed from this standpoint, we are conscious of *two main kinds* of sounds: *tones* and *noises*. There is a fundamental difference between the two kinds, although we usually encounter a mixture of both. As given in our subjective experience, 'tones' are something clear, musical, agreeable, while noises are more or less harsh, unmusical, disagreeable. One need but think of the preliminary tuning-up exercises of a band just prior to playing, and the actual rendition of a concert piece, in order to understand the difference between noises and 'tones.'

Sounds, considered psychologically, have *three chief characteristics*: pitch, loudness, and timbre.

Pitch. The pitch of a sound is designated by the expressions *high* and *low*. These expressions are metaphors taken from spatial dimensions; we have no literally direct terms to designate 'pitch' as a sound quality. The expressions, however, are apt enough. No doubt, the terms 'high' and 'low,' as applied to the psychological experience of sound, have their origin in the association with volume and dimension. There is something broad, voluminous, massive, dark about the 'low' sounds; sounds lose more and more of this character as the scale advances, until they become thin, sharp, light, bright in the 'high' sounds. The progress from the bottom to the top of the scale of sounds resembles the ascent from the deep broad lowlands of the valleys to the high narrow tip of a mountain peak. Some such association probably prompted the selection of the

terms 'low' and 'high' as analogically descriptive of the pitch of sounds.

Sounds having a definite, well marked pitch are called *tones*. Sounds produced by musical instruments and, as a rule, by the animal voice, are tones. Not always, however; a sneeze, a cough, the bark of a dog, and the roar of a lion are noises. *Noises* also have pitch. An exploding firecracker has a higher pitch than a bomb. Language appropriately describes the difference of pitch in noises by means of words: squeak, slither, blare, rattle, noise, shot, roar, rumble, boom.

The *range* of the human ear and its *selective discrimination* of pitch is remarkable. Sensitivity differs in individuals to some extent, but the average person is capable of distinguishing about 20,000 different tones. Pitch sensitivity is a native endowment, but attention and practice sharpen the acuity of discrimination; it is best in the middle section of the scale, and not so good in the lower and higher sections.

Loudness. Loudness, like pitch, is uni-dimensional; that is to say, it is progressive in character, beginning with sounds so weak as to be barely audible and increasing in strength until sounds of maximum intensity are reached.

Timbre. Timbre, or tone color, is that quality which *distinguishes tones of the same pitch*, when produced by different voices or instruments. For example, when instruments are being tuned for a concert piece, the pianist will strike a certain note on the piano. This same note will then be played by other musicians on the violin, the clarinet, the flute, the trumpet, the oboe, etc. The pitch of

the tone is the same for all the instruments; yet this same tone is characteristically different for each instrument. And if a number of singers give voice to this same note, it will be noticed that their tones are individually different. A musician can always recognize the type of instrument by its tonal quality. It is this tonal quality which is designated as tone color or timbre. In the description of tones, words like 'soft,' 'metallic,' 'wooden,' 'mellow,' 'thin,' 'full,' 'hollow,' 'sweet,' 'clanging,' etc., express timbre.

Timbre is the result of a fundamental tone combined with harmonic *partials or overtones*. Tones as we hear them are practically never simple, pure tones, but tones compounded of a dominant (fundamental) tone and a number of other tones (partials or overtones) which have a definite harmonic relation to the dominant tone. Close attention to tones as emitted by various instruments enables a trained listener to pick out the fundamental and also the distinctive overtones, although in normal experience, leaving critical analysis aside, the tone as a whole is sensed as a *unit*. The number and strength of the partials, therefore, determine mostly the timbre of a voice or instrument. Various kinds of *harmonic analyzers* have been devised to discover the overtones accompanying the fundamental tone; these analyzers show that the timbre of instruments depends on the number and strength of the overtones. Over 40 partials can be detected in the low notes of a piano, and in the clarinet some of the partials constitute about 60 per cent of the tone. The timbre of the same instrument changes considerably in the low, middle, and

high registers. Timbre, then, is a matter of overtone structure more than anything else.

Sound as Vibration

So far we have considered sound as a psychological experience, as sensation. Sound, however, has a *physical cause*; it is not something purely subjective. The physical correlate of the sensation of sound is the *vibration* of air or of some other medium. Such vibrations determine the pitch, the intensity, and the timbre of the sounds we hear, because they are the *physical stimulus* of the organ of hearing, and sensation is a conscious response to a physical stimulus.

From the standpoint of physics, *sound* is a form of vibration, *a wave motion in an elastic medium*. The sound wave is a *longitudinal vibration*, the particles of the medium moving back and forth, not in a curve, but in a straight line. In air, which is the common medium of physical sound, this wave is produced by a condensation and rarefaction of the air. The waves proceed from the sounding body in all directions, so that they represent an ever-widening sphere. Sound waves travel through the air with the speed of about 1100 feet per second, depending on the density of the air. They follow one another at a certain frequency, and by 'frequency' we mean the number of vibrations per second. The *energy* of the stimulus determines the *amplitude* of the *vibration*, and that is its *intensity*.

Psychologically, sounds are experienced as having pitch, loudness, and timbre. Since sensation is the conscious response to a physical stimulus, and since the physical

stimulus is the sound wave or vibration, what in the stimulus corresponds to pitch, loudness, and timbre? To put it in a different way:

How do sound waves or vibrations produce the pitch, loudness, and timbre of sounds as experienced in sensation?

Pitch and Sound Waves. Extensive experimental research has established the fact that *pitch* is determined by the *vibration rate or frequency*. A low rate produces low sounds a high rate, high sounds. Middle C, for example, has a vibration rate of 260 vibrations per second; this rate is expressed in a different manner by saying that the frequency of these waves is 260 cycles per second. The octave below middle C has a rate of 130 vibrations per second, and the octave above a rate of 520. The lowest sound still audible by the human ear has about 16 to 20 vibrations, while the highest has about 20 to 21,000 vibrations per second. Individuals differ, of course, in sensitivity, and absolute figures are thus impossible; the figures given are those of the most reliable authorities. Young persons have a larger range than older persons. Sensitivity is not uniform in all registers, so far as the distinction of differences in tones is concerned; it is finest in the middle registers, where sounds have a vibration rate of from approximately 1000 to 5000 per second. Many persons are able to distinguish tones with a difference of only four vibrations, and a trained ear can notice the difference between half a vibration and even less. A semitone is one twelfth of an octave and has about 16 vibrations at middle C; this interval is relatively large and is

easily distinguishable. It is claimed that in the middle octave as many as 1000 tones can be discerned as to pitch, at least by very keen ears.

Loudness and Sound Waves. The *loudness* of tones is dependent on the *amplitude* or *intensity* (energy) of the vibration. The vibration rate or frequency of a sound wave remains the same at all times, unless impeded in some way, and the pitch, therefore, also remains the same. The amplitude or energy of a sound wave does not remain the same; unless reinforced constantly, energy is gradually used up, so that the amplitude decreases as time goes on. Thus, a tuning fork whose note is middle C will always give off this tone, because its vibration rate or frequency is always 260 cycles per second as long as it vibrates; its amplitude or energy, however, diminishes gradually, and the tone becomes weaker and weaker in loudness, until it finally ceases altogether. The greater the amplitude of the sound wave, therefore, the louder the tone; the smaller the amplitude, the weaker the tone.

Pitch is determined by frequency, vibration rate; loudness, by amplitude, intensity, energy. It would be erroneous, however, to give an absolute value to this rule. The organ of hearing is not a machine which responds mechanically to a mechanical stimulus. Hearing is the function of a living organ, and this function modifies to some extent the operation of the rule. Since the sensitivity of the organ of hearing is finest in the middle range (1000 to 5000 vibrations per second) and weaker in the low and high ranges, sound waves in the low and high ranges must have greater energy than in the middle range in order that

the sounds be equally loud to the ear. The voice of a soprano will appear louder than that of a bass singer, even though the intensity of both voices be the same. Similarly, octaves have the ratio of one to two as to frequency; psychologically, in the low and high registers, the octaves seem to have a smaller span than in the middle region of the musical scale. The semitones represent the same interval in all octaves, and this interval should be heard as the same in every octave; but that is not the case. If two adjacent keys are struck successively at the lower and upper end of the keyboard of a piano and then in the middle of the keyboard, the interval between the semitones in the middle register will appear greater than that of the semitones at both ends. Pitch and loudness, therefore, are not rigidly determined by the frequency and amplitude of the vibrations, but depend to some extent on the unequal sensitivity of the ear.

Timbre and Sound Waves. Timbre, as was said before, is a mixture or blending of a fundamental and overtones. In sounds produced by musical instruments these overtones stand in a harmonic relation to the fundamental, namely, in the ratio of 1, 2, 3, 4, etc. The reason is the fact that a sounding body vibrates not only as a whole but also in its parts. When a violinist draws the bow over a string, the string vibrates as a whole, and that gives rise to the *fundamental*. But the string also vibrates by halves, quarters, eighths, etc., each part having its own frequency relative to the others; these vibrating parts thus give rise to *partials or overtones*. These overtones also have *different*

intensity quantities; some are stronger, some weaker. Frequency means pitch; intensity means loudness.

It is the blending of these overtones of different pitch and intensity with the fundamental of the string as a whole which constitutes the timbre of the violin. The material and construction of the instrument as a *resonator* for the tones contribute greatly to this timbre, because the body of the instrument vibrates also in its own peculiar manner, damping some tones and reinforcing others. The tuning fork, being so simple in construction, emits a relatively simple and pure tone.

Noises and Sound Waves. That noises and tones are not essentially different is clear from the fact that tones are present in all noises. Noises are combinations of tones; these tones can be separated through sound filters and eliminated individually. Being combinations of tones, noises consist of a number of fundamentals with their respective partials; this combination brings about a *conflict of frequencies and amplitudes* among the component tones which affects the ear disagreeably because of interference among their proper ratios. Noises are somewhat in the nature of timbre, except that the parts are combined in a disharmonious whole; hence some instruments, particularly drums and certain horns, are more noisy than musical.

The Musical Scale. A 'tone is a sound with a well-marked or definite pitch. A *musical tone* is one which has a definite harmonic relation to other tones, so that it can be combined with them into harmonies and melodies. A *harmony* is the simultaneous combination of musical tones which gives pleasure to the listener. A *melody* is the rhythmical

succession of single musical tones arranged into a pleasing unity. A *musical scale* is a graduated series of tones, ascending or descending in order of pitch according to a specified scheme of their intervals. The typical interval scheme of the modern scale of music is the octave. In the 'chromatic' scale there are twelve equal steps or intervals (semitones) between a keynote and its octave, based on the frequency of the sound waves. It is indifferent what particular vibration be chosen as a keynote; but once a keynote has been selected, the intervals progress in a definite ratio of vibrations up to the octave. By international agreement the tone of 440 cycles (vibrations) per second is designated as 'a'. Since the octave above a chosen keynote stands to this keynote in a frequency ratio of 2 to 1, it is obvious that the vibration rate of this octave must be 880 per second. By multiplying 440 by 1.059 and dividing the product by the twelfth root of 2, we arrive at the vibration rate of each of the twelve semitones in this octave. In order that tones be 'musical,' so that they can be combined in harmonic relations with one another, they must be 'spaced' or separated from one another by definite distances in the scale. Because of this fact, only about 85 tones are available for musical purposes, so that there are only 7, or at the most 8, octaves in the musical tone system which can be effectively used by musicians.

Theories of Hearing

A relationship undoubtedly exists between physical sound waves and the pitch, loudness, and timbre of sounds as

experienced in the organ of hearing. From time to time theories have been advanced attempting to explain this relationship.

The Resonance Theory. This theory is associated with the name of the eminent scientist *Helmholtz*. To him and his followers the basilar membrane of the cochlea, with its more than 20,000 transverse fibers, is similar to a piano with its many strings. When the damper is lifted and a note is sung into the piano, this note is an air wave compounded of many frequencies, and each string which corresponds to one of these frequencies will vibrate. In this manner the fundamental and partials of the voice tone is reproduced through *resonance* in the strings of the piano. In an analogical fashion the fibers of the basilar membrane are individually attuned to the frequencies of the sound waves, each to its proper frequency. The membrane is narrowest at the base of the cochlea and widest at the apex; it is therefore assumed that the 'resonators' for the high sounds are at the base and those for the low sounds at the apex. The vibrations communicated to the endolymph thus affect the transverse fibers and stimulate the 'hair cells' attached to them, and the impulse is transmitted from each cell through a conducting nerve fiber to the brain. Pitch would be explained by the rate of vibrations, loudness by their energy, and timbre by the complex of vibrations of the sound waves producing a similar effect in the transverse fibers.

Evidence of a sort for the resonance theory is found in the cases of *tone deafness due to localized injury* in the organ of Corti. Injuries make people deaf to tones of a

certain frequency band, depending on the region affected. On the other hand, objection is raised against the theory on the basis of the *microscopical dimensions* of the transverse fibers; it is difficult to understand how a correspondence can exist between the relatively large sound waves and the infinitesimal fibers.

The Sound-Pattern Theory. In this theory, the basilar membrane as a whole reacts to the incoming vibrations in such a manner that it vibrates in patterns which correspond to the *sound patterns*. Accordingly, some sections of the membrane vibrate while others are at rest, and the type of vibration varies in the different sections, so that the neural current is the exact counterpart of the sound pattern.

Considering the rapid changes which occur in the sound patterns of, let us say, a spirited concert piece, it seems doubtful whether the *refractory phase* of a nerve impulse would permit such rapid changes and impulses without serious interference. To offset this difficulty, some adherents of the sound-pattern theory, especially *Wever and Bray*, contend that it is not necessary to suppose that the single nerve fiber responds to every successive wave, but only, perhaps, alternately or at certain intervals. To use the analogy of a company of soldiers firing their rifles, certain squads may fire a volley in rotation instead of the entire company firing at once. This so-called *volley theory* is based on the plausible assumption that the refractory phase is not the same for all nerve fibers, so that some fibers can transmit the impulse while others are in their refractory phase.

Neither the resonance theory nor the sound-pattern theory seems capable of explaining all the facts. Perhaps neither is an adequate interpretation of hearing. On the other hand, the two theories are not mutually exclusive in their main features, and it is possible that both contain elements of truth which can be united in a serviceable theory. Some psychologists favor the view that a composite theory, combining the resonance and sound-pattern ideas, is the best.

SMELL, TASTE, AND HEARING ARE IMPORTANT SENSES. THEY convey to the organism many items of information concerning things as they exist for themselves. These senses, like the somesthetic senses, enable man to make a *proper adjustment to his environment*, and this is the main purpose of the cognitive element in sense function.

One important fact should be noted. There is *no mechanical point-for-point correspondence* between sense and stimulus. The senses are *selective* in their response to possible stimuli. Taste, for example, responds in just four ways to the manifold chemical properties of things; pitch and loudness are not mechanical reproductions of the frequency and amplitude of sound waves. Vital function is thus seen to be distinct from mere physical action. Furthermore, these senses, especially the closely cooperating smell and taste, plainly show again that man is an *integral organism*, because their functions are not isolated activities but are subservient to the welfare of the organism as a whole.

Summary of Chapter V

Smell and taste belong to the 'lower' senses, hearing and sight to the 'higher'; the former are nutritive, the latter are more cognitional in character.

1. *The Sense of Smell.* It is the sense by which certain properties (smell, odor, scent) become known through the stimulation of receptors responsive to chemical substances in a gaseous form or to minute particles which reach them normally from a distance and in low concentration. The *organ* of smell is a small brown-yellow spot of the mucous membrane of the nose. The *stimuli* are odorous particles which enter the nostrils through the breathing in of some form of gas in which the particles are suspended. The odorous quality of substances depend on the chemical constitution of the substances and on the specific receptivity of the receptor cells.

Among the many *classifications* of odors, the following is the one generally accepted: fragrant, fruity, resinous, spicy, putrid, burned.

2. *The Sense of Taste.* It is the sense by which certain qualities (taste, savor, flavor) of soluble substances become known by contact with a particular set of epithelial end organs (taste buds) located mainly in the papillae of the tongue. The *organs* of taste are the taste buds. The *stimuli* are chemical substances in solution. The *kinds* of taste are four: sour, salty, sweet, and bitter. In all probability there are four types of receptors corresponding to these four kinds of taste.

3. *The Sense of Hearing.* It is the sense by which the vibrations of certain media acting upon the ear become known as sounds.

‘Sound’ has two distinct meanings: physical and psychological. *Physical sound* means the vibrations emanating from a vibrating body. *Psychological* sound means the conscious experience of tonal qualities after the organ of hearing has become activated by the stimulus of the vibrations.

4. *The Human Ear.* The ear is the *organ* of hearing. In man it consists of three parts. The outer ear consists of the auricle and the external auditory meatus. The *middle* ear consists of the tympanic membrane and the three ossicles. The *inner* or internal ear consists of the vestibule and the cochlea. This latter contains three canals: the tympanic, vestibular, and cochlear canals.

5. *The Organ of Corti.* It is situated on the basilar membrane. Transverse fibers are stretched across this membrane, containing the ‘hair cells’ which are the receptors.

6. *Sound as Sensation.* There are two main kinds of sound: tones and noises. Sounds have three chief characteristics: *pitch, loudness, and timbre.*

7. *Sound as Vibration.* Physically, sound is a vibration or wave motion in an elastic medium. As such it has ‘frequency’ (vibration rate) and ‘amplitude’ (intensity, energy). *Frequency* determines the pitch; amplitude, the loudness. *Timbre* is the result of the vibrations of a sounding body which vibrates as a whole and in its parts, giving rise to a fundamental and partials (overtones).

Noises consist of a number of fundamentals and their overtones mutually interfering. *Tones* have a definite fundamental. A *musical scale* is a graduated series of tones, ascending or descending in order of pitch according to a specified scheme of their intervals.

8. *Theories of Hearing.* In the *resonance theory* of Helmholtz the transverse fibers of the basilar membrane of the cochlea are assumed to be individually attuned to the frequencies of the sound waves, each to its proper frequency, similar to the strings of a piano. According to the *sound-pattern* theory, the basilar membrane as a whole vibrates in patterns which correspond to the sound patterns. This theory has been modified by *Wever and Bray*, who contend that single nerve fibers need not respond to every successive wave, but only, perhaps, alternately or at certain intervals; this is the *volley theory*. Neither theory seems to be satisfactory in every respect.

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Chapter 6

SIGHT

SIGHT IS THE NOBLEST OF THE EXTERNAL SENSES. MORE THAN the others, it brings the mind into cognitional contact with the world. Unaided sight spreads before us in vivid clarity the colors and shapes of objects in our immediate vicinity. Aided by the instrumentalities of telescope and microscope, it penetrates the vast immensity of the starry heavens and the infinitesimal recesses of subvisible bodies. Distances measured in light years and in microns are thus brought within the field of vision.

Sight apparently has the marvelous power of perceiving things at a distance without the necessity of any physical contact. The eye, small though it is in comparison to the objects it beholds, seems capable of encompassing the whole world. Little wonder, then, that physiologists and psychologists have given so much attention to the miracle of sight. Much has been discovered concerning sight through scientific research.

The Organ of Sight

Sight is the sense which is *responsive to the stimuli of radiant energy or light*. The organ of vision is the eye. Its general shape is that of a sphere. It is the only sensory organ with a mechanism which prevents the normal stimulus from affecting the receptors, namely, the eyelid. An ingenious arrangement of muscles enables us to turn the eyeball to the right, the left, up, down, in a circle, and at various directional angles.

The eye itself consists of a number of distinct structures. The outer part of the eyeball is composed of *three layers of tissue*: the sclerotic, the choroid, and the retina. The *sclerotic* is the dense, tough, opaque, white coat or covering which encases the eyeball on the outside, except for the front part (the cornea). The *choroid* is a membrane containing numerous blood vessels and large branched pigment cells, situated next to the sclerotic on the inside of the eyeball. The *retina* is a membrane lining the posterior chamber of the eye next to the choroid; it contains the receptors and is the immediate seat of vision.

At the front of the eyeball the sclerotic is modified into the transparent *cornea*. The cornea is like the segment of a sphere attached to the eyeball. It is transparent, so that light rays can enter the eye. It consists of layers of interlacing fibers, united by a cementing substance. Beneath it is a limpid fluid, called the *aqueous humor*. Just as the cornea is an extension of the sclerotic, the *iris* is an extension of the choroid. It is an opaque, muscular, contractile membrane, perforated by an opening, the *pupil*. The anterior portion of the iris is colored, and this coloring is different in different individuals; the posterior surface is

pigmented, so as to exclude all light except through the pupillary opening. The iris acts as a diaphragm, contracting when light is dim, so that the pupil becomes enlarged, and relaxing when light is strong, so that the pupil becomes smaller. This action is reflex (the 'pupillary reflex') and adjusts the eye automatically to the quantity of light necessary for accurate vision.

The cornea refracts the rays of light, but it is non-adjustive. In order that the rays be refracted according to the distance of the objects seen, a transparent biconvex body, the *crystalline lens*, is suspended by a ring of ligaments immediately behind the iris. It consists of concentric lamellae or plates composed of slender, curved, rod-like cells. The lens is elastic to some extent, so that its curvature can become more spherical or more flattened, depending on the relaxation or contraction of the *ciliary muscles* which control the ligaments holding the lens in place. By means of this varying curvature the rays of light are focused on the retina. The chamber of the eyeball, situated between the lens and the retinal layer, is the *fundus*, and it is filled with a clear, colorless, transparent jelly-like substance, the *vitreous humor*. The latter is enclosed by a membrane, called the *hyaloid membrane*.

The eye, as will be noted, is constructed very much like a photographic camera. It consists of a focusing apparatus (cornea, iris, lens), a dark chamber (fundus, choroid), and a sensitive plate or film (retina).

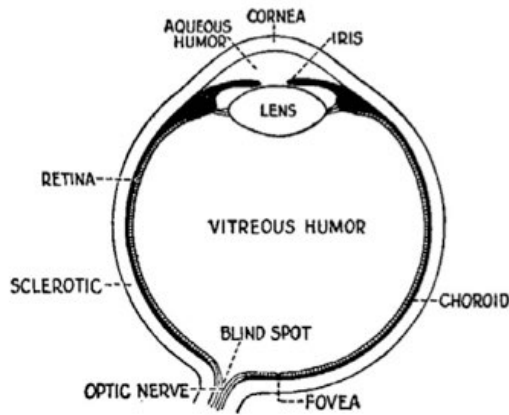


Fig. 21. Diagram of the Human Eye.

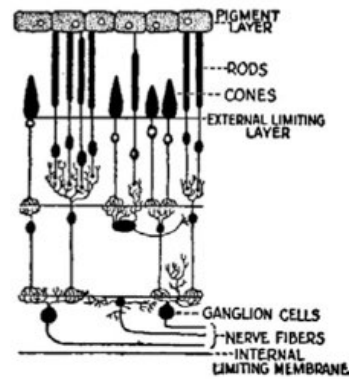


Fig. 22. Cross Section of the Human Retina.

The *retina* is the seat of vision. A number of distinguishable *layers* compose the retina. Beginning with the retinal surface in contact with the vitreous humor and ending with the surface resting on the choroid, these layers succeed one another in the following order: the inner limiting membrane, separating the retina from the vitreous humor; a layer of branches of the optic nerve, together with blood vessels and ganglion cells; the inner reticular layer of fibers; the inner nuclear layer; the outer reticular layer; the outer nuclear layer; the outer limiting membrane; the rods and cones; and, finally, a layer of pigment cells, next to the choroid. The retina forms the innermost lining of the eyeball and is not more than five tenths millimeter in thickness. Toward the center of the posterior surface of the retina is a small yellow spot, called the *macula lutea*, and in it is located the *fovea*, a small depression or shallow pit, which is the area of acute vision. The retinal nerves unite into a bundle and emerge from the retina a short distance from the macula lutea on the nasal side of the eyeball, thereby forming the *blind spot* where no vision is possible.

A *partial decussation* of the optic nerves occurs where the nerves of the two eyes meet. This decussation is termed the *optic chiasm* (from the Greek letter 'chi,' χ , which it resembles). The result of this chiasm or partial decussation is that the nerves of the nasal half of the right eye and of the outer half of the left eye meet and travel to the left hemisphere of the brain, while the nerves of the nasal half of the left eye and of the outer half of the right eye meet and travel to the right hemisphere. Hence, any object to the right of the eyes will throw its image on the left half of the retina of each eye and be perceived by or in the left hemisphere of the cerebral cortex; reversely, the impulses originating from an object to the left of both eyes will travel to the right hemisphere. The terminal branches of the retinal nerves spread out over the entire retina, so that each point of the retina has a nerve. Each nerve goes to a ganglion in the superior colliculus of the midbrain, and from these ganglia nerves proceed to the visual center of the occipital cortex of the cerebrum. In this manner every point of the retina is connected with a corresponding point in the cortex of the brain.

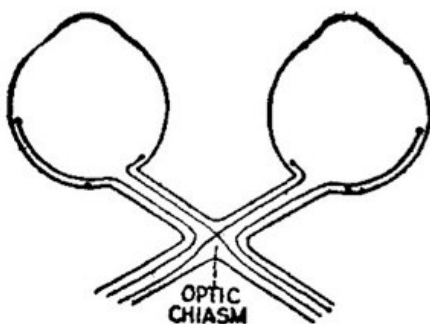


Fig. 23. Diagram of the Optic Chiasm.

While it is commonly stated that the retina (in conjunction, of course, with the brain) is the seat of vision, in the retina itself the *rods* and *cones* are the *receptors*. They are called 'rods' and 'cones' because of their shape, the rods being more long and slender, while the cones are

more short and conical. Contrary to what one might expect, the rods and cones are not placed at the top of the retinal layer next to the vitreous humor, but at the bottom near the choroid. In consequence of this arrangement, light rays must pass through all the retinal layers before reaching these receptors. The function of the rods and cones will be explained presently.

Light Rays as Stimulus

The *stimulus* of sight is *radiant energy*. Ordinarily, the radiant energy of the sun is the stimulus; but star light and artificial lights are also stimuli which normally activate the organ of vision.

Light emanates from luminous bodies in the form of *photons*, and photons are particles or corpuscles approximately the size of electrons. Notwithstanding this fact, light also manifests itself as a form of *electromagnetic wave* propagated through the hypothetical aether. How to harmonize this double phenomenon of light, is one of the great problems of modern physics.¹ Since we are not concerned here with the physical problem of the constitution of light, we will follow the usual procedure of treating light as a wave.

The vibrations of light waves are transverse to the direction of their propagation, and the speed of their transmission is about 186,300 miles per second. The wave lengths of light are measured in millimicrons, i.e., in millionths of a millimeter, of which the symbol is m^{μ} . Not all wave lengths emitted by radiant bodies affect the retina

and stimulate it to vision. Ultraviolet rays are shorter than $400\text{m}\mu$, and ultrared rays are longer than $800\text{m}\mu$, but neither are visible. The range of the visible spectrum lies roughly between wave lengths of $386\text{m}\mu$ and $800\text{m}\mu$. If one passes a ray of sunlight through a prism, one disperses this light into rays according to their wave length and the spectral colors appear: red ($760\text{m}\mu$) is at one end of the spectrum, violet ($400\text{m}\mu$) at the other end, yellow ($580\text{m}\mu$), and green ($530\text{m}\mu$), and blue ($480\text{m}\mu$) in between. Intermediate wave lengths give various shades of these colors. When the stimulus consists of a ray of one wave length, one frequency, it is said to be a *homogeneous ray* of light. Most rays, however, are mixtures of various wave lengths. The white light of the sun has a maximum mixture, as the prismatic colors reveal.

A *physical object is colored*, when it emits, transmits, or reflects all or some of the rays of light. In this sense, a body is 'white,' when it absorbs none of the solar rays but reflects them all diffusely; a body is 'black,' when it absorbs all rays and reflects none; a body is 'blue,' when it absorbs selectively a portion of the rays and diffusely reflects the others, among which the 'blue rays' predominate. The *color of an object*, therefore, from the standpoint of the physicist, is that property of an object, due to its atomic and molecular constitution, which enables it to emit, transmit, or reflect all or some of the rays of light capable of stimulating the retina to sensation. Viewed this way, *objects possess physical color*, irrespective of whether or not they ever affect an organ of sight, because the physicist considers 'color' to be identical with electromagnetic aether

vibrations in so far as they are *capable* of becoming the stimulus activating the retina. Strictly speaking, then, a 'black body' is devoid of all physical color, because it absorbs all light rays, so that no light is emitted or reflected.

Like sound, light waves have *length, frequency, and amplitude*. Differences in these magnitudes bring about differences in the waves. The hue or color depends mainly on the wave length, while brightness or brilliance depends mainly on the amplitude of the wave.

Color as Sensation

The *psychologist* has only a secondary interest in the physical vibrations or light waves which produce vision. His primary interest lies in the *conscious reaction or sensation of sight* evoked by the action of the physical stimulus on the organ of vision. His field of investigation, therefore, is *visual experience*, namely, color as it appears in visual sensation.

All in all, there are more than 30,000 distinguishable colors. Viewed from the standpoint of psychological experience, we have *achromatic* and *chromatic* sensations. In 'achromatic' sensations we experience 'white,' 'black,' and the intermediate 'grays.' There are about 700 different shades of gray between pure white and complete black. They differ from one another in brightness. In 'chromatic' sensations we experience what we ordinarily call 'colors,' namely, blue, green, yellow, red. Although the term 'achromatic' means 'non-colored,' psychologically 'white,' 'gray,' and 'black' are experienced as 'colors,' just as much

as 'blue,' 'green,' etc. We therefore divide visual sensations into experiences of *neutral* (achromatic) and *chromatic* colors.

If we now *classify psychological colors*, we find that we have *six psychologically primary colors*. There are two neutral colors, white and black. The grays are intermediates of white and black. And there are four chromatic colors, red, yellow, green, and blue. All other colors are shades or blends of these four. We have here one of the great differences between physics and psychology. According to physics, neither 'white' nor 'black' is a distinctive color. 'White' has no specific wave length in the spectrum; it is a mixture of the wave lengths of various colors. 'Black' has no wave length at all which could be said to correspond to it. In psychological experience, however, both 'white' and 'black' are colors as distinctive as any of the chromatic colors. 'Black' is not the same as 'colorless' in our experience; distilled water and a clear pane of glass are 'colorless,' but coal and the printed words of this page are decidedly 'colored.'

Chromatic colors have *three attributes* or characteristics:

hue, saturation, and brightness. By *hue* we understand that attribute of a color which we designate by naming it 'red,' 'blue,' etc., distinguishing it thereby from the neutral colors. Although this is a roundabout way of describing a 'hue,' we cannot do better, because the sensation of color is an ultimate datum of experience and such a datum is incapable of strict definition. It is much easier to point to a stick of sealing wax and say "This is red" and to the sky and

say 'That is blue,' and it is this characteristic of 'red' and 'blue,' etc., which we mean by 'hue.' The solar spectrum shows us a series of hues in various shades from violet to red. *Saturation* is the amount of hue present in a given chromatic color. There are, for example, many shades of red, but some shades contain more 'redness' than others; 'pink,' for example, is less saturated than 'cardinal red,' because there is more white and less red in the former than in the latter. We might say that hues, so far as saturation is concerned, run from 'dull' or 'pale' to 'vivid'; 'pink' is a pale or dull red, while 'cardinal' is a vivid red. By *brightness* or *brilliance* we mean that attribute of hues which enable us to place them in a series progressing from 'light' to 'dark.' All hues of the solar spectrum can be placed in such a series, and a series can also be made of any particular hue in its various shades. In the spectrum, for example, yellow is the brightest hue and blue the darkest. In the entire series of green hues, Nile green is very bright and bottle green is very dark. Among the neutral colors, white represents extreme brightness and black extreme darkness; the grays occupy a middle place in brightness between them.

There are a number of *phenomena* in connection with color which deserve special consideration. They give us a better insight into the *psychology of vision* as such. In general, it is true, of course, to say that the sensation of vision depends on the stimulus and varies with the stimulus. Sensation, however, depends also on the *peculiar sensitivity of the receptor organ*, and this vital factor produces phenomena which cannot be explained on the basis of

physical light waves alone. Some of these phenomena will be treated in the sections following.

Rod and Cone Vision

The rods and cones are the *receptor cells* which receive the stimulus of light and react to it. Sight, therefore, has a *duplex apparatus*. According to the theory of *Von Kries*, the rods and cones differ fundamentally in function, and at present no one seriously doubts the truth of the theory. The theory states that the rods are the receptors for *achromatic vision*. The rods are sensitive only to the white-gray-black series; they are insensitive to chromatic colors or hues, such as red, green, etc. On the other hand, the cones are the receptors for *chromatic vision*. They respond to the different wave lengths of light by sensations of chromatic colors or hues (red, yellow, brown, indigo, etc.), and thus are the receptors for what is commonly called 'color vision.

There is good *evidence* in support of the difference between rod and cone vision. The fovea, which is the area of the retina where chromatic vision is most noticeable, contains closely packed cones, but no rods. From the fovea outward, rods begin to occur in the retina and increase in number toward the periphery, while the cones decrease steadily in proportion, until at the extreme periphery the retina contains rods almost exclusively. It is a known fact, however, that the extreme periphery of the retina responds only with sensations of the white-gray-black series but not with sensations of the chromatic- color series. Again, people who are devoid of cones entirely in their retina are totally

color-blind and see all things in the neutral shades of white-gray-black, just as in an ordinary photograph; in order to see objects, these persons must turn their eyes slightly sideways, so as to focus the light away from the fovea to the rods of the periphery. Finally, nocturnal animals, like owls, bats, and others, have eyes which possess mostly rods and few cones, because in the dim night light objects are not seen in chromatic colors but in gray and black or, as it is called, in 'rod-white.'

The *stimulus threshold* is lower for the rods than the cones so that the rods will respond to dim or faint light where the cones of the fovea will not respond at all. The cones are, therefore, 'night blind,' while the rods are able to respond to the dim light of the moon and stars. We can see a faint star in the heavens, not by looking at it directly, but by looking slightly to the right or left of it, because then the light strikes the rods situated in the periphery and away from the central or foveal portion of the retina. A simple *experiment* will show that the rods and cones produce their own particular subjective effect in the perceiver. Place three electric lamps (preferably with carbon filaments) in a row, connected together in one circuit and standing about a yard apart. Decrease the current until the filaments barely glow. Stand in such a position that only the center bulb is seen in the line of direct vision, while the two outer bulbs are seen by oblique vision only. In a darkened room the center bulb will now appear with a red glow, while the two outer bulbs will show the 'rod-white' luminosity. No matter how quickly you shift your gaze from one lamp to the other, only the one directly viewed will be red; the other two will

immediately change to 'rod-white.' You perceive the lamp as 'red' when its rays fall upon the cones, and as neutral 'rod-white' when its rays enter the eyes obliquely and fall upon the rods. The cones, therefore, are the organ of high intensity or *photopic vision*, while the rods are the organ of low intensity or *scotopic vision*. The cones are adapted for daylight and brightness and the rods for twilight and relative darkness.

Color Mixture

By *color mixture* we mean the stimulation of the same retinal spot by light rays of different wave length. These rays may be applied to the retinal spot simultaneously or in rapid succession; the result is the same. Color mixing is important to psychology because of the fact that many diverse physical stimuli will produce the selfsame color sensation, which again proves that there is no point-for-point correspondence between physical stimulus and conscious response. There are *three laws of color mixture*. It should be borne in mind that these laws apply solely to lights, not to pigments.

The First Law. It concerns the *complementary colors* and is formulated in two parts. The *first* part reads: "For every long wave of visible spectrum a definite short wave can be found so that when the two waves are mixed in appropriate proportions, each component of the mixture will neutralize the chromatic effect of the other and the sensation of neutral white will arise." The *second* part reads: "If the relative strength of the two components is not

appropriately adjusted, the neutralization of one component is incomplete and the result of such a mixture is the sensation of an unsaturated color whose tone is determined by that of the stronger component."

This law expresses the general fact that two homogeneous light waves, one of long wave length and one of short wave length, when stimulating the same retinal spot, will not produce the sensation of their respective normal hues, but will produce a sensation of *white* (or gray). The wave lengths which produce the sensation of white are said to be *complementary colors*. The effect does not depend entirely on the specific wave lengths, but depends somewhat on the individual differences of the observers. In his own case, *Helmholtz* determined the complementary colors as follows, the numbers indicating the wave lengths of the homogeneous colors in Angstrom units:

Color + Complementary Color = White

Red (656.2).....Green Blue (492.1)

Orange (607.7).....Blue (489.7)

Gold (585.3).....Blue (485.4)

Gold (573.9).....Blue (482.1)

Yellow (567.1).....Indigo Blue (464.5)

Yellow (564.4).....Indigo Blue (461.8)

Green Yellow (563.6)..Violet (433)

The Second Law. It concerns *intermediate* colors and reads:

“When two waves are combined which separately arouse color sensations whose tones are not complementary to each other, the result of such a mixture is the sensation of an intermediate color.” According to this law, non-complementary pairs of wave lengths, when mixed, will result in color sensations of intermediate hue and brightness. Color mixtures of this type give rise to such colors as orange, yellow-green, green-blue, greenish-yellow, red-yellow, pink, lake, rose, tan, lilac, etc. For example, by mixing red and yellow in different proportions, we obtain vermillion, orange, and gold; red and yellow are non-complementary hues, and their mixture will never give white or gray. By mixing green and red lights we obtain a yellow hue.

The Third Law. It concerns the *substitution* of colors in mixtures containing more than two components and it reads: “If a definite mixture of lights has the color of a definite other light, then this mixture can be substituted for it, whenever this other light is required as a component in some other mixture.” An illustration will make the meaning of this law clearer. Yellow, for example, is one of the spectral colors resulting from a homogeneous ray of light with a wave length of $567\text{m}\mu$. But yellow also results from a definite mixture of red and green lights. Now, yellow and indigo blue lights, when mixed, give white. Instead of homogeneous yellow (y), we can substitute red and green lights ($r + g$) and mix them with indigo blue light ($i.b.$), and by means of this double mixture we obtain white (W). We thus have the formula $(r + g) + i.b. = W$, and that is the same formula as $y + i.b. = W$.

Pigments do not behave like lights in mixing. Yellow and blue pigments give rise to a green color in mixture, but yellow and blue lights give rise to a sensation of white. Yellow pigment absorbs certain wave lengths, including blue; it then reflects diffusely some wave lengths, including green, but the light which is predominantly reflected is yellow. Blue pigment absorbs certain wave lengths, including yellow; it then reflects diffusely some wave lengths, including green, but the light which is predominantly reflected is blue. Then, when blue and yellow pigments are mixed, the blue pigment absorbs the yellow, and the yellow pigment absorbs the blue; the green rays, however, are still reflected by both, and so the mixture of both pigments results in green color. It will thus be seen that the mixture of *lights* is a matter of *addition* of wave-length stimuli, while the mixture of *pigments* is a matter of *subtraction* or double absorption of wave-length stimuli. Hence the difference.

Color Contrast

A psychological phenomenon somewhat similar to color mixing is that of color contrast. By color contrast we mean the *difference in the appearance of colors* brought about by the stimulation of adjacent sets of rods and cones in the retina. When one set of rods and cones is stimulated by certain kinds and amounts of lights or colors and the adjacent set of rods and cones is stimulated by different kinds and amounts of lights or colors, then these different stimulations bring about a condition in which the affected

sets mutually modify each other to such an extent that the colors change their appearance in some measure. These changes in appearance are sometimes quite pronounced. The effect of color contrast seems to be mainly the result of *physiological inhibition*. The stimulation of one area of the retina inhibits, either partially or completely, the effect produced in the other, and the result is a change in the appearance of a definite color.

The student can observe the effects of *simultaneous contrast* by means of a simple experiment. Take sheets of colored paper of as many hues as you can procure — white, black, red, yellow, green, blue, and intermediate colors. From each sheet cut out a piece two inches square, to be used as a background. Then cut out small pieces about half an inch square from each sheet, so that you will have a small piece of the same color to place in the center of each background. Now place a small piece of yellow paper against the larger background of white, black, red, blue, etc., preferably in the center of the background. Arrange the backgrounds with the yellow pieces in a series, side by side, on a table in good light, and compare the yellow pieces one with the other. Note the *different shades* of yellow which now appear against the various backgrounds. Do the same with pieces of blue, green, etc., placing them on the same backgrounds. The apparent change in color for pieces taken from the same sheet of paper is rather remarkable. Though they all have the same color in the sense that they reflect the same wave length, the psychological effect, due to simultaneous contrast in adjacent retinal areas, has

changed the sensation of color considerably for the individual pieces.

Against a green background gray appears tinged with red, blue seems purplish, and yellow becomes more like orange. The laws of color mixture apply here, so that contrast effects tend toward the complementary colors of the contrasting colors; a green background, for example, induces a sensation of red in the color placed within its field. That is why it is unwise to select colored fabrics under artificial light; artificial light is usually yellowish and that produces color contrast.

Afterimages

Adaptation is a common phenomenon of vision. Prolonged stimulation of the same retinal area by a uniform stimulus decreases its effectiveness and makes this area more sensitive to the stimulus of the opposite color. *Successive contrast* results.

One type of successive contrast is the *afterimage*. Afterimages are sensations occurring after the stimuli causing them have ceased. They are of two kinds: negative and positive. A visual afterimage is *negative* or *complementary*, when a dark image is replaced by a light image, or a light by a dark, or the color of the original sensation by its complementary color. A visual afterimage is *positive*, when it preserves the color or shade of the original sensation.

Afterimages or after-sensations occur because it takes a certain amount of time for the visual apparatus to reach the

height of its response to the stimulus, and it also takes some time for the apparatus to lose the effect of the stimulus. In consequence of this *after-lag* the response continues for a time after the stimulus has ceased. If someone swings a torch in a circle at night, the after-lag of the response produces the sensation of a fiery ring. Motion pictures make the impression of continuous action, although there is a lightless interval between the individual pictures thrown on the screen, because the response of the retina, due to after-lag, persists after the picture has been removed from the screen and thus bridges the gap of the dark interval between one picture and another; if the dark interval is too long, we observe a flicker. We notice the same phenomenon in an electric lamp using alternating current; the light appears constant and continuous. In such instances we still have the *original response*, not an afterimage. This after-lag of the original response does not last longer than half a second after the stimulus has ceased. That a certain *aftereffect* still persists in the retina after the original response has faded out, is observed in the fact that afterimages can be seen after a blank interval following the original response and its after-lag.

The student can easily demonstrate to himself the existence of positive and negative afterimages. Place a sheet of white paper used for typewriting and a piece of black or very dark cloth of about the same size side by side on a table. Look for a second or two directly at an exposed electric lamp, one with clear glass. Then turn your eyes to the paper and to the dark cloth, blinking the eyelids at the same time. You will see the outline of the filament loop of

the lamp, now bright like the original (positive afterimage), now in its complementary color (negative afterimage). On a dark field the image will in all probability be positive, if you look at the field without blinking, and on a light field it is likely to be negative; the effect, however, depends on a number of circumstances. After a while these afterimages become weaker and weaker and then disappear entirely. Afterimages can, of course, be produced in many ways. A simple method is to look at a black or white or colored object with a fixed gaze for about half a minute and then turn the eyes upon a background of medium gray, and a negative afterimage will appear. These images are *subjective* in character, because they follow the movement of the eyes in any direction, after the eyes have ceased looking at the original object. As a rule, we do not see afterimages in the daytime, because bright light blots them out; however, if we look at the setting sun and then look at other objects with a flat surface, we obtain afterimages of the sun, because the sun is brighter than these surfaces.

Color Blindness

Color blindness is another interesting phenomenon of vision. By *color blindness* we understand the partial or total inability to distinguish or recognize chromatic colors. It is an abnormality of vision in which certain colors drop out of the spectrum for the individual observer or all things are seen in neutral colors. Color blindness is adjudged an 'abnormal' condition in the visual mechanism because

ninety-five per cent of persons see all the chromatic colors of the spectrum.

Color blindness assumes different forms. According to physics, *there are three primary colors*: red, green, and blue. The proper mixture of these will produce any hue. The ability to see these primaries equally well constitutes normal vision and is termed *trichromatism* (three-color vision); a normal person is said to be a 'trichromat.'

Partial color blindness is dichromatism, and it exists in two forms: red-green blindness, or blue-yellow blindness. In red-green blindness these two colors appear as gray. This type of color blindness may follow one of two patterns. It may be red blindness, in which the brightest part of the spectrum is in the normal yellow-green, and the red end of the spectrum is invisible; this is called *protanopia*. Or it may be green blindness, in which case the brightest part of the spectrum is the normal yellow; this is *deutanopia*. In *blue-yellow* blindness, the second form of dichromatism, blue and yellow appear gray, while red and green, or blue-green, are distinguished; this type is termed *tritanopia*. About four per cent of males are protanopes or deutanopes; color blindness is seldom found among women. Tritanopia, or blue-yellow blindness, is extremely rare. Much of the data concerning partial color blindness have been gathered from the experiences of persons who had trichromatic vision and then, through disease or injury, had become color-blind. One or the other case is on record where a person was normal in one eye and colorblind in the other.

Total color blindness, or *monochromatism*, is relatively rare. Persons afflicted with this form of color blindness are

unable to see any colors of the spectrum; they see all objects in neutral tones of white-gray- black, as in an ordinary photograph. Though their vision is deprived of all chromatic color perception, they are able to distinguish differences in brightness.

Color weakness is not color blindness. Persons who are color weak see all chromatic colors and can distinguish them, but some colors need a *stronger* stimulus than others in order to be seen. Red and green light, for example, produce the sensation of yellow, when properly mixed; but a red-weak person needs more red, and a green-weak person needs more green, in order to obtain the yellow which a normal person sees.

Since the receptors of chromatic color vision are the cones of the retina, color blindness and also color weakness presupposes some defect in the cones. And since in dichromatism the vision of one or the other color is missing, while vision for the rest is unimpaired, one must assume that the defect responsible for color blindness is present in practically all the cones of the eye or eyes. Just what this defect could be, is difficult to say. An adequate explanation of color blindness is a crucial test for a good theory of vision.

Binocular Vision

Man's two eyes are placed in such a position that both look forward. The object seen is observed from two divergent angles; and thus the field for each eye is slightly different, and the fovea of one eye receives an optical image which

differs to some extent from that of the other. It would seem that man should see two distinct fields and two distinct objects. When normal eyes, however, are directed toward an object, they see but a *single object and a single field*. What is the explanation?

There is a *correspondence* between the *retinal points* of one eye and those of the other. The *fovea*, where focusing occurs, is a relatively small area, and it is assumed that here the correspondence is rather close. Due to the decussation of the optic nerves, the foveal points are connected with each hemisphere of the brain, so that the two foveas act as a single organ of vision. The result is a *single cortical response* to the two overlapping retinal fields, termed *binocular fusion*. Fusion occurs only when the rays of the field or of an object are focused on the foveas in a practically identical manner.

We can and do see *double images* of the same field or object when the two foveas are out of alignment. With both eyes open, look at some object, say a book, and then press a finger against one eyeball, thereby pushing this eyeball out of its normal position with respect to the other; you will see two images of the book, one stationary (in the stationary eye) and one moving (in the eye moving under the pressure of the finger). Even in ordinary vision we see double images. Focus your eyes on an object about five or six feet away, and then place your extended index finger directly in the line of vision about six inches in front of your eyes while they remain focused on the distant object; you will have a single image of the distant object, but a double image of your finger, and you will be able to see the distant object (or

field) *through* the images of your finger. If you focus your eyes on a near object, the distant object will appear double. Be sure that you do not shift the focus of your eye in this experiment. Ordinarily, of course, we never notice these double images, although they are always present, because we concentrate our attention upon the object in focus and neglect the rest of the field. It is only at the focal point of the fovea that the two optical images are practically identical and are thus capable of fusion. In the outlying areas of the retina the rays of light will not converge to a point, but cross, and throw the image of the object or field on different retinal areas, thus producing the vision of a double object or field.

Binocular rivalry occurs, when each eye, separately and simultaneously, sees colors or objects or figures which are very different in appearance. Under such conditions, at first there is a response only to one field: the image of one field is seen, that of the other is suppressed and invisible. Then a shift occurs, in which the latter field, at first invisible, now become visible. After an interval the fields are again reversed, and this alternation of the two fields continues back and forth. It is as if a 'rivalry' existed between the two eyes. When complementary colors are used in these experiments, some observers experience only a rivalry; others, however, experience *psychological fusion* according to the laws of color mixture. In the case of fusion of complementary colors, this fusion cannot occur in the retinas themselves, because each retina is stimulated by a single wave length of light. The fusion can only occur in the midbrain or in the cortex; and in all probability the

response is in the cortex of the cerebrum. If this interpretation is correct, it is an indication that the cortical response has more to do with actual color sensation and general vision than is usually supposed. The shift of fields in binocular rivalry seems to receive its explanation in *adaptation* or *fatigue*. The neural mechanism responding to the one field gradually suffers fatigue, whereupon the other field forces itself into the foreground, only to be replaced after a while by the first field; the process repeats itself alternately through fatigue and recuperation.

Behaviorism and Color Vision

It is an axiom of *behaviorism* that an *exact correlation* exists between *stimulus* and *response*; the response is the exact physiological counterpart of the stimulus. If we know the stimulus (cause), we also know what response (effect) will follow; and if we know the response (effect), we also know the stimulus (cause) which produced it. Applied to physiological optics, this axiom means that, if we know the wave length, amplitude, and form of the light wave, we can predict what sensation of color will ensue. Facts, however, show that the *behaviourists are in error*.

Different stimuli produce the same sensation. Given certain stimuli of light waves, we cannot predict automatically the sensation which will follow; introspection shows that the response may be different from what the behavioristic axiom would indicate. Mixing wave lengths 656 and 567 (red and yellow) should give a blend of the two, namely 612 (orange); and it does. Then mixing yellow

and indigo-blue should give a blend of these two, and so should the mixing of red and green-blue; but it does not, because these are complementary colors, and complementary colors give white (or gray), which has no resemblance to the colors which act as stimulus. All complementary colors act in this manner.

Simultaneous contrast shows that the sensations of color change, even though the kind and amount of wave lengths emitted or reflected to the retina remain unchanged. Hence, from the nature of the stimulus we cannot predict the character of the sensation.

The *sensation of black*, which is just as characteristic as white or blue, etc., should be impossible in the theory of behaviorism, because no light waves reach the retina from a 'black' object. 'Black' is an indirect effect of light, arising under simultaneous or successive contrast; but it is real enough, as we can readily observe by reading the print of a book. The mere absence of the stimulus, therefore, will not enable the behaviorists to account for the sensation of 'black.'

The *negative afterimage* are genuine phenomena of mental life; yet, since they are 'negative' in character, no objective method of behaviorism can detect their existence. They are perceivable by no one but the sentient individual, and he alone can describe their properties through introspection.

Visual Space

What we see in vision is not the retinal image, nor the electromagnetic waves of light, nor color mixing, nor simply patches of color. These realities, of course, are present and play their respective parts in vision and without them vision would be impossible. What we actually see in vision are *objects, things*: human beings, animals, plants, buildings, vehicles, fields, clouds, sky, etc. When we designate the objects of vision in this fashion, we are not speaking of visual sensations but of *visual perceptions*.

We apparently see things in definite *places*; they are a certain *distance* away, both in relation to ourselves and to other things; they have a definite *size* and *shape*; they are composed of *parts* spread out in the *three spatial dimensions* of length, height, and depth. In other words, we have a perception of visual space in three dimensions. If we inquire into *how* this perception is acquired, we are confronted with a rather complicated problem.

Colored surface in two dimensions is an immediate visual experience. Any seen object or patch of color shows that it is spread out in height and length; we cannot see a mathematical point. In any seen object or patch of color, we can intuitively distinguish 'right' and 'left,' 'up' and 'down'; consequently, we distinguish concrete parts of surfaces. We cannot see an object or patch of color, if they lie within the bounds of the visual field, without seeing their general shape; colored surfaces have limits of extension which involve shape, and 'shape' or 'form' is thus concretely given with the vision of colored surfaces, as anyone can observe by looking at a landscape or series of buildings. Even relative size is concretely given with colored surfaces;

looking at an archery target, we see that the outer rings are relatively larger than the inner rings.

Depth in space, the third dimension, is not an immediate experience, but a matter of perception and judgment. We have become so accustomed to interpret the visual image in three dimensions, it seems that depth in space is also a datum of immediate experience. Distance and depth are rather a matter of *interpretative judgment*, and that is acquired through learning.

Merely looking at the heavens gives us no indication of the absolute size and distance of the sun, moon, and stars. History proves this; it is only through astronomical calculations that these things are now known to us. Perspective seemingly enables us to observe depth in space directly; that this judgment is erroneous, is clearly shown in stereopticon views, where flat pictures have apparent depth. The futile graspings of infants at objects which they see indicates that distance in space and absolute size are not directly given in visual images. More valuable evidence is derived from the experiences of persons who, blind from birth, had received their sight in later years, so that they were able to give a rational account of their new experiences. There was no experience of depth in space, and everything was seen in a flat side-by-sideness in two dimensions.

HOW DO WE LEARN TO INTERPRET OUR VISUAL IMAGES AS TO *DEPTH* and *distance* in space? Why are we so certain that there is a

third dimension? A number of factors are involved in this process of interpretation.

In this respect the *tactual sense* is a great aid to sight. By means of the tactual sense, we experience *double contact* in our own body; that is to say, by passing our hands over our body, a contact is established between the hands and the body, hands and body both experiencing sensations of touch. In this manner we soon learn the general contour of our body, the relative position of the various members, and their relative size with respect to one another. We also learn that the various members are distinct from one another; hand, leg, foot, arm, trunk, head, etc., are not the same, and yet they are all parts of our own organism and belong to our body. When we grasp a pencil or an apple we obtain a rough estimate of size, shape, etc.; most of all, however, we perceive that they do not belong to our being, but are totally different from our self. We have the same experience when we touch a tree, a desk, a building, or some other person. By *combining sight and touch* we learn to distinguish ourselves and other beings, some of which are similar to our being (other persons) and others dissimilar (pencil, apple, tree, building, etc.).

From here to the *perception of depth* in space is but a short step in experimental learning. Through contact with an object by the hand or body, we experience pressure and kinesthetic sensations; through sight we see the contact made. We notice, however, that we do not always obtain sensations of contact, even though in the visual image the hand seems to touch the object. We then stretch out the hand to make contact; even this does not suffice at times,

and then we walk toward the object. When we finally reach the object and touch it, our visual and tactual images again coincide. Our body thereby becomes a standard of measurement, and we thus learn two very important facts: *depth and distance in space and the measurement of this depth and distance in space* in terms of a standard of measurement. We now realize through progressive experience that some objects are near and some are far.

Having established the fact of depth and distance through the combined data of sight and touch, we begin to observe *many criteria in the visual image* itself which can be utilized effectively in gauging the size and distance of objects in space.

Light and shadow are criteria of distance and depth in space. There are 'cast shadows' and 'attached shadows.' When a light is thrown onto an object, the object casts a shadow onto the ground or onto another object. The light on a contoured object, i.e., an object not entirely flat, does not cover the object evenly; some parts are highlighted, and others are shaded or in shadow, and this type of shadow appears attached to the object itself. If we know the source and direction of the light, we can form a fairly accurate estimate of depth and distance. The cast shadows reveal the relative distances in space between one object and another, while the attached shadows reveal the three dimensions of a particular object taken alone.

Perspective is another criterion. 'Linear perspective' reveals distance by the apparent reduction in the size of known objects. A horse, a man, and an automobile, for example, seem to become larger as they approach, and

smaller as they go away from us; we can gauge the distance in space by the apparent size. In 'detail perspective,' an object loses more and more of its distinctness in line and shape as the distance from the observer increases. Knowing these items from close observation, their progressive diminution in distinctness becomes a criterion of distance. Due to 'aerial perspective,' it is noticeable that familiar objects lose color tone, vividness, and brightness as they recede into the distance. 'Movement perspective' is another criterion. Watch a speedy airplane close overhead and note how fast it cuts through space; but as it circles around in the distance, it almost seems to stand still, although its speed is still the same. These various types of perspective, therefore, are cues to distance and depth in space.

In binocular vision of a nearby object, the *angular difference* of the two overlapping optical fields also reveals depth in space with regards to the shape of the object, because we thereby see 'around the corner' of an object. The stereoscope is based on this fact.

Another factor which assists us in gauging distance is the *focusing of the eyes* by means of the muscles of the eyes. When we look at an object which is very close, it appears blurred in outline and detail, and the muscles are strained in the attempt to make the eyes converge sufficiently for accurate focusing. When we look at a remote object, convergence and muscular strain are absent.

Experience teaches us to make use of a *combination of tactile and visual cues* in order to estimate the relative size of objects and their distance and depth in space. Training and learning, together with association, enable us to

interpret these cues so proficiently that we have the impression that the perception of the third dimension is directly given in our visual image.

TWO OPPOSING THEORIES OF VISUAL SPACE DESERVE MENTION: *nativism* and *empiricism*. The nativists claim that our perceptions of space are the result of a native or constitutional property of vision itself, independent of learning and interpretation. The empiricists claim that our perceptions of space are entirely and exclusively a matter of experiential education; due to the kinesthetic sensations accompanying the movements of the eye in vision, we obtain cues or 'local signs' which enable us to pass a judgment on the direction and distance of objects in space.

The *nativists* advance a number of facts in support of their theory. Spatial dimensions are given directly in the perception of colored surfaces. Chicks just out of the egg pick at grain particles with unerring accuracy and follow the movements of a worm or insect without difficulty. Similar incidents are reported about other animals, and they seem to indicate a congenital faculty of space perception. Examples from animal life, however, are inconclusive, because it could be that the sense of smell has more to do with their actions than sight. While the nativists are correct in stating that spatial dimensions are necessarily involved in colored surfaces, it does not follow that the perception of the third dimension is also an immediate datum of visual experience; the perception of the third dimension, as we have shown, is rather a matter of

interpretation based on the sense of touch and on various cues of the visual image.

The *empiricists* also advance certain facts in support of their view. They refer particularly to the cases where persons, blind from birth, have received sight. Cheselden, Wardrop, and Franz reported such cases more than a century ago, and many cases of a similar kind have been described since. Such persons have no perception of distance or depth in space and must learn to interpret their visual images. They have, however, an immediate vision of the two dimensions of length and height. It is the contention of the empiricists that the sense of sight has no native capacity of recognizing extension in any manner. In order to see a circle or triangle, the eye must follow the lines of these figures, and the eye itself must move in the form of a circle or triangle. From these muscular sensations, through experience and association, we gradually acquire the notion of extension and three-dimensional space. These muscular movements of the eyes thus become the 'local signs' whereby we judge distance. Lotze (1817—1881) was a prominent exponent of the 'local sign' theory. Empiricists are wrong in attributing our judgments about dimensions to the muscular sensations of the eye following the lines of figures, etc. Were their contention correct, we would have no notion what a circle, triangle, or other mathematical figure is like, because photographic reproductions of the eye movements show they are jerky and irregular and never describe anything like the smooth lines observed in the contour of any object or figure. Eye movements form one of the criteria of distance and size, but they play only a

minor part; criteria present in the visual image itself, as mentioned above, play the major part in space perception.

These facts concerning vision, furnished by the physicists, physiologists, and psychologists, are very informative. The *fundamental purpose* of the sense of sight, as of the other external senses, is the *adjustment* of the organism to its surroundings. As a living being living in a world of manifold objects, man must be able to find his way about among them. All the senses serve as channels of information regarding these objects, so that man can protect, preserve, and develop his being as an *integral organism*.

One fact stands out prominently, as we look back over these various senses: Sense function is a type of activity far superior to that of physical or chemical substances, and sense function cannot be explained in terms of physical or chemical action and reaction.

The information assembled by the external senses is passed on to the internal senses; these must now be examined.

Summary of Chapter VI

More than any other sense, sight brings the mind into cognitional contact with the world.

1. *The Organ of Sight.* It is the eye. The eye consists of a number of distinct parts: the sclerotic, the choroid, the retina, the cornea, the iris, the lens, the aqueous and vitreous humors. The *retina*, which is the seat of vision, is composed of various layers of tissue. Its rods and cones are the receptors.

2. *Light Rays as Stimulus.* Light appears as photons and also as electromagnetic waves. The range of the visible spectrum lies between wave lengths of $386\text{m}\mu$ and $800\text{m}\mu$. Light waves have length, frequency, and amplitude.

3. *Color as Sensation.* In achromatic sensations we experience white, black, and gray; in *chromatic* sensations, red, blue, green, yellow, and intermediate hues. There are *six psychological* primaries: white, black, red, green, yellow, and blue. Chromatic colors have three attributes: hue, saturation, and brightness.

4. *Rod and Cone Vision.* The rods are the receptors for achromatic, low intensity, scotopic vision; the cones are the receptors for chromatic, high intensity, photopic vision. The organ of sight, therefore, is a duplex apparatus.

5. *Color Mixture.* By this we mean the stimulation of the same retinal spot by light rays of different wave length. There are *three laws* of color mixture. The first concerns complementary colors; the second concerns intermediate

colors; the third concerns the substitution of colors in mixtures containing more than two colors.

6. *Color Contrast*. By this is meant the difference in the appearance of colors brought about by the stimulation of adjacent sets of rod and cones. Contrast seems to be mainly the result of partial or complete physiological *inhibition*. *Simultaneous* contrast can be observed by placing a piece of colored paper against variously colored backgrounds.

7. *Afterimages*. Afterimages are sensations occurring after the stimuli causing them have ceased. They are *negative* or *complementary*, when a dark image is replaced by a light image, or a light by a dark, or the color of the original sensation by its complementary color. They are *positive*, when they preserve the color or shade of the original sensation. Afterimages are subjective.

8. *Color Blindness*. This is the partial or total inability to distinguish or recognize chromatic colors. *Dichromatism* or *partial* color blindness exists in two forms: red-green and blue-yellow blindness. In *monochromatism* or *total* color blindness a person sees all things in the neutral colors of white-gray-black.

9. *Binocular Vision*. The optical fields of both eyes, though slightly different, are seen as a *single field*, due to binocular fusion in consequence of a single cortical response. When the two fields are focused on the fovea in a practically identical manner, fusion occurs; otherwise we see double images. Binocular *rivalry* occurs, when each eye, separately and simultaneously, see colors or objects or figures very different in appearance. When complementary

colors are used, *psychological fusion* may occur according to the laws of color mixture.

10. *Behaviorism and Color Vision*. In accordance with this theory, an exact correlation must exist between stimulus and response. Such an exact correlation does not exist in color vision. Different stimuli produce the same sensation. In simultaneous contrast the sensations of color change, though the kind and amount of wave lengths remain unchanged. The sensation of black is not properly accounted for. Afterimages are subjective in character.

11. *Visual Space*. Colored surface in two dimensions, length and height, is an immediate visual experience; visual experience also includes the intuitive distinction of concrete parts, shape, and relative size. *Depth in space*, or the third dimension, is a matter of perception and judgment. The combination of *touch* and *sight* assists us in interpreting the visual image with respect to depth in space. Thereupon certain *criteria* in the visual image enable us to gauge depth: light and shadow, perspective, angular difference of the optical fields in binocular vision, and the muscular movements of the eyes in focusing.

Nativism attributes perception of space to a native or constitutional property of vision itself. The theory, however, is wrong in including the direct perception of the third dimension, depth in space. *Empiricism* attributes it entirely and exclusively to experiential education, in which the kinesthetic sensations of eye movements furnish us with 'local signs.' This theory overlooks the fact that the visual image itself furnishes criteria of visual space and that the vision of colored surfaces gives two dimensions immediately.

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1 See the authors *From Aether to Cosmos* (Bruce, 1941), pp. 58—64

Chapter 7

CENTRAL OR SYNTHETIC SENSE

[FORMERLY KNOWN AS THE 'COMMON SENSE',
ED.]

INFORMATION CONCERNING CONDITIONS IN MAN'S OWN organism and in the outside world comes to the mind through the channels of the external senses — sight, hearing, taste, smell, and the somesthetic senses. This information comes piecemeal. Each sense resembles a brook, and each item of sensation resembles a drop of water carrying a bit of information in solution, and through these diverse sources an enormous amount of information flows into the common reservoir of the brain.

These bits of information do not remain isolated, nor do they mingle indiscriminately into a jumbled mass of heterogeneous items. They are analyzed, sifted, sorted, arranged, and combined into meaningful wholes; they are stored away, capable of being recalled for future use, ready to be compared and combined with further information received from the vital sources of the senses as time goes on. This process of elaboration is carried out by the *internal senses* — the *central sense*, *imagination*, *sensory memory*, and *instinct*. These will now be discussed.

The Central Sense

We may define the *central sense* as the mental *power to consciously perceive, distinguish, and synthesize the objects and operations of the presently active external senses*. From Aristotle down through the Middle Ages and up to our own day, this power has been termed the *common sense* (*sensus communis*). While the name is accurate enough in its technical meaning, the English language unfortunately uses the expression 'common sense' more frequently to designate things totally different. Sometimes 'common sense' is used to mean plain good judgment; again it is used to mean the intuitive judgment of mankind relative to certain fundamental principles; and it is also used to designate the unscientific and unreflective opinions of common people who lack an extensive education. Because of these various meanings, it seems unwise to apply the term 'common sense' to the internal sense in question. T. V. Moore employs the term *synthetic sense*. We prefer the term *central sense*, because it is general enough to include all the functions proper to this sense, without any danger of confusing it with other mental powers. In as much, however, as Moore's term is apt and expressive, it may be advisable to speak of this power either as the 'central' or 'synthetic sense.'

The central or synthetic sense has a *double function*. When the external senses react to a stimulus, so that the eye sees and the ear hears, etc., the central sense perceives and distinguishes the various sense qualities presented, combines them, and refers them to the *one object* from

which the stimuli originate. This is the objective phase of the function of the central sense. There is, however, also a subjective phase to its function. By means of the central sense we become *aware of the acts of sensation* present in the various external senses, such as the act of seeing and the act of hearing, etc.; and we also become aware of their differences as acts of sensations, so that we know that the act of seeing is not the act of hearing, etc. Viewed from the standpoint of this latter function, the central or synthetic sense is termed *sensory consciousness*.

Existence of the Central Sense

Introspection proves that we have the ability to *distinguish* between the *qualities* perceived by the various external senses. The eye, of course, can distinguish between white and black, between red and green; taste can distinguish between bitter and sour and sweet and salty; smell can distinguish between fruity and fragrant and fetid odors; hearing can distinguish between high and low notes, between a cacophonous noise and a clear tone; and the somesthetic senses can distinguish between the different sense qualities in their particular field. But one sense knows nothing of what is registered by another sense: sight knows nothing of sound, hearing knows nothing of color or flavor or odor or cold or pain, etc. We distinguish, however, between these various sense qualities and the sensations they produce in us. For example, we distinguish between the whiteness, roughness, and sweetness of sugar; between the shape, the tone, and the touch of a violin; between the

blackness, the odor, and the disagreeable taste of tar; between the sharpness, the temperature of a needle, and the pain caused by its puncture, and so on.

Introspection also proves that we *combine* these different sense qualities and refer them to the *same object*. I take a certain thing between my fingers, and it is hard and square to the touch; I look at it and see that it is white; I taste it, and it is sweet. The fingers know nothing of its color or taste; the eye knows nothing of its hardness or taste; the tongue knows nothing of its hardness or color. Yet I make a synthesis of these irreducible qualities, refer them to the same object, and call it 'sugar.' I look at my desk and see a pencil; it is yellow and slender, and I take it and strike it against the desk, hearing a sharp sound. These are sensations of sight, touch, and hearing. I refer them all to the one same pencil, and I perceive that they all belong together, simultaneously, to the same object. What makes the synthesis of these heterogeneous items? Since the single senses respond only to their own stimuli, no single external sense nor combination of senses can effect the synthesis. There must exist, therefore, a central sense to which the single senses relay their information; this *central sense*, upon receipt of the data of the separate senses, distinguishes between them, combines them, and then refers them to the one concrete object from which the various stimuli originate.

That this analysis and synthesis of sensations and their objects is not an intellectual operation, but the activity of a sensory power, is shown by the fact that *brutes possess this ability*. Consider the actions of a dog. Suppose the dog is in

one room, and his master is in the adjoining room behind the closed door. If the master calls the dog by name, the dog will prick up his ears and listen; he recognizes his master's voice. Not seeing his master, he runs about; coming to the door, he sniffs and recognizes the odor peculiar to his master. If the master now opens the door, the dog runs to him without hesitation, even if other persons are also present. The dog knows that he hears his master, but he also knows that he does not see him; he recognizes the fact that the sound and odor are those of his master, but he also knows that he lacks the sight of his master; and when he sees him, he combines sound and odor and sight and refers them to the same object, his master. The dog, therefore, makes a concrete distinction between the various sensations and their objects and synthesizes them into a concrete whole. A lion does not bite so eagerly into the neck of a zebra because the zebra has a striped hide or emits a certain odor or utters a peculiar sound. The lion kills the zebra because the zebra tastes so delicious. But the lion knows that objects of such a shape and color, emitting such an odor, and uttering such a sound, have a delicious flavor. The lion thus distinguishes between these sensations and the sense qualities and refers them all to one object. Such examples could be multiplied indefinitely. They show that animals possess a central or synthetic sense.

IN A SIMILAR MANNER, IT CAN BE SHOWN THAT MEN AND BRUTES possess sensory consciousness, so that they are aware of

their sensations and of the sense qualities present in the sensations.

If I take a bell in my hand and ring it, I not only see its shape and color, perceive its hardness and temperature, and hear the sound of its ringing, but I am aware of the fact that I see the shape and color, perceive its hardness and temperature, and hear its sound. I have such an experience every time I pay attention to my senses and their operations and attempt to discover, for example, how acute my hearing is by listening to the tick of a watch, how sharp my eyesight is by reading a distant sign, how delicate my touch is by fingering weights when blindfolded, etc. In such cases I not only have sensations but 'become aware of them. It is obvious, however, that the eye is not conscious of its seeing, nor the ear of its hearing, nor the finger of its touching, etc. Much less can the eye be conscious of the hearing of the ear or of the touching of the fingers; and the same must be said of each of the external senses with respect to the sensations of the others. Still, the awareness of the operations and qualities present in the senses, singly and conjointly, is a fact. Since this awareness cannot be attributed to the external senses themselves, we must admit the presence of a central or synthetic sense which is conscious of these senses, their operations and sense objects.

Brutes, too, possess sensory consciousness. They seek to alleviate pain, hunger, thirst, sex urge, etc. If they were not conscious of these things, how could they seek to alleviate them? They look at a wounded foot and lick it; if they were not conscious of the pain, they would not act in this manner.

They manifest signs of pleasure, fear, and anger. Scratch a dog under the chin, or stroke the back of a cat; they give every indication of pleasure and of being aware of the pleasurable feeling. When the master approaches the dog with a whip, the dog slinks away or crouches at the feet of the master; he shows fear of the whipping and is conscious of the anticipated pain to be received from the blow. When the dog and the cat collide, they jump apart, face each other, the dog barking and the cat spitting, ready to fight; they are angry, and they are conscious of the fact that they stand in the face of an attacking foe. None of these actions have any meaning except under the supposition that animals are conscious of objects and of their own sensory reactions in a concrete manner.

Animals exhibit curiosity in their surroundings, and that presupposes consciousness. One of the most comical scenes to witness is the first acquaintance of a dog with a live frog. Curiosity prompts the dog to investigate this object. He walks up to the frog, inquisitive but cautious, eyes it uncertainly, and then sniffs it. When the frog, frightened, leaps through the air, the dog is visibly perturbed, jumps away, stops, stares at the strange creature, hesitates, barks, quiets down, and then, perhaps, approaches it again with the slowness and deliberation of a very mystified observer. Who would say that he is not conscious of the frog and his own perceptions in its presence? Or, if a squirrel is near, toss a piece of candy on the ground, and watch its antics. Curiosity urges the squirrel to examine the object, while fear of the human being holds it in check. It approaches stealthily, stops, flashes its tail, and then scampers away in

fright. The action is repeated from a different angle of approach a number of times, but every time the squirrel comes a trifle closer, until at last it can smell the candy and give it a tentative nibble; if the taste is agreeable, it will grab the candy in its paws, put it between its jaws, and rush away to enjoy the morsel in safety and leisure. The squirrel most assuredly is conscious of the object perceived and of its acts of perception. Animals show curiosity by turning their head to hear better, by looking fixedly at objects to see better, by approaching objects to smell them better, and so forth. Such actions show that they are conscious of the sensations present in their sense organs and of the objects presented by them.

The mere fact that men and brutes have *different senses* makes a central or synthetic sense a necessity, for they would be useless without it. It would be useless for an animal, whether man or brute, to see food, if the animal were not conscious that it is food. The animal could not strive to relieve the sensation of hunger by taking food, if it did not experience hunger consciously as its own hunger. It is obvious that men and brutes do not experience sensations as detached, isolated, unconsciously received processes, but are aware of the presence of these processes as their own in a concrete sensory manner. The fact, however, necessitates a central or synthetic sense capable of distinguishing and synthesizing the data presented by the separate external senses, because otherwise there would be no common bond which would enable us to compare, distinguish, and unite them into concrete wholes.

It is precisely because of this common bond that the philosophers of old termed this sense the 'common sense.'

Gestalt and Synthetic Sense

The *associationism* of Hume, which has dominated modern psychology to a great extent, was frankly sensationalistic. According to Hume, there are just two fundamental elements which enter into the fabric of human knowledge, 'impressions' and 'ideas'; translated into the terms of modern psychology, these are 'sensations' and 'mental images.' The 'ideas' (images) are but faint replicas of 'impressions' (sensations), and these are all we can and do know. They are simple, discrete components which are combined and recombined in various ways according to the laws of association. Hume insisted that they are isolated, discrete 'existences' or elements, and the mind cannot perceive any connection between them, nor can it combine them into higher units or organized wholes; this theory follows logically from his doctrine that the mind of man is not a distinct entity but merely "a heap of perceptions."

The philosophy of Gestalt (a German word for 'form' or 'shape' or 'configuration') is in opposition to this 'atomistic' concept of Hume and his followers. The more recent School of Gestalt was founded by M. Wertheimer, K. Koffka, and W. Köhler about the year 1912. For the isolated, discrete psychic elements of sensationalism and associationism they substituted 'organized wholes,' 'configuration,' 'Gestalt.' In this view the whole is not a mere sum of the discrete parts, but something over and above the sum of the parts; the

whole is prior to its component parts; the parts derived their character from the whole, not the whole from the parts. Wertheimer expresses the essence of the Gestalt theory in this manner: "There are wholes, the behavior of which is not determined by that of their individual elements, but where the part-processes are themselves determined by the intrinsic nature of the whole."¹

Applied to sensory experiences, this principle implies that we do not build up a percept, like a mosaic, by putting together the individual sensory elements, so that the whole-properties are a mere summation of the part-properties; on the contrary, what we perceive primarily are the wholes and their properties, and then first analysis will reveal the parts of wholes. For example, I see a house. From the standpoint of *sensations*, there may be one hundred and twenty distinct sensations of brightness and shades of color in my total impression of the house. But that is not what I actually see; what I see is the 'house' as a 'whole- complex,' and the component parts with their brightness and color properties are but 'parts-of-the-whole- house,' if they are noticed at all. Again, when I behold a city scene, the 'whole view is what I behold first and primarily, and then I notice streets, houses, lawns, trees, automobiles, people, etc., as subsidiary wholes and parts; but I am never aware of a million and more discrete sensations which through addition make up the total scene as a result of their combination.

Such 'wholes' contain more than the mere sum of all the parts, as paradoxical as this may seem. If I take nine distinct tones of different pitch and place them in a definite

sequence, the result, let us say, is a 'melody.' I can arrange them in a different sequence, and the result is a different melody. I can rearrange them again, and now there is no melody at all. In every case, the sensations are the same as to kind and number. 'Melody,' therefore, is more than the mere summation of these nine sensations; it is the 'form' or 'configuration' of the nine tones as a unit or whole which constitutes melody, and that is something over and above the single tones as discrete elements. The 'form' or 'configuration' of the melody becomes still clearer, when we take the melody and transpose it into different keys; we now have totally different sets of nine tones, yet we recognize the 'melody' without difficulty as being the same in every key. We thus see that it is the *form*, the *configuration* of the melody as a whole or unit which determines the nature of the tones as component parts of the melody, and not the nature of the single tones as sensation elements which determine the nature of the melody as a whole. The same is true of the call of a robin, the song of a bob-o-link, the trill of a wren, the hoot of an owl, the moo of a cow, the whinny of a horse, the bray of a mule, the howl of a wolf, the trumpeting of an elephant, etc.; they are perceived as configured wholes and are recognized as such, not as so many separate sensations arising from air vibrations added together to make a numerical total. A symphony by Bach is more than the mere sum of all the separate notes, and a painting by Raphael is more than the juxtaposition of so many particles of paint and daubs of color; the symphony and painting as configured or structuralized wholes are what I perceive,

and the separate parts have importance only in so far as they are integral portions of the whole.

The advocates of the Gestalt theory are certainly correct, when they claim that our percepts are configured wholes and not mere aggregates of elements of sensation. Sensory configuration is a fact, as the above-mentioned instances prove. Perhaps the best proof is found in the case of persons afflicted with cataract from birth and then operated on later in life, because their first acquaintance with visual perception is uninfluenced by past experience.

When conditions were exceptionally favorable, it was invariably found that these patients perceived *objects* and *scenes* as whole-complexes. Trees were seen as trees, houses as houses, streets as streets, persons as persons; but they were not *recognized* as such until they were manipulated or brought into relation with past experiences in some way. These patients could see that a cube was different from a sphere, but they did not know which was the cube and which the sphere until placed in their hand. After a walk through the village, a patient of Dufour remarked that he had seen 'many beautiful things,' but he did not know what they were because he had not been told. We thus see that *configuration* is given immediately in visual perception *interpretation*, however, is an intellectual process. The visual picture of individual objects and scenes is clear and precise, but it has no meaning until connected with the data of other senses, especially with the data of touch and hearing; only after this connection is made, it is possible to interpret the picture and recognize the objects for what they really are.

Experiences of this kind make it clear that things are not perceived as a mere aggregate of disparate visual, auditory, or tactual sensations, but as individual objects, as *configured wholes*; the component parts are present and are also perceived, but as constituents in a secondary manner. *Sensory synthesis* must always be present, because the whole-complex must be seen in relation to its parts, and the parts must be seen in relation to the whole-complex, and because the data of the various senses must be combined into a *perceptual whole*. Only then, after this sensory synthesis is effected, can the intellect proceed to interpret the configured whole and give it meaning. A sensory synthesis, however, demands a special sensory power capable of holding apart and combining the various sensory items. This sensory power is the *central or synthetic sense*. Gestaltists do not admit the existence of a central or synthetic sense, though it follows logically from the facts of their theory. They realize, however, the necessity of a sensory synthesis, and so E. M. V. Hornbostel, for example, argues for the *unity of the senses*.² He does not claim that all the senses are really only one sense, but he stresses the point (unduly, it is true) that the properties of one sense quality are often applied to another sense-quality on the basis of *similarity*. The point is worthy of consideration.

We always speak of tones as 'high' or 'low' in the scale; we also speak of tones as 'warm,' 'cold,' 'sharp,' 'dull,' 'bright,' 'dark,' 'heavy,' 'light,' and so forth. Similarly, we designate colors as 'warm,' 'cold,' 'loud,' 'quiet,' 'soft,' 'hard,' and so on. In this manner we express the fact that

we recognize a definite similarity between the qualities of one sense and those of another, although the sense qualities in themselves are radically different. There is more to this transfer of properties than fanciful language. The basis for this transfer of properties lies in the operation of the *central or synthetic sense*. This internal sense is the common receptacle for the sensations mediated by all the external senses; it holds them apart and yet holds them together, discriminating between them and synthesizing them. The mind notes similarities which at first are not obvious, but which are there fundamentally nevertheless. Language reveals the presence of these similarities in the sensory field of the various senses. Only on the supposition of the existence of a central or synthetic sense does this remarkable feature receive a satisfactory explanation.

The facts brought forth by the psychology of Gestalt in this connection are not really new; they were known in principle by Aristotle and the Schoolmen. They verify the Aristotelian-scholastic concept of the central sense.

Pathology and Central Sense

T. V. Moore³ has shown that *pathological conditions of the brain*, with their attending disturbances, definitely prove the existence of a central or synthetic sense. When such conditions prevail, the afflicted persons lose to some extent the power to synthesize the sensory data into a perceptual whole, even though the single items are all perceived as present.

In the *visual* presentation of an object, we first perceive it as a confused whole and then differentiate the details; we then reform the details into a meaningful whole. For example, we first see an object in a general way as a human person; we then note the details of this person as to color, stature, gait, voice, etc.; we finally reform these details and recognize this person as 'John Jones.' In the case of cerebral disturbances, such as lesions through injury or disease, the power of sensory synthesis is impaired, although the ordinary sensory and intellectual abilities are intact.

Lissauer (1890) describes the case of a man who had injured his head in a fall. He could match colors placed before him, but he made frequent errors when asked to pick out a color by name. He could draw the figure of a watch set before him, but he was incapable of identifying and recognizing either the watch or the drawing; if he took the watch in his hand or listened to it tick, he recognized and named it immediately. When told to draw a figure from memory, he would draw a few strokes, ponder, make a few more strokes somewhere, attempt to group them, etc. The drawing had no meaning for him. Sometimes he recognized a picture as a whole, for instance, an animal, but could not distinguish the head from the tail. He also recognized a bust picture of Bismarck, but was unable to point out correctly the eyes, the ears, etc.

To a normal person the synthesizing of the various items presented in a picture or drawing, if it is not too extensive or complicated in details, is a relatively easy matter; but to a person suffering from a cerebral disturbance of some

sort, it is difficult or even impossible. In order that such a synthesis be effective, it is necessary that the main items be held together in the span of conscious perception long enough for the concrete relations of the parts to become apparent to the observer. The focus of attention passes from one item to the other, but the single items attended to must not fade from consciousness during the successive phases of focusing. Such a fading, however, is precisely what may, and often does, happen in the case of cerebral disturbance; persons afflicted in this manner cannot retain the impressions long enough to make the necessary comparison and synthesis. One patient, for example, was capable of recognizing the single objects and persons in a comparatively simple picture and describe each one separately, but could not hold the items together in consciousness so as to give a correct interpretation of the picture as a whole. Others are able to interpret a single picture, but are unable to interpret a series of pictures in continuity, as in a comic strip. The 'interpretation,' of course, is a function of the intellect. That the intellect failed, however, to make the interpretation, was not the fault of the intellect as such, but the fault of the sensory mechanism furnishing the items for interpretation. That the sensory mechanism is at fault can be observed in those cases where the brain recovers from the injury or disturbance; as the condition gradually clears, synthesis also improves. In some instances patients of this kind return almost to normal. The synthetic function, therefore, is a sensory function dependent on the cerebral centers and their neural associations.

Inability to synthesize *tactual* sensations has also been observed. Dejerine (1906) had a patient who, when a key was placed in his right hand, did not know what it was, although he could give a rather accurate description of it. It was described as "a fairly long object, thin, hard, that has a hole at one end." When it was placed in his left hand, he recognized it immediately and said it was "a key." When the touch spots are insensitive to vibration, because the stimuli, due to some cerebral condition retarding perception, are too slow in reaching consciousness, patients are unable to distinguish between the feel of wool and the feel of glass, etc. Even when capable of recognizing the primary qualities of an object by touch, some persons are unable to recognize the object itself by means of tactile sensations; in other words, the perception of tactile qualities is normal, but they lack the power of synthesizing the perceived data into an integrated perceptual whole.

The lack of perceptual synthesis has also been observed in *taste*. To recognize an object of taste, a combination of the qualities of taste, smell, temperature, touch, and kinesthesia is required; taste alone merely reveals the qualities of sweet, bitter, sour, and salty, without identifying the object itself. One woman patient could readily distinguish the four flavors, but did not know what she was eating.

These and similar pathological cases show clearly that the data of the separate external senses are insufficient to account for the sensory synthesis which occurs in our normal mental life. Over and above the functions of the external senses themselves there must exist the function of

a super-sense intimately connected with the brain. If the function of this super-sense is impaired through cerebral injury or disturbance, normal sensory synthesis is slowed down or partially lost. This super-sense is the central or synthetic sense.

The Nature of the Central Sense

The central sense, it should be clear from what has been stated about its function, is really the *root* and *principle* of the external senses. The external senses are in the nature of instrumental causes in the service of the central sense as the principal cause. The central sense operates through the external senses, collecting divergent data from each of them and synthesizing these data into perceptual wholes, or precepts, so that the organism can know and recognize the single *objects* more or less in their entirety. While the single senses perceive specific sense qualities (proper sensibles), the central sense becomes aware of these qualities and also of the general qualities of bodies based on extension (common sensibles). These common sensibles are movement, rest, figure, magnitude, and number. Our perception of visual space, especially of the third dimension, is mainly the result of the synthetic operation of the central sense using the data supplied by the special senses.

If we now inquire into the *nature* and the *organ* of the central sense, we immediately become involved in difficulties. *Aristotle*⁴ had already realized the problem.

The central sense must be a sensory power, because it is concerned with sense objects; besides, brutes possess this

power, and they are restricted to sense perceptions. Aristotle pointed out that if one person sensed the 'whiteness' of an object (say, sugar) and another person its 'sweetness,' there would be no possibility for them to compare their sensations and combine them in a common percept. The same difficulty, however, seems to arise, if we assume that the central sense is a distinct power residing in a *special organ*. We must bear in mind that this organ would perceive not only the sense *objects* of all the special senses (color, sound, flavor, odor, warmth, cold, pain, etc.) but also the *percipient acts* of sensations (seeing, hearing, tasting, etc.). An organ, however, being material, must consist of parts; every part would perceive the act of sensation and the corresponding object of a particular external sense. We have here practically the case of the two individual persons of whom Aristotle speaks, since each separate part of the organ corresponds to such an individual person; and under such circumstances the comparison, discrimination, and synthesis of the sense objects into a perceptual whole would remain unexplained.

The eye sees color, but it does not see itself see; the ear hears sound, but it does not hear itself hear. No sense perceives its own act of sensation, because that would be a *reflex knowledge* of itself which, as we will see later, is impossible to a material organ. It follows, of course, that a central or synthetic sense is necessary, but the acceptance of a central or synthetic sense does not solve the difficulties.

D. Card. Mercier,⁵ the eminent Belgian philosopher, finds *three serious difficulties* in the assumption that the central sense is a distinct power or faculty with a special

organ. The *first* is that we have two distinct senses perceiving the same proper sense qualities. The eye and the central sense would perceive color, the ear and the central sense would perceive sound, the tongue and the central sense would perceive flavor, and so on. The *second* is, that it would be necessary to ascribe to the central sense such totally disparate things as the perception of color and the perception of seeing the color, the perception of sound and the perception of hearing the sound, the perception of flavor and the perception of tasting the flavor, and so forth. The objects of sense and the acts of sensation are so entirely different in character, that it is difficult to understand how they can stimulate one and the same power and organ into activity. The *third* difficulty is, that the same central sense would become active through the perception of formally diverse objects like color, sound, odor, taste, pressure, warmth, pain. etc. Why all the special external senses, if one sense and one organ can perceive them all?

Mercier is of the opinion that these difficulties can be avoided by assuming that the central sense is *not a special power or faculty with a special organ* determined to the *one specific activity* of discrimination and synthesis. No special organ is required. Synthesis would occur through the functioning of the *cerebral centers* of the single external senses connected with one another by *association fibers*. His explanation then is as follows:

When I grasp a bell and ring it, I have sensations of touch, pressure, temperature, sight, and sound. Each sensation goes to its respective cerebral center. The

simultaneousness of these sensations produces in the cerebrum a *simultaneous reaction* which presents itself psychologically as a *synthesis* of the sensations of touch, pressure, temperature, sight, and sound, and in this manner the object, the bell, is apprehended in its various qualities as a perceptual whole. What more is needed?

Each kind of sensation leaves a cerebral image of its sense quality behind in its respective cerebral center, and all centers are united through association fibers. As a consequence, the visual image of the bell will recall the image of its ringing, its hardness, its temperature, etc.; so, too, the image of the ringing of the bell will recall its shape, etc. If, however, one of these centers should be destroyed or impaired, the cerebral image of this center will also be destroyed or impaired, so that this particular image drops out of the association either entirely or in part. It then happens that persons will not be able to recognize objects by sight or touch or hearing, and so forth, because of a lack of cerebral synthesis. Psychic blindness, psychic deafness, and similar perceptual abnormalities result from such a lack of cerebral synthesis.

In as much as no special structure or cerebral center has been discovered which could be assigned definitely to the central or synthetic sense as the seat of its function, it seems very reasonable to ascribe the central sense and its function to the *brain as a whole*, operating through its centers and association tracks.

Sensory Consciousness

Mercier's explanation of the central sense's function of *consciousness* is also interesting.

We perceive the percipient act of sight, hearing, and of the other special senses. When an external sense is activated to sensation, the muscular apparatus serving this sense contracts and produces muscular or kinesthetic sensations. This muscular sensation, which is the same everywhere, is really what we call sensory consciousness.

As *proof* for his contention, Mercier adduces certain facts. The exercise of an external sense is always *accompanied* by muscular exertion and sensation. In order to see properly, we turn the head and the eyes, fix the focal point and the ocular axis; in order to hear properly, we turn the head in the direction of the sound and strain the ears; in order to taste and smell properly, we move the tongue about and inhale the air through the nose; in order to 'feel' properly, we manipulate an object. In other words, to apprehend an object clearly with our senses, we must accommodate the organ to the object by means of muscular movements. There is thus a permanent *connection and association* between these muscular sensations and the exercise of the sense organs, and the result is the inner perception or 'consciousness' that sensation takes place in a special organ.

Attention to these muscular sensations, as we know, strengthens the consciousness of perceptions. Lack of attention, or the concentration of attention on one type of perception, impedes the consciousness of entire sets of perceptions. Many soldiers, in the heat of battle, fail to

notice minor wounds and experience no pain for a while. Absorption in a problem makes us oblivious of street noises.

According to Mercier's theory, then, consciousness does not manifest to us an internal perception of the act of perception strictly as such. We see or hear or taste or smell or feel something and at the same time have the 'feeling of activity' through muscular sensation. The sentient subject simply perceives *simultaneously a sense object* (color, sound, flavor, etc.) and the *muscular sensation of activity*.

Mercier's theory of sensory consciousness is ingenious, but it does not seem very *satisfactory*. For one thing, the sensations of some external senses are not accompanied by muscular sensations. Such are the sensations of the touch, temperature, and pain spots; they can be aroused by very slight punctiform stimulation, when the muscles are completely relaxed and inactive. The end organs for these sensations are distributed profusely throughout the skin, even in areas where muscle and tendon spindles (the organs of muscular sensation) are not present; one need but mention, for example, the cornea of the eye with its sensitivity to pain. Under such circumstances, we should not be conscious of these sensations; as a matter of fact, however, we are. Again, when the sensory nerves leading from the muscles of a part of the body are severed, muscular sensations from that part of the body are no longer experienced; but other sensations may still be normal and are consciously apprehended as occurring in that part. Finally, the muscular or kinesthetic sense is one of the external senses, on a level with the senses of sight, hearing, touch, temperature, pain, and the others; as such,

this sense is no different from the others. Hence, we are also *conscious of muscular sensations*, as we can easily observe, if we flex our arms or lift a weight. Consciousness, then, cannot be identical with the muscular sensation of activity, but must be something over and above it; otherwise we would be obliged to assume that this second consciousness would thus be the muscular sensation of a muscular sensation.

Mercier's theory, that the synthesizing function of the central sense should be attributed to the brain and its associated centers, is reasonable, and many philosophers hold the same view. His theory of sensory consciousness, however, seems to run counter to observed facts.

Tilman Pesch,⁶ the prominent neo-scholastic, claims that *concomitant consciousness*, or *apperception*, is an essential phase of every act of cognition and therefore also of the function of sensory perception. Every act of cognition (and sensation is such an act) reveals not only the *object which* is presented but also the *subject to whom* the object is presented. Just as it is essential to the act of knowledge (here sensation) that it manifest the thing to the knower, so it is also essential to the act of knowledge to manifest *itself* secondarily and, so to say, 'obliquely' to the knowing (sentient) subject; concomitant consciousness consists precisely in this 'experiential manifestation.' Sensation would not be an act of knowledge, of cognition, if the sentient subject were not aware (conscious) of the knowledge obtained through sensation; and since the knowledge of sensation is negotiated to the subject through the 'act' of sensation, the sentient subject becomes

simultaneously, concretely and concomitantly, aware (conscious) of the act itself. It follows, then, that 'consciousness' is not a specific function of the central sense at all, but is an *essential property of all cognitive functions* of whatever kind.

Obviously, of course, some ultimate principle of unity is demanded to link the cerebral centers and their separate functions and data together. This principle must be the *unitary nature* of the percipient subject, based upon a single *vital principle* of sentiency which is predominantly active in the centralizing organ of the brain.

Summary of Chapter VII

The internal senses are: The central or synthetic sense, imagination, sensory memory, and instinct. This chapter deals with the central sense.

1. *The Central Sense.* It is also called the 'common sense and the 'synthetic sense,' and is defined as the mental *power to consciously perceive, distinguish, and synthesize the objects and operations of the presently active external senses.* A double function is ascribed to it: It perceives and distinguishes the sense qualities presented, combines them, and refers them to one object; it also makes us aware of the percipient acts of sensation. In this latter capacity it is termed 'sensory consciousness.

2. *Existence of the Central Sense.* Introspection shows that we distinguish between the 'whiteness' and 'sweetness' and 'hardness' of sugar, etc.; also, that we *combine* them and refer them to the same object. Since the single senses respond only to their respective stimuli (the eye to light, the ear to sound, etc.) and not to those of other senses, they cannot make the synthesis; a central or synthetic sense is required. Brutes also possess a central sense, as their actions show.

Introspection also reveals that we are conscious of the percipient acts of sensation; we not only see, hear, etc., but are aware that we see, hear, etc. Brutes, too, have this consciousness.

The fact that we have different *kinds* of senses, makes a central, synthetic sense necessary, otherwise our mental life

would consist of a mass of isolated, unrelated sensations.

3. *Gestalt and Synthetic Sense*. For the isolated discrete psychic elements of sensationalism and associationism, Gestaltists substitute 'organized wholes,' 'configurations,' 'Gestalt.' The whole is prior to the parts; the parts derive their character from the whole, not the whole from the parts. What we perceive primarily are the wholes and their properties, and then first will analysis reveal the parts of the wholes. Much experimental evidence is adduced to prove the truth of this fundamental fact of mental life.

Sensory synthesis must always be present in the perception of configured wholes. Such a sensory synthesis, however, demands a special sensory power capable of holding apart and combining the various sensory items. This sensory power is the *central or synthetic sense*.

4. *Pathology and the Central Sense*. Due to cerebral disturbances and lesions, the power of sensory synthesis is impaired or partially lost, although the ordinary sensory and intellectual abilities are intact. Hence, the data of the separate external senses are insufficient to account for sensory synthesis. The central sense in such cases is impaired.

5. *Nature of the Central Sense*. If one assumes that the central sense is a distinct power residing in a special organ, grave difficulties are encountered, because one part of the organ would presumably perceive one thing, and another part another thing; and thus a synthesis seems impossible.

Mercier is of the opinion that the simultaneousness of the sensations produces in the cerebrum a simultaneous reaction which presents itself psychologically as a synthesis;

hence, the central or synthetic sense and its functions should be ascribed to the brain as a whole. This is a reasonable theory.

6. *Sensory Consciousness*. Sense consciousness, Mercier contends, is nothing more than the muscular sensation which accompanies seeing, hearing, etc. Tilmann Pesch insists that consciousness is an essential phase of every act of cognition, including sensation, otherwise sensation would not be 'cognition'; hence, consciousness is not a specific function of the central sense at all.

The functions of the central sense ultimately demand a *vital principle* as the principle of unity.

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¹ Willis D. Ellis, *A Source Book of Gestalt Psychology* (Harcourt, Brace and Co., 1938), p. 2

² Erich M. v. Hornbostel, "The Unity of the Senses," in *A Source Book of Gestalt Psychology*. pp. 210—216

³ *Cognitive Psychology* (Lippincott, 1939), Part III, Ch. II, III, IV

⁴ *On the Soul*, Book III, Chap. 2, 42

⁵ *Psychologie* (11th ed., 1923), marg. nn. 10

⁶ *Intitutiones Psychologicae* (Herder, 1898), Vol. II, nfl. 474 et 574

Chapter 8

IMAGINATION

WE HAVE NOW ADVANCED ONE STEP FARTHER IN FOLLOWING THE progressive stages of human knowledge. Objects stimulate the various sense organs into activity. These organs transmit nerve impulses to the brain, and the organism responds with the sensations appropriate to the stimuli. Sensations reveal a number of qualities, such as color, sound, flavor, warmth, cold, and so on. Then the internal central or synthetic sense combines these different sense qualities into a perceptual whole by referring them to the same object. This meaningful impression of the object obtained by the use of the senses is called the *percept*. The percept, therefore, is the sensory representation of the object as it appears to the activated senses and the central sense.

It is the purpose of this entire process to make us acquainted with the *objects* existing in the world in which we live. This purpose, however, would be only incompletely realized, if the impression of these objects would disappear when the objects themselves disappear, because then we could have no abiding *knowledge* of them. One of two things is necessary, if we are to have an abiding knowledge

of objects: either the objects must remain present to our senses all the time, or we must have internal images of the objects present in us all the time. The first alternative is practically impossible and, as a matter of fact, does not occur. The second alternative, therefore, is a natural necessity, and nature has provided for this requirement of knowledge in the internal sense of *imagination*.

The Concept of Imagination

The *imagination* can be defined as the *power to form mental images or phantasms of perceived objects, together with the ability to reproduce these images or phantasms even in the absence of the perceived objects*.

The term 'image' or 'phantasm' must be taken broadly so as to include the representations of all the senses. We can imagine the color and shape of a rose (visual image), the fragrance of an orange (olfactory image), the taste of sugar (gustatory image), the tickle of a feather (touch image), the weight of steel (pressure image), the song of a canary (auditory image), the temperature of the yearly seasons (warmth and cold image), the misery of an operation (pain image), the strain of running (kinesthetic image), the sensation of falling (static image), the ache of hunger (visceral image).

The *differences between percepts and phantasms* or images are noteworthy. Upon comparison, we find that percepts are vivid and strong; phantasms are pale and weak. One need but look at a street scene, in order to observe the vividness and strength of the visual picture; the

same view, as reproduced by the imagination with closed eyes, is extremely pale and weak. Percepts are unchangeable for the will; phantasms are changeable. So long as the stimuli reach the senses, they produce their effects, and our will can do nothing to alter them; the imagination, however, is dependent on the direction of the will, so that the will can decide what phantasms shall remain present or be eliminated. When we listen to a song on the radio, we hear the melody just as it is rendered by the singer; but when we imagine a song, we can change the melody at any point and even stop it entirely. Percepts possess clarity and fullness of detail; phantasms are vague and indistinct. Look at a bouquet of flowers and note the clarity and fullness of detail in shapes and colors; then close your eyes and imagine the same bouquet, and the details give way to vague and indistinct impressions.

These characteristics of percepts and phantasms are indicative of the *difference between the central sense and the imagination*. The central sense receives its data from the external senses and is directly dependent on the stimulation of these senses in its own proper function; hence, it never operates except when the external senses function, and it occupies itself exclusively with the objects presented by these senses. The imagination receives its data from the central or synthetic sense and then forms phantasms of the objects, and these phantasms can be revived even when the originals, the objects, are absent; the imagination, therefore, does not occupy itself with the objects, but with images in so far as they are representations of these objects. The causes which produce

the percepts exist outside of us, as a rule, and are beyond our control; but the causes which produce the phantasms exist entirely within us and are, to a great extent, subject to our control. Because of these conditions, the percepts come into existence as items in a series fixed according to time and place, following the spatio-temporal order of the physical stimuli; but the representations of the imagination, being derived from the stored-up images always present after their formation, are capable of being evoked, separated, or combined in various ways and can be arranged in a series totally different from that in which the original perceptions occurred. The products of the central or synthetic sense are *presentations* of immediately present objects; the products of the imagination are *representations* of these objects in the form of phantasms.

Imaginal activity thus reveals three distinct features of the imagination: *formation and conservation* of the images of sense objects; *reproduction* of the images; *construction* of the images into new combinations. We therefore speak of the 'conservatory' imagination, the 'reproductive' imagination, and the 'constructive' imagination. In speaking in this manner, we do not mean to imply that there are three distinct imaginations in man; there is but one imagination with three phases to its normal activity.

The Conservatory Imagination

Somehow or other, we *conserve* the 'images' or 'phantasms' of previous sensations and perceptions in our imagination; or, at any rate, we conserve something which the

imagination elaborates into 'images.' Our daily experience proves that we are able to revive these images, not only once but hundreds of times. The ability to revive them presupposes the conservation of these images or of something which gives rise to them.

Certain *ultra-spiritualist* philosophers, such as Herbart, Sir William Hamilton, and others, look upon the conservation of images as taking place in the *mind or soul alone*, independent of neurological processes and of the brain; brain and nerve substance have nothing to do with the conservation of images. If this theory were true, a number of facts are unintelligible. Drowsiness retards the revival of images; tea, coffee, and some drugs increase the flow of images, while other drugs decrease their flow; in old age the conservation of images is weaker than in youth; diseases and injuries of the brain blot out entire sections of kindred images producing psychic blindness, psychic deafness, etc., leaving others intact and revivable; tumors of the brain often disturb imaginal functioning, and the functioning sometimes returns to normal after removal of the tumor; fatigue interferes with the retention of impressions. Facts of this nature show definitely that the conservation of images is not a purely psychic process, but is dependent at least to some extent on physiological conditions and neurological processes, especially those of the brain.

Materialistic psychologists and philosophers, among whom are Bain, Spencer, Ribot, and many others, place the conservation of images on a purely *neurological* basis. Cerebral processes alone are involved in conservation.

These psychologists and philosophers differ in the details of the theory, but the general view is that the sensory impulses produce a modification in the tissue of the fibers and cells of the brain. Ribot, for example, assumes a definite modification of neural elements. The molecules of a nerve cell are forced by the nerve impulse to oscillate in a particular manner and do not return to their original condition; a repetition of this process tends to fix the molecules in this state of modified action; a number of such neural elements become connected through dynamic association, and thus entire events are recorded. Others look for the trace of the images in the grooving of pathways through groups of neurons and fibers brought on by repeated stimulation; the neural mechanism would be something like a new engine which must be 'broken in' and then runs smoothly, because it is grooved in a definite direction.

That some sort of modification of the nerve substance actually occurs and plays a part in the conservation of images, is undoubtedly correct. But that such neurological processes should be accepted as the complete explanation of the conservation of images, is an inadequate theory, because it is too mechanistic and ignores the psychical features of the images.

To say that sense perception leaves in the cerebrum a weak *representation*, a *faded copy*, or a vestige, is merely a restatement of the problem. What sort of a weak representation or faded copy of a color, a sound, a flavor, or of a pain can exist in the brain? If present, would we not be conscious of them? Our experience is to the effect that we

can revive such images, sometimes voluntarily and sometimes involuntary, but they are not present *as images* until revived.

We can, and probably must, admit that some sort of image trace or, as Wundt terms it, '*functional disposition* of the nervous substance' remains in the neural elements after sense perception. More, however, is required. 'Traces,' 'dispositions,' 'oscillations,' or 'grooved pathways' of nerve tissue and cells are *not images*. What similarity is there between these things and the imaginal phantasms representing the Battle of Pearl Harbor, an Army and Navy football game, a morning in the Alps, the Bay of Naples, the bustle and hubbub of the port of Hong Kong, the death scene of a dear relative, the rhapsody of a symphonic orchestra, or the misery of a painful illness? Most of the events and scenes relived with the greatest vividness in our imagination have occurred *only once*, and thus a repeated stimulation of the same cells never took place to produce a modification of molecular grouping or grooved pathways of functional dispositions. Furthermore, when we look at a scene, the visual image covers the entire retina; looking at other scenes immediately after, we cover the same retinal elements with new visual images; and this process occurs hundreds of times in succession. One set of brain cells certainly does not select the impulses of one retinal image and conserve its trace exclusively, and another set the trace of another image, and so forth with the retinal images of all the successive visual impressions. The *same cerebral cells* receive the nerve impulses of a multitude of visual images; and since there is no reason to assume a preferential

selection of traces on the part of the cerebral cells, these traces should overlap and interfere with each other, something like multiple exposures on the same photographic plate. No such confusion of images, however, takes place, because each scene or event can be reproduced as a *whole*. Again, if an identical tone is sounded, say, four times in succession, the impulses should reach the same cerebral spot along the same fibers, leaving a single reinforced trace or groove, and one should be able to revive only a single image of this tone; as a matter of fact, however, our imagination revives the whole event as a tone sounded four times.

The simple fact is that neural modifications of the cerebrum can no more be the full and exclusive explanation of the conservation of phantasms than the activations of sensory nerve terminals by physical stimuli are the full and exclusive explanation of the original perceptions of which the phantasms are the imaginal representations. Just as there is more to a perception than the molecular vibration of a nerve cell, so there is more to a phantasm than the molecular modification of a brain cell. Perceptions and imaginal phantasms involve the mental element of conscious cognition, and *conscious cognition* is something *psychic*, not purely physical; there is a *meaning* in what we perceive and imagine, but there is no meaning in the molecular oscillations of brain cells or in the grooved pathways of cerebral substance concerning whose existence we are totally unconscious.

The ultra-spiritualistic and materialistic theories are oversimplified extremes. Perceptions and phantasms are

neither purely psychical nor purely physiological, but *psycho-physiological*. Cortical centers and cortical cells are necessary conditions for the conservation of phantasms, as is evident from the fact that injury to certain cortical centers makes the storage and revival of imaginal phantasms at times impossible. On the other hand, phantasms have a cognitional element which is truly psychical in character, and as such they demand a mind or psyche capable of cognition as distinct from mere neurological function. The psychical and physiological features of the phantasm and its 'trace' are interdependent, because man is a *psycho-physiological* organism. The phantasmal 'trace,' or whatever it is that is stored and conserved, must, therefore, also be psycho-physiological.

'What, then, precisely is this 'trace' or 'vestige' or 'disposition' which underlies the phantasm or image of the conservatory imagination? Frankly speaking, we do not know. Something of the sort must be assumed to exist and be conserved; otherwise we cannot explain how the phantasms can arise after the actual perceptions have disappeared, sometimes even after the lapse of decades. It is likely that the phantasmal trace is such that a direct examination of its nature either by introspection or by experimental methods is not possible. And so the workings of the conservatory imagination may never actually become known.

The Reproductive Imagination

The *reproductive imagination* is the imagination in so far as it has the power of forming phantasms of objects and events which have been previously perceived. It should be noted very carefully that what are reproduced here in phantasmal forms are objects and events as *they have been perceived* at one time or other in actual experience, though at present they are no longer before the senses. It is not necessary that they be recognized as having been previously experienced; 'recognition' is a function of memory.

Just as we do not know exactly how the phantasmal trace is stored by the conservatory imagination, so we do not know how the reproductive imagination elaborates the phantasms from these traces. Someone says 'Times Square in New York,' and there rises up within our imagination the visual phantasm of this famous triangular thoroughfare with its crowds, theaters, stores, and bright lights. Someone mentions 'Lohengrin,' and the auditory phantasm of the wedding march begins to unfold in stately rhythm. Someone speaks of 'army grub,' and the gustatory and olfactory phantasm of corned beef and canned salmon assail the consciousness of the former soldier. And so with other experiences of the past. How are these phantasms evoked and evolved? The inner mechanism is hidden in the recesses of the mind.

Through experience we know that our imaginal phantasms are not isolated fragments of mental phenomena; they are *associated* with one another. The reproduction of related phantasms is called *association*, and the principles which condition the reproduction of a related set of phantasms are called the *Laws of Association*. That

reason and will exert a powerful influence on the reproduction of phantasms and associate them freely, can be observed in the composition of a song, a poem, a book, etc. In the present connection, however, we are concerned only with *involuntary* association.

Laws of Association

There are primary and secondary Laws of Association. The primary are: the law of contiguity, of similarity, of contrast. The secondary are: vividness of impression, frequency of repetition, recentness.

THE PRIMARY LAWS OF ASSOCIATION

The Law of Contiguity. By this we mean the tendency of the imagination, in the presence of objects or events or in the presence of the phantasms of such objects or events, to recall other objects or events *connected* with them *in time or in space*. 'Contiguity' is really a spatial concept, but here it is used in the sense of 'closeness' in time as well as in space. This law is the formulation of a fact of common experience.

If I see or imagine my childhood home, there immediately arise before me objects and events connected with that place and period of my life: neighboring houses, streets, companions, relatives, events of school life, games, adventures, etc. If I imagine World War II, this recalls the attack on Pearl Harbor on December 7, 1941, the Japanese campaign against the Philippines, Malaya, Java, Burma,

etc., or it may recall the succession of events and places connected with the Axis campaign in Europe and North Africa, etc. The techniques of art and skill all involve associations in time and space; whenever I practice or merely imagine a certain technique, a succession of temporal and spatial phantasms referring to its performance passes through my imagination. All *learning* depends on associations of objects or events contiguous in time or in space. As a rule, such associations contain elements in both time and space.

The Law of Similarity. This law states that present phantasms of objects, events, perceptions, and so forth, tend to reproduce in our imagination similar experiences of the past. We read, for example, an account of the French Revolution and are immediately reminded of the American Revolution. We see a scene on the Rhine and our imagination pictures a similar scene on the Hudson. We look at the photograph of our mother, and we recall her person. The law also applies to perceptions of taste, smell, pain, touch, temperature, etc. The *esthetic pleasure* derived from the arts of painting, poetry, sculpture, drama, opera, and so forth, is based to a great extent on imitation and the suggestion of similarly experienced or imagined things and events.

The Law of Contrast. This law states that present phantasms of objects, events, perceptions, and so forth, tend to reproduce in our imagination *contrasted* experiences of the past. It is a well-known fact that if one member of a pair of contraries is mentioned or imagined, the other member of the pair readily suggests itself: hot-

cold, black-white, rich-poor, health-sickness, young-old, up-down, north-south, quiet- loud, pleasure-pain, full-empty, and so on. Viewed superficially, this linking of contraries is one of the oddest facts of our mental life, because there seems to be no associative bond between such opposites. Upon closer inspection, however, it will be seen that the Law of Contrast is really a combination of the Laws of Similarity and Contiguity. These opposites are the extremes, the beginning and the end, of a common series; and the beginning and the end of a series are similar in this that they are terminal points. For this reason, too, it is customary to mention the extremes of a series in the same sentence, because thereby, in a way, we cover the entire series; we thus have the association of contiguity in thought and language.

Obviously, the lines of associations as expressed in these laws frequently converge and combine, so as to strengthen the bond between imaginal phantasms. We then speak of *compound, complex, or cooperative associations*. To many a soldier the word 'New Guinea' will recall the countryside, the din of battle, the death of a comrade, wounds, destruction, pride in victory, patriotism, and many other things. Reversely, there are *conflicting or obstructive* associations which impede the recall of a desired image by diverting the mind through counter-associations. We may wish, for example, to recall a certain melody; but a somewhat similar melody forces itself upon our imagination, and we are unable to rid ourselves of it, thus blocking the path for the recall of the melody desired.

The Secondary Laws of Association

Vividness of Impression. When an impression is very vivid, either in its very nature or because of its accompanying circumstances, such an impression is more readily reproduced by the imagination. No picture or description can impress us so deeply as the actual participation in a stirring event. No king will forget his coronation, no president his election, no mother the birth of her child, no author his first book, no soldier his baptism of fire.

Frequency. The more frequently an impression is repeated, the easier it is to recall. Hearing a person's name once, listening to a melody once, reading a poem once, viewing a scene once, etc., does not create a strong associative bond as a general rule. Frequent repetition, however, has a tendency to reinforce an impression, and through this repetition its reproduction is facilitated. Frequency is usually the basis of learning.

Recentness. When an impression has occurred recently, its trace is still fresh, and the reproduction of the impression by the imagination encounters little difficulty. When, however, many other impressions intervene between occurrence and recall, the traces of the older impressions are weakened and perhaps even obliterated. It may be comparatively easy, for example, to reproduce through our imagination the main events of the last week, but well-nigh impossible to recall those during the same week a year ago.

It is unquestionable that association plays a very prominent and important part in our mental life. A knowledge of the laws which govern association should

enable us to apply these laws intelligently for the practical purposes of everyday existence, particularly in mastering the techniques of our profession or occupation. A genius may be born, but even a genius must develop his native abilities.

The Constructive Imagination

The *constructive imagination* is the imagination in so far as it has the power to unite phantasms which, in *this* particular combination, have never been experienced by the subject. We observe its free workings in dreams and fancies, its controlled workings in the products of art and science. In all these activities combinations of phantasms occur which, prior to the imaginative function, represent things never perceived by the individual in question. The result of the function of the constructive imagination may be the phantasm of a single object, such as a winged horse or a castle in the clouds, or it may be the phantasms of a series of events, like the Iliad of Homer or a trip to Mars.

Except perhaps in dreams and free fancies, the workings of the productive imagination are strongly influenced, and often almost completely controlled, by the *intellect and will*. The arts and sciences are proof of the influence of intellect and will in the products of the imagination.

The Arts. We speak of the 'creations' of art. Strictly speaking, the artistic imagination does not create; it merely unites images taken from the various sensory impressions with ideas of the intellect and combines them into beautiful forms which are an idealization of the real and a realization

of the ideal. The total effect is an esthetic whole which is a work of art, a supreme achievement of the constructive imagination. The *Hamlet* of Shakespeare, the *Divina Commedia* of Dante, the *Pieta* of Michelangelo, the *Sistine Madonna* of Raphael, the *Parsifal* of Wagner, the Cathedral of Rheims — these show the productive imagination of human genius at its best, because they are an expression of culture in its highest form. Needless to say, imaginative art may assume humbler forms, as we observe it in a mother's lullaby, a child's play-acting, a boy's fancy diving, a girl's crocheting, a man's sales talk, and so forth. Even the appliances of the household are embellished by the artistic touch of man, so that a utilitarian article becomes a thing of beauty.

Science and Invention. Many discoveries and inventions of a scientific character were the result of fortunate accidents. As a rule, though, they were the outcome of laborious research. Research means the formulation of hypotheses, and hypotheses are the imaginative construction of probable assumptions concerning causes and effects. Research means the imaginative application of general principles to problematical particular instances and the imaginative synthesis of isolated facts into problematical universal laws. Research means the imaginative devising of instruments, ranging from Geiger counters for trapping individual electrons to giant telescopes for studying immeasurable galaxies of stars. Research means the imaginative development of experiments for the verification or disproof of scientific theories which may affect the welfare of entire nations and

change the course of history. Modern civilization, in a great measure, has been profoundly influenced by epoch-making inventions, such as the telephone, the locomotive, the steamship, the automobile, the airplane, the radio, and such inventions are the products of man's imagination applying the principles of science to the needs of life. There has not been a single instrument, from a wheel and a knife to a turbine generator and a rotary press, which does not show the impress of the constructive imagination of an inventive genius. Nor has there been a single science, starting from a few disconnected facts and ending in a grandiose synthesis of all relevant facts and laws, which could have developed into a system of knowledge without the aid of the imagination of a host of scientific workers.

It is true, of course, that the constructive imagination, operating with sensory phantasms only, could never achieve these results; it must be controlled and directed by the intellect and will. But it is equally true, that the intellect and will derive their data concerning the outside world from the perceptions of the external senses and the phantasms of the imagination; without this assistance, as we are at present constituted, intellect and will would be helpless powers of the organism as a whole. It would be more accurate to speak of the 'constructive imagination' as being the imagination and the intellect in collaboration.

THE *DEVELOPMENT* OF THE CONSTRUCTIVE IMAGINATION IS interesting, for it follows closely the biological development of man himself.

In *children* we observe the first stage of development. One of the outstanding activities of the constructive imagination of the child is its tendency to interpret inanimate things as living. To the little girl the doll is always a real baby, and to the little boy the teddy bear is always a real animal. Not that they actually believe it; their imaginative fancy is at work. The child also shows its constructive imagination in its play. Girls can spend an entire afternoon playing house, and a boy will build house after house with blocks. Another feature of childhood imagination is the love of fairy tales and narratives. Children will listen with rapt attention to the stories of Little Red Riding Hood and of Jack and the Beanstalk. In our day father and mother must read to them the adventures of the comic strip.

In *youth* the constructive imagination finds its outlet in games and competitive sports. In the early part of youth the games are still very imaginative, but a considerable amount of bodily activity is required. This period helps to develop muscular coordination and mental ingenuity. In the latter part of youth, the games become more and more strenuous, and the competitive spirit is strongly emphasized. Sport, for sport's sake, predominates. Games and sports serve the purpose of preparing the girl and boy for the serious duties which lie before them in after-years. At the end of youth, the element of sex enters strongly into the workings of the imagination. Sex interest is revealed in the type of books the young folks read and in the social events which they enjoy.

In *adulthood* a further radical change occurs. The constructive imagination is now employed in the serious problems of life, the foundation of future social security, the rearing of a family, the complete development of all bodily and mental faculties. What was begun in childhood as a matter of sheer fancy has grown into mighty forces for good or evil in the battle of individuals and of nations. The boy and girl have become the man and woman, upon whose shoulders rests the burden of civilization.

Some Phenomena

In our normal waking state the activities of the imagination are checked by the constant impact of stimuli impinging on the external senses and by the control of intellect and will. A completely uncontrolled imagination in our waking states is a comparatively rare occurrence. It is in *dreams* that the imagination has free play.

Dreams possess a number of characteristic features. In sleep the activity of the cortical centers is in abeyance, so that outside impressions lose a great amount of their correcting influence. As a result, dreams have a decided *appearance of reality*. There is also a *lack of coherence*. Since intellectual criticism and voluntary control are missing, the scenes and events pictured in dreams shift about in kaleidoscopic fashion, frequently ending in something entirely different from the beginning, because the imagination seizes upon an accompanying association and promptly veers off in that direction. Nevertheless, there is, as a rule, a certain *degree of consistency* in

dreams, probably due to sets or configurations of associative bonds present in the imaginal material. Since striking images stand out among the vague mass of fleeting phantasms, they acquire disproportionate value for the moment, and that probably accounts for the *exaggeration* so noticeable in dreams.

As for the *stimulus* of dream states, it is safe to assume that some dreams originate from auditory, pressure, temperature, and visceral sensations dimly experienced during sleep. Other dreams undoubtedly have their start in worries, problems, fears, unsatisfied desires, etc. Many dreams have the definite character of *wish-fulfillment*. Freud made wish-fulfillment the basis of his technique of *psychoanalysis*, but he gave it a one-sided development by insisting that the wish-fulfillment of dreams is based almost exclusively on inhibited sex desires. It is true, of course, that sex desires may and do play a prominent part in dreams, due to the repression of sex impulses in normal waking states; during sleep such impulses are practically out of control and rise to the surface, thereby producing dreams of wish-fulfillment with a sexual content. It is unwarrantable, however, and a distortion of fact, to interpret all dreams in terms of ultimate libido, as Freud and the regular psychoanalysts do. *Fear*, with its corresponding emotions, is also a dominant factor provocative of dreams, and such dreams should be interpreted as simple expressions of fear, without having recourse to a very obscure and doubtful symbolism of hidden sexuality. Thus, the horror dreams of soldiers, who have gone through the ordeal of a terrifying battle, should

be laid to the fear for personal safety and not to suppressed libidinous desires. Similarly, many dreams are the play of *indifferent* images which happen to cluster around some impressive event which occurred in a recent experience; to interpret them in any other way is to do violence to simple facts. There is no absolutely uniform pattern of dreams originating from a single type of stimulus.

An interesting phenomenon of imagination activity is *eidetic* imagery. An eidetic or eidetiker is an individual who can form images of unusual clarity and vividness, so that these images are faithful reproductions of the original sensory experiences. The power of forming eidetic images is found in some children and is lost at about the age of puberty; in very exceptional cases it persists into adulthood. If a picture is placed against a gray background, and the child scans it for 10 to 15 seconds, then, upon removal of the picture, the child apparently still sees the original picture as if projected against the neutral background; this image of the original picture is the eidetic image. The child will not only describe, but point out, the details of the picture as if the picture were still there. If the gray background is turned around, the eidetic image travels with it (apparently), and the child sees it upside down. The accurate description of the details shows that it is not a question of memorizing the contents of the picture, because the time of exposure is too brief for memorizing so many details; the eidetiker simply 'sees' the picture. Experiments have been made with 'double' pictures which represent one face when placed erect, and another face when placed upside down. The eidetiker, of course, is left in ignorance of

this peculiarity of the picture; when the background is turned upside down, the eidetiker is surprised to see a new face before him. It would be erroneous, however, to think that eidetikers 'see' the entire picture just as presented originally; the picture seems to take on detail as they visualize it by going from one part to another. Eidetic images are usually of the visual type, but experiments with other types have also been successful. Most eidetikers are able to recall their eidetic images after the lapse of some time. It is probable that the individuals termed 'lightning calculators' are really eidetikers, because eidetic children have been known to still 'see' the figures of a problem on the blackboard even after the figures were erased. In as much as the power to form eidetic images is nearly always lost at about the advent of puberty, it seems to be based on biological factors; just what these factors might be, is still unknown. Even a change in diet, in some cases, alters the eidetic imagery. E. R. Jaensch and his collaborators have done good work in this field.

It is a well-known phenomenon of imaginal phantasms that they have a certain *motor character* and *motor effect*. Actual perceptions are usually accompanied by muscular contractions of some sort. The phantasms, since they are representations of perceptions, naturally include such motor images, and as a result incipient movements of the musculature accompany phantasms. There is always the tendency present to carry out the motor part of the phantasm through appropriate muscular action. When we make an intensive task of memorizing an address, we unconsciously form soundless words with our tongue and

mouth. Imagining that we are playing a musical instrument produces in us a faint impulse of performing the action itself. The vivid imagination of a fine meal stimulates the salivary gland and induces salivation. The passenger in an automobile, sitting alongside the driver as he wends his way through congested traffic, feels the impulse to step on the brake and finds that he has pressed his foot firmly against the floor boards. Watch the crowd at a tense moment in a sports event, such as a football game, tennis match, horse race, bowling, baseball, basketball, etc., and note that practically all execute some movements reflecting the action of the players.

This motor character of phantasms explains a number of curious phenomena in human behavior. There is the fact of unconscious *imitation*. Someone yawns, and soon everyone present is yawning. Someone has a hearty, infectuous laugh, and, before we realize it, we are smiling or even laughing, without knowing what it is all about. The passion-charged actions of the actors in the 'big moment' of a drama electrify the audience on the other side of the footlights, and the audience lives the scene with the players to such a degree that it laughs, weeps, and becomes almost hysterical. Mob psychology is based on this fact. *Sleepwalking* is another instance of the power of the motor character of phantasms. In the waking state we check the motor impulse of phantasms and stop the resultant actions before they become pronounced. In sleep some persons are incapable of checking the impulse, and it then happens that motor dreams are carried out through a train of completed bodily actions. The actions performed in *hypnotism*

undoubtedly admit of a similar explanation. The hypnotized persons in a deep trance resemble sleepwalkers in so far as they are unconscious of their surroundings and cannot check the motor impulse produced by the phantasm; they differ from sleepwalkers in this, that their imagination is open to the suggestions of the operator, to whom alone they pay attention. When given a suggestion involving certain actions, the suggestion awakens the motor phantasm in their imagination, and the command of the operator is automatically carried out.

Other important, though abnormal, phenomena pertaining to the activity of the imagination are hallucinations and delusions. Some persons have subjective perceptual experiences which lack obvious sensory stimuli; although the senses receive *no relevant stimulation*, such persons erroneously perceive facts as present to the senses which are not actually there. These erroneous perceptual experiences are termed *hallucinations*. Sensations, as a rule, play their part in hallucinations, but the imaginal content plays the dominant part in the total experience; in some instances, actual sensations are a negligible factor or may be, so far as can be discovered, entirely missing. Some hallucinations involve a single sense only, others involve a combination of senses; one subject, for example, may have merely a visual or auditory or tactual hallucination, while another may experience a complex hallucination combining visual, auditory, and tactual imagery. The causes may be organic (toxic conditions, injuries, etc.) or psychic (fears, anxieties, etc.). In *delusion*, on the other hand, the subject suffers from a mental disorder which manifests itself in a

misinterpretation of the general state of affairs; delusion is due to an error of judgment rather than to an error regarding the facts immediately present to the senses. A delusion is characterized by a false belief of judgment regarding the self; such is the delusion of grandeur or of persecution, found in some forms of insanity or mental disease.

The activities in the imagination show plainly that, over and above the functions of the neural mechanism itself, some *unifying principle* is demanded, in order to account for the conservation, reproduction, and construction of phantasms. Since these phantasms combine the general qualities of the various sense objects into unified wholes, the separate cerebral centers, individually and collectively, are incapable of effecting the unification. Here again, man is seen to be an *integral organism*, in which the biological functions and the psychic functions are coordinated into a vital unit.

Summary of Chapter VIII

In order that we may have an abiding knowledge of objects in their absence, we must retain the contents of perceptions in the form of images. The imagination performs this function.

1. *The Concept of imagination. It is the power to form mental images or phantasms of perceived objects, together with the ability to reproduce these images or phantasms even in the absence of the perceived objects.* Its functions are: the formation and conservation of images; their reproduction; the construction of images into new combinations.

2. *The Conservatory imagination.* Ultra-spiritualist philosophers place the conservation of phantasms in the soul or mind alone; materialistic philosophers place it on a purely neurological basis. The former are wrong, because bodily factors facilitate and impede conservation; the latter are wrong, because psychical factors are involved, in as much as phantasms contain the mental element of conscious cognition. Imaginal phantasms have a *psycho-physiological* character. We do not know the exact nature of the 'trace' which underlies the phantasm, nor do we know how it is conserved.

3. *The Reproductive imagination.* It is the power of forming phantasms of objects and events which have been previously perceived. The reproductions of related phantasms is called 'association.'

4. *Laws of Association.* The primary Laws of Association are: contiguity in time and space; similarity; contrast. The secondary Laws are: vividness of impression; frequency; recentness.

5. *The Constructive imagination.* It is the power to unite phantasms which, in this particular combination, have never been experienced by the subject. Constructive imagination plays a prominent part in the arts and sciences. It passes through various stages of development in childhood, youth, and adulthood.

6. *Some Phenomena.* Dreams are the products of free imagination. Psychoanalysis makes use of dreams. *Eidetic* images are images of unusual vividness and clarity, so that they are faithful reproductions of the original sensory experiences. These images seem as if projected externally. Phantasms have a certain *motor character*; incipient movements of the musculature accompany phantasms. The motor character of phantasms results at times in imitation, sleepwalking, and in hypnotic actions. *Hallucinations* and *delusions* are abnormal phenomena in connection with the imagination.

Like the central sense, the imagination ultimately demands a vital principle as the principle of unification.

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Chapter 9

MEMORY

IN REVIEWING THE PROGRESSIVE STAGES OF OUR SENSORY knowledge discussed so far, we find that this knowledge proceeds along the following lines. The exteroceptive, interoceptive, and proprioceptive senses respond to stimuli from objects and send nerve impulses to the brain; the response is a definite sensation of color, sound, flavor, pain, etc. The central or synthetic sense then consciously compares, distinguishes, and combines these various sense qualities and refers them to their respective objects, thereby forming perceptual wholes. The imagination thereupon accepts the data of the central sense and fashions a phantasm or image of the perceived object; this phantasm leaves a trace or disposition in the imagination, so that the phantasm is revivable, either voluntarily or involuntarily, in the absence of the object and its stimuli.

The objects of sense do not remain in our presence. If the knowledge of these objects is to be true knowledge, we must be able to refer the information contained in the phantasms to the definite objects for which they stand. We must, therefore, be able to *recognize* (recognize, i.e., cognize or know again) the objects and the experiences

represented (represent, i.e., make present again) by the imaginal phantasm. Recognition is the function of *memory*.

The Concept of Memory

By *sensory memory* we understand the *power to recall past objects and states of consciousness and recognize them as having been present in former experiences*. The characteristic feature of memory is the concrete recognition of something as having been present before.

Many psychologists and philosophers refer the entire process of the retention and reproduction of past images or phantasms to memory. The expressions 'memory trace' and 'memory image' are common phrases. Many also bring the Laws of Association into connection with memory. This is permissible, but it must be borne in mind that the retention and reproduction of the images of objects and events does not necessarily involve memory. Oftentimes objects and events, which were actually a part of past experiences, are reproduced by us in phantasmal form at a later date, but we do not recognize and remember them as having been previously experienced; when confronted by such objects or events, or when someone calls our attention to them, we confess that we "do not remember them." We thus have retention and reproduction, but not memory. Hence, retention and reproduction are more properly functions of imagination than of memory. The *distinctive element* of memory is the *recognition of past objects and events*, not their phantasmal retention and reproduction.

Maher gives the following concise description of the *difference* between imagination and memory. "The chief features in which remembrance differs from mere revival of images are: (1) The freedom of the imagination as to the number and variety of its acts, the limited character of our recollections; (2) the casual and variable order of the former states, the serial fixity and regularity of the latter; (3) the isolated nature of imaginary events, the solidarity or relatedness of remembered occurrences, which are inextricably interwoven with multitudes of other representations; (4) finally, the peculiar reference to my own actual experience involved in the act of identification or recognition, which forms part of the recollection but is absent from the creations of fancy."¹

The reproductive imagination and memory are closely connected. The imagination supplies the phantasm of a former experience, and memory recognizes the phantasm as the representation of an experience had before. Without this recognition, we have the activity of the imagination, but not that of memory. However, for the sake of convenience, it may not always be necessary to make too close a distinction between the reproductive activity of the imagination and the recognitive activity of memory.

There are *two main features* to memorial activity: the recognition of the past, and the estimation and measurement of the past.

Recognition or Remembrance. By this is meant the apprehension of the sameness of two representations or perceptions, one present and one past. I am aware that my present representation or perception is identical with a

representation or perception which I have had on a former occasion.

It may be a question of two perceptions, as when I see a traffic policeman on a corner and remember that I had seen him there yesterday. Or, of two representations (phantasms), as when I imagine Times Square in New York and then remember that I also imagined it last week. Or, of a perception and a representation, as when I see a friend and then remember that I had thought of him (imagined him) only an hour ago. Or, of a representation and a perception, as when I imagine the Old Faithful geyser and remember that I had seen it a number of years ago. These are instances of recognition or remembrance, and the past and present are always linked together.

Mere knowledge of the sameness between one thing and its representation is not sufficient to classify this knowledge as 'remembrance.' For example, I visit a man in his home and I see, let us say, his photograph on the mantle-piece while he is conversing with me. Although I perceive the sameness between this man and the man on the photograph, this is an instance of mere knowledge without memory, because both perceptions occur simultaneously. On the other hand, if I see the man now and recall that I have seen him formerly. it is a case of memory and not of mere knowledge.

The objects of memory are always accompanied by a feeling of *familiarity*, of *acquaintanceship*. Oftentimes we see an object or person, or we hear a melody, or we feel a pain; almost immediately the object, person, melody, pain, etc., seems familiar to us, as if we had had the experience

before. A little effort may recall the exact occasion of the former experience, and then the act of memory is complete. It may happen, though, that no amount of effort enables us to recall the occasion; while it is possible that we may be mistaken concerning the fact of a former experience, this 'familiarity' probably indicates a confused and vague remembrance.

Estimation and Measurement of the Past. It is a fact of everyday occurrence that we *date* and *localize* our experiences in memory by placing them at a definite point in the chain of events reaching into the past; and it is a further fact that we concretely *measure* the time when the past experience took place. How is this estimation and measurement accomplished?

The *psychological process* is as follows. The stimulations of the external senses and the perceptions of the central sense occur successively, so that we have a series of internal conscious states following one after the other. We can gauge the slowness or rapidity of the flow of our internal acts by the rhythmic movements of the breathing of the lungs or of the beating of the heart. We thereby possess a means of estimating and measuring subjective time in a concrete manner. By using this standard of *subjective time* we can now estimate and measure the objective time involved in the sensations and perceptions of objects. The succession of events as we perceived them is fixed according to a 'before' and 'after' in the very series itself. If we now represent to ourselves this internal series of perceptual events, from the present backwards, we not only apprehend 'time' and the 'duration' of time concretely, but

we are able to 'date' and 'localize' a particular event by placing it at a definite point in the series of past events. Certain external events in this series, such as night and day and the annual seasons, stand out in strong relief and become fixed points for dating other events. In this manner we become accustomed to using subjective and objective time for dating and localizing events in memory.

Brutes, too, possess memory. A dog remembers the location of his kennel, recognizes his master, and knows what to do or not to do at a certain command. A delivery-wagon horse remembers all the stops on his regular route. Pigeons remember the cote to which they belong. Bees roam far afield, but they return unerringly to their own hive. Robins discover a cherry tree or a strawberry patch and always find their way back. The training of animals is based on the fact of their being able to remember a certain sequence of actions. Many of the conditioned reflexes induced in the animal experiments of Pavlov and others would be impossible, if the animals had no memory.

Animals have also a concrete estimation of time. The cattle on the farm wend their way to the barn when milking time arrives. Some dogs will stand at the gate every evening at the same time, awaiting the master's return from work. Pigeons remember their regular feeding time and congregate accordingly. In the salivary conditioned-reflex experiments, if the routine calls for food to be given one minute after the signal, the animal remembers the time interval, and salivation does not start until toward the end of the interval. Such instances and experiments prove that animals have memory and estimation of time.

In all that has been said here about time and its estimation, it should be noted that it is the sensory memory that is involved. The abstract concept of time is an object of intellectual insight and is treated in cosmology.²

Learning

In as much as retention and recall play such a predominant role in remembering and forgetting, psychologists have conducted numerous experiments in memorizing, hoping thereby to obtain a better understanding of the inner workings of memory. Many interesting facts have been brought to light by the various methods employed. It would serve no useful purpose to give a detailed description of these methods and their results, but a few of the outstanding facts will be recorded. Unfortunately, most experimenters fail to make a distinction between sensory and intellectual memory, and in consequence materials of both the sensory and intellectual type are used rather indiscriminately, so that it is practically impossible to restrict ourselves here to the data of sensory memory.

In order to test the ability of memory experimentally, something must be 'learned.' Then it is possible to examine how much of the material is remembered and in what manner it is retained, and a statistical score of successes and failures can be established. A number of variable factors enter into the problem of learning: the quantity and quality of the material, the time of learning and other circumstances. These items should make a difference, and they do.

One thing discovered very early in all experiments is the fact of *individual differences*. Memory is not a mechanical device, and not everyone reacts to the same learning methods in the same way. Some persons have a better memory than others. It is in the last analysis a native endowment, dependent on the individual's psycho-physiological organism. To offset these individual differences, psychologists use groups of approximately the same age, educational background, etc., in order to strike a fair average in their experiments. In this connection it is worthy to note that the power of memory shows no marked difference in the *two sexes*. With respect to age, young persons in childhood and adolescence are more adept in word and rote learning, but less adept in learning material according to its intellectual content; the reverse is true of adults. In youth the imagination develops rapidly, while the intellect develops more slowly, due to the fact that the intellect must obtain its data from the central sense and imagination. Adults, therefore, neglect the practice of word and rote learning in favor of memorizing facts and their intelligible relations. Memory is at its best in the years from twenty to thirty, and from then on the curve of learning declines steadily but slightly until far into middle age. Continuous practice will keep the learning curve at a fairly even level until almost into old age. Memory becomes poor in old age because of the general deterioration of the organism as a whole.

In experiments with the *quantity* of material to be learned, the usual procedure is to have the subject read a list of numbers or nonsense syllables and then observe how

many items he can repeat after one presentation. The amount of material remembered after a single presentation is an index of the 'memory span.' No matter what methods or materials are used, there is a *natural limitation* in the amount that can be absorbed by the memory at a given time. This limitation is in all probability due to the fact that after a while the refractory phase of neural activity begins to show its effect.

The *quality* of the material used makes a great difference in learning. Meaningful material is more easily learned than meaningless material. It is possible to connect meaningful words mentally through associative bonds, so that one word will recall the other. It is much more difficult to memorize a list of nonsense syllables like 'zut,' 'koq,' 'gif,' etc., than it is to memorize meaningful words like 'rose,' 'foot,' 'here,' etc., because nonsense syllables must be learned by a sheer act of memory without aid from natural or artificial associations. Due to this fact, memory, as memory, can be tested much better in its power of retention and recall by means of nonsense syllables and numbers.

The *time* element also makes a difference. Given the same quantity and quality of material to be learned, it makes a difference whether five minutes or thirty minutes are given to memorize a lesson. A longer period, with the possibility of repeating the learning process, gives the memory trace a better chance to become set and fixed in its character. Similarly, if the material is allowed to be 'relearned' after an idle period of retention, memory can be tested by noting the 'time saved' in rehearsing as compared to the time required for the first learning. The memory

trace is strengthened considerably by relearning, and recall is facilitated. This *spaced practice*, as it is termed, is of considerable importance in learning extensive material. The periods between relearning should be filled out with a totally different occupation, in order to obtain best results. 'Cramming' is a poor method of learning. The neural mechanism, after a period of protracted activity, always needs time for rest and recuperation; it cannot be active without the expenditure of nerve energy, and this energy is limited in amount. The refractory phase sets in, and the nerves demand a period of relative inactivity. To continue the memorizing of the same material during the refractory phase of nerve activity is not only harmful to the nerves themselves, but does not help the task of memorizing. After a certain span of time, which naturally differs with different individuals, a point is reached where the memory is saturated and can absorb no more.

The period of rest consists in some form of relaxation for the particular set of cortical centers used in the previous task of memorizing. Just what the form of relaxation happens to be, is of minor importance. Experiments, however, show that the best method is to apply one's self to the memorizing of a task just before retiring at night, provided one is not too fatigued, and then relearn it in the morning. The traces of the phantasms impressed upon the nervous elements thus have a better chance to become strengthened. This strengthening of the traces is probably due to the *perseveration* tendency of images, namely, the tendency of images to reappear soon again in

consciousness. We are confronted with a curious phenomenon of the retention of images, reminiscence.

Reminiscence

By *reminiscence* is meant the spontaneous and gradual improvement of memory with a subsequent higher score in recall, without a relearning or rehearsal of the memorized material.

If true, we face a paradoxical situation. It is a known fact, of course, that we usually do not retain and remember all we attempt to learn. It is also a known fact that memory images fade rapidly after learning, so that the ability to revive them deteriorates as time progresses unless reinforced by relearning and rehearsal. Reminiscence would be the opposite. It implies that the memory traces, if left to themselves during a period of mental incubation, are not inactive, but pass through a stage of latent organization and of gradual development in the subconscious recesses of the mind.

Certain *experiences* apparently indicate that there is a rhythmic character to the memory curve, a waxing and waning of the memory trace. According to this view, spaced learning and perseveration would receive a neat explanation. Perseveration is a fact. Images have a tendency to crowd up to the level of consciousness not long after the original experience. We hear a striking melody; and the melody continues to haunt us for hours, periodically running through our mind. Things we have heard or seen float in and out of consciousness in a sort of rhythmic

succession, at least for a time. In spaced learning, as we know, we can memorize more material and are able to recall this material more effectively than if we used the same amount of time in a single span of learning. It would seem that the curve of retention is like a wave, with crests and troughs; when the period of relearning coincides with the crest of subconscious memory activity, the traces are reinforced and thereby strengthened.

The 'inspiration' of genius lends color to this theory of reminiscence. The biographies of great artists narrate many instances where an artistic theme, left dormant for a while, suddenly flashed through their mind with the perfection of a completed product. It was as if the imaginative power or, if we wish, memory worked subconsciously on the theme and, without interference or aid from any conscious course, brought it to fruition. A stubborn problem is often best solved by laying it aside for a period of time and then taking it up again. Oftentimes, too, when a name or word eludes all efforts at recall, we brush the whole matter aside and occupy our mind with something else; sometime later, and quite suddenly, the desired name or word will probably burst upon consciousness. Do such experiences prove the fact of 'reminiscence,' so that a spontaneous and gradual consolidation of memory traces actually occurs in the workshop of the subconscious mind? The professional psychologists have taken up the problem.

Experiments have been made in an effort to prove or disprove the alleged phenomenon of reminiscence. The method used was to have subjects learn a memory task.

Tests consisted in comparing the results of immediate recall and delayed recalls, the subjects being kept in ignorance of the fact that delayed recalls were to be made. Philip Ballard (1913) undertook a large number of experiments with school children. Taking the score of the immediate recall as 100, he found their average score after one day to be 111, after two days to be 117, after three days to be 113, after four days to be 112; and from there on the score dropped gradually. Nicolai (1922), exposing a box of assorted toys to children, also found that their average score of recall had risen from 5.4 objects to 6.3 in one hour, and to 7.8 in twenty-four hours; even after four weeks their average score was 7.4. Nicolai was certain that no rehearsal had been possible at least for the first hour, because their time during this hour had been filled out with school work. Welborn and Killiam (1934) made tests with college students. In the tests the memorized material was presented to the students in two forms; some sentences were presented verbatim, while other sentences were presented according to the substance of the subject matter. Tests of verbatim items after 10 minutes and after 30 days showed a score of 37.7 and 33.5 respectively; tests of substance items for the same intervals were 19.1 and 26.9 respectively.

On the other hand, experiments made by Williams (1926), Warner Brown (1923), Raffel (1934), and others, show no latent consolidation and improvement. Woodworth³ is convinced that the facts can be explained by chance recall and by the 'condition of readiness,' and there is no need to have recourse to 'reminiscence.'

The problem is admittedly a thorny one. Since the process of recall itself is not open to inspection, the only available method is that of the recall score. This method would be good, if it were possible to exclude all rehearsal on the part of the subjects. It is not a question of deliberate rehearsal on their part, but of sporadic, intermittent rehearsal of a casual sort; the subjects may just 'think about it' off and on between tests, without even realizing that this amounts actually to rehearsing. A control over this kind of indirect review of the memorized material is next to impossible. Following this line of thought, G. O. McGeoch (1935) made experiments with school children. After the tests, upon her inquiry, it was discovered that approximately 77 per cent admitted some rehearsal; oddly enough, though, the recall score of those who did not review the material also showed improvement.

And so opinions differ. The controversy is not settled. Experiments are still being conducted, to determine, if possible, the exact nature of the phenomenon.

Retroactive Inhibition

Psychologists understand by *retroactive inhibition* the tendency of mental activity to impair the recall of memorized material, if this activity is placed between the time of learning and the time of recall. The term 'retroactive inhibition' is open to misinterpretation. The expression might be understood to mean that such an activity is 'retroactive' in the sense that the effect of its influence reaches back into the past beyond the point of

time when the activity itself, as the cause, actually occurred. Such a view would be equivalent to the statement that the effect is prior to its producing cause — a patent impossibility. Psychologists, of course, do not attach such a meaning to the term. What they intend to imply is, that mental activity, interpolated between learning and recall, *interferes* in some manner with the recall of previously memorized material; in other words, such an interpolated activity has the tendency to make us forget what has been learned immediately before.

The *fact* itself is certain. Common experience shows that best results in memorizing are obtained, if a period of rest follows the period of learning; the results are not so good, if the period of learning is followed by strenuous mental activity of the same or of a similar kind. Psychologists observed the same fact in their psychological research work on memory.

Since the turn of the century, many *experiments* have been made to determine the character of retroactive inhibition. Muller and Pilzecker (1900) had observed that recall after a period of idleness was more than 50 per cent better than when learning was immediately followed by intense mental activity. Muller and Pilzecker were the first to call attention to the phenomenon of 'perseveration,' and they interpreted this perseveration as a consolidation of the memory traces, so that the traces have the natural tendency to re-occur in consciousness for a time. Retroactive inhibition, then, would hinder this consolidation of the memory traces, in as much as intense mental activity, following a period of learning, would hinder the original

traces from going through their normal phase of consolidation. Viewed this way, retroactive inhibition is a form of *anti-consolidation*.

While not all psychologists agree with the Muller and Pilzecker theory of anti-consolidation, their experiments confirm the fact of retroactive inhibition in general. It was found, however, that the retroactive inhibition of interpolated mental activity depends on the *type of activity* to a great extent. Retroactive inhibition is strongest when the interpolated *material* is rather *similar in form*, though of a *different content*, to the original material memorized. When the interpolated material is of a markedly different character, inhibition is not so pronounced; but any type of strenuous mental activity exerts an inhibitory effect in some degree. The same situation prevails when the mental operations are similar or dissimilar in type. Quite naturally, retroactive inhibition will be strongest when both material and operation are similar to, and weakest when material and operation are dissimilar to, the material and operation found in the original task of learning. Experiments were made along these lines by Robinson (1920), Skaggs (1925), McGeoch and McDonald (1931), Nagge (1935), and others. All revealed the fact that retroactive inhibition occurs, but they do not seem to confirm the theory of anti-consolidation as propounded by Muller and Pilzecker. Muller and Pilzecker maintained that the factor in retroactive inhibition which hindered the consolidation of the memory traces was the *strenuousness* of the interpolated mental activity. Were the 'strenuousness' the factor, the similarity or dissimilarity of the interpolated material or operation, with respect to

the material and operation of the original task, should not influence the recall one way or the other; so long as the interpolated activity is not strenuous, consolidation of the traces and subsequent recall should proceed normally. These more recent experiments, however, show plainly that *similarity of form* in the material and operation is the disturbing factor in retroactive inhibition, even though perhaps not exclusively.

There is a further point to consider. In the anti-consolidation theory of Muller and Pilzecker the *time element* seems essential. In order that the traces can consolidate properly, a period of relative rest should follow immediately after the period of original learning. Given this period of rest for consolidation, retroactive inhibition should not occur. But it does occur. Muller and Pilzecker found that even a brief pause after learning eliminated the effect of retroactive inhibition to a large extent. On the other hand, Robinson (1920) and McGeoch (1933) found that any activity interpolated between learning and recall, whether at the beginning or middle or end of the interval, brought on retroactive inhibition. Whitely (1927) and von Restorif (1933) maintain that inhibition will take place and diminish recall, if the mental activity immediately precedes the original memory task instead of being interpolated between learning and recall; such an inhibition would be proactive, not retroactive.

In view of these findings, some psychologists prefer the *transfer or interference* theory of DeCamp (1915) and Webb (1917) to the anti-consolidation theory of Muller and Pilzecker. According to the transfer theory, the original and

interpolated activities intermingle, so that the two sets of traces become a single mixed set with subsequent confusion of recall results, or the traces of the original material are used with the traces of the interpolated material and become modified thereby.

It is questionable whether the anti-consolidation and the transfer theories are strictly antagonistic and exclusive. The facts seem compatible with both theories. Muller and Pilzecker may have been mistaken in ascribing restrictively the effect of retroactive inhibition to the 'strenuousness' of the activity interpolated immediately after the period of original learning; however, the facts brought to light in the experiments of recent years do not necessarily rule out the possibility of a consolidation of the traces. Both the transfer theory and the anti-consolidation theory are plausible interpretations of the facts discovered, but each may possibly be only a partial interpretation of all the facts involved. Further investigation is still needed.

If we now turn our attention to the familiar phenomenon of *forgetting*, we find that normal forgetting is accounted for by two main factors. The first is the *natural fading* of the memory trace. Unless an experience is recalled from time to time, so that the trace is strengthened and made ready for further recall by associative bonds of some sort, the lapse of time makes the trace weaker and less capable of recall. It is a question, however, whether the trace is ever completely obliterated, because sometimes past events, long forgotten, are recalled with a startling vividness of detail. The second factor is the effect of proactive and retroactive *inhibition* on the part of interfering mental

activity. The present discussion brings out this point. Proper methods of memorizing will retard the negative process of forgetting by furnishing aids toward the consolidation and strengthening of the traces.

Recall and Recognition

Recall is the mental reproduction of a former stimulus or experience. Recall, of course, is dependent on the trace left by the former stimulus or experience. If this trace should have become obliterated for some reason, recall is impossible; if the trace is still present, no matter in how strong or weak a condition, recall is, theoretically at least, always possible.

Recognition is the consciousness that the stimulus or experience now present has been present formerly. It also is dependent on the trace left by the former stimulus or experience. If this trace were obliterated, recognition would be impossible; the present stimulus or experience would indeed be the repetition of a former stimulus or experience, but it would not be 'recognized' or 'remembered' as such and would simply be considered as being present for the first time. The same trace, therefore, is active in both recall and recognition.

It would be erroneous, however, to judge from their mutual dependence on the memory trace that the functions of recall and recognition are identical and to state, as Stevenson Smith (1927) does, that there is no definite difference between them. Mutual dependence on something does not necessarily mean identity.

The facts show that recall and recognition are *distinct functions*. We can have recall without recognition, and we can have recognition without recall. Consider the following experiment. A subject is made to memorize a list of 50 meaningful words. After two days he is told to write a list of 50 words, including in this list all the words of the original list which he remembers; he is then requested to make a check mark back of the words which he recognizes as having been on the original list. On comparing the two lists, we find the following (here, of course, hypothetical) results: 20 correctly checked words, recalled and recognized; 30 unchecked words, supposedly not on the original list. Upon examination, however, we find 20 entirely new words among the unchecked words and 10 of the original list; these 10 were, therefore, recalled but not recognized. The score: recall, 60 per cent; recognition, 40 per cent. In actual experiments the results will, in all probability, be somewhat different; but something of the sort usually happens, showing that more items are recalled than are recognized. And if the remaining 20 unrecalled and unrecognized words of the original list are now mixed with 30 new words, so that a new list of 50 words is presented to the subject, he will, in all probability, be able to pick out a fair number of words which he now recognizes as having been on the original list, though they were not recalled in his test list. Here, then, we have recognition without recall, while in the test we had recall without recognition and also recall with recognition.

Everyday experience confirms these findings. We sometimes have recall without recognition. In an idle

moment of relaxation we may hum what we think is a spontaneous melody of our own composition. Later on, we hear an orchestra on the radio play a piece which contains the main features of this melody. We had most probably heard the melody on a former occasion and recalled parts of it, though we had not recognized it as a previous experience. It happens, too, that authors are guilty of what may be called 'unconscious plagiarism.' They read something striking, and it makes an impression; but they soon 'forget' all about it. At a future date, they have occasion to write on this particular subject. Among the matter written may be found a few sentences which, as a matter of fact, are practically verbatim repetitions of what they had read formerly, although they are unaware of this fact; it is an instance of recall, but not of recognition. The reverse is also true. Somebody speaks to me of a person who is supposed to be a mutual acquaintance; he may relate place, date, incident, conversation, etc., but to no avail. Upon showing me a snapshot of the person, I now recognize him, though up to that moment recall was impossible. It often happens, too, that we cannot recall a certain song or orchestral composition; but we have immediate recognition of it, when we hear it again.

Recognition without recall is a very frequent occurrence in memorizing, let us say, a lengthy poem or an address. After having read it over a few times, we will be able to recall some parts of the poem or address, but most of it we cannot recall. When, however, we glance over the poem or address for relearning, we experience no difficulty in recognizing it in its entirety. The trace is present, but too

weak to be activated into full recall; the item itself, though, when presented, is readily recognized as having been presented before.

We thus come to the conclusion that recall and recognition are distinct functions. Were they identical operations, the presence of the one would of necessity involve the presence of the other. When the one can be present and the other absent, they must be diverse operations.

There are a number of *characteristic differences* which mark off recognition from recall. They show that recognition and recall are not identical functions. T. V. Moore⁴ enumerates the main ones.

Complexity of detail in the original stimulus creates a greater difficulty for recall than it does for recognition. The details of a poem, for example, may be incapable of recall after a single reading, but their recognition should be an easy matter. A musician may not be able to recall the details of a musical score after hearing it for the first time, but he probably would have little difficulty in recognizing the piece when hearing it again. Increasing the number of words in a test makes recall more difficult, but the recognition of the list itself is made scarcely more difficult on that account. A mechanic may find considerable difficulty in recalling all the parts of a complicated machine, but he recognizes each part when he sees it. Children are often unable to recall the exact spelling of lengthy words, but they recognize the words when reading.

Recall is affected more adversely by *retroactive inhibition* than is recognition. Strenuous mental activity,

following immediately after a memory task, interferes with the recall of the contents of this task but it does not interfere with recognition. The memorizing of two poems in succession, similar to each other, brings on retroactive inhibition, and recall is thereby impaired; but it does not impair the recognition of the poems. A lesson in Italian, succeeding a lesson in Latin, induces retroactive inhibition, because of the similarity of form existing in the two lessons; recall is impeded, but recognition remains relatively intact.

Primacy and recency influence recall more than they do recognition. When memorizing a series of items, such as a list of words, syllables, or numbers, it has been found that the first and last items of the series, all things being equal, are retained better and can be recalled easier than the middle items of the same series. The earliest (first, primary) and the most recent efforts in learning have an advantage, so far as retention and recall are concerned, over the efforts which occur in between. The fact itself is beyond dispute. Psychologists offer the following explanation. The beginning of a series receives full attention, because nothing precedes it; hence, the impression of the memory trace is deeper and stronger. The memory trace of the middle of the series is interfered with by the proactive inhibition of the first part of the series and by the retroactive inhibition of the last part of the series. The last part of the series is not interfered with by retroactive inhibition, because nothing follows it. The middle part of the series, no doubt, produces a retroactive inhibition upon the first part and a proactive inhibition upon the last part. But the first and last part of the series thus suffer from only one

factor of inhibition, while the middle part suffers from two factors. Whatever may be the true explanation of the fact, primacy and recency are advantageous for recall. As for recognition of the items of a series, the first and last parts have no advantage over the middle part; all are recognized with equal facility.

A *single rehearsal* makes recall difficult, but not recognition. As a rule, the material, if somewhat extensive, must be rehearsed a number of times before it can be effectively recalled. The recognition of this material, however, is much easier after a single rehearsal than its recall. After a single rehearsal, a subject may recall but a few items from a list of words; when presented with the words, however, the subject will readily recognize many more words as present in the list than those which he was able to recall.

Meaningful material facilitates both recall and recognition, but recognition is affected more than recall. Nonsense syllables are much harder to recall and to recognize than meaningful words. Similarly, memorization, with subsequent recall and recognition, of material in one's native language is far easier than that in an alien language. Obviously, too, the recognition of meaningful material is not as difficult as the recognition of material without meaning.

The *will to remember* is an important factor for recall and recognition, but more important for recall than for recognition. Since recall is a more difficult operation than recognition, the will to remember naturally benefits recall more than recognition.

These facts prove that recall and recognition are distinct functions. In ordinary conversation we seldom make the distinction, using both terms indiscriminately, but the distinction is there and should not be overlooked.

Pathology and Memory

Pathological disturbances of memory throw the functions of retention and recall into high relief. The causes of such disturbance may be either organic or psychogenic. The *organic* causes involve a destruction or impairment of cerebral nerve tissue, due to injuries (a fall, a head wound, etc.), disease (syphilis, etc.), poisoning (alcohol, carbon monoxide, etc.), and similar agencies. The *psychogenic* or mental causes involve a functional impairment, due to excessive mental strain, emotional shock, hysteria, and so forth. The resultant amnesia differs in the two types of cases. In the cases where organic factors are the cause, amnesia takes the form of inability to store new impressions, while the power to recall impressions stored prior to the onset of the cause remains relatively intact. In the cases where psychogenic factors are the cause, amnesia takes the form of inability to recall impressions of the past, but the power to store new impressions following the onset of the cause remains relatively intact. At times, of course, both organic and psychogenic causes are involved, and in such cases the impairment of memory is more pronounced and general in character. Psychogenic amnesia usually clears up rapidly of its own account. Organic amnesia is not so amenable to treatment and cure, especially where

cerebral lesions have occurred; where poisoning is the cause, the elimination of the poison frequently leads to partial or complete restoration of memory. Psychogenic amnesia is more in the nature of retroactive inhibition, while organic amnesia is more in the nature of a partial or total inability of the memory traces to register, due to the partial or total destruction of a section of nerve tissue itself.

It is thus clear that retention, recall, and recognition are distinct functions. It is also clear that the imagination cannot function in the absence of an object without retention and recall. Either, then, imagination and memory are parallel powers, both utilizing the same material through retention and recall; or retention and recall should be assigned to imagination, leaving recognition and the estimation of time as the proper functions of memory. The latter view seems preferable.

Summary of Chapter IX

Memory is one of the internal senses.

1. *The Concept of Memory.* By sensory memory we understand the power to recall past objects and states of consciousness and recognize them as having been present in former experiences. The distinctive element of memory is the recognition of past objects and events, not their retention and reproduction. The two main features of memorial activity are the recognition of the past and the estimation or measurement of the past.

Recognition or remembrance is the apprehension of the same-ness of two representations or perceptions, one present and one past. By the *estimation* and *measurement* of the past we mean that we date and localize our experiences in memory by placing them at a definite point in the chain of events reaching into the past and concretely measure the time when the past experience took place. *Brutes* also possess memory in these two features.

2. *Learning.* Experiments in learning reveal how much of the memorized material is remembered and in what manner it is retained. There are a number of variable factors which enter into the problem of learning: the quantity and quality of the material, the time of learning, and other circumstances. Generally speaking, 'spaced learning' is the best method of memorizing; this fact is probably due to the perseveration tendency of images.

3. *Reminiscence.* By this is meant the spontaneous and gradual improvement of memory with a subsequent higher

score in recall, without a relearning or rehearsal of the memorized material. It implies that the memory traces, if left to themselves during a period of mental incubation, are not inactive, but pass through a stage of latent organization and of gradual development in the subconscious recesses of the mind. Opinions differ with regard to the existence of reminiscence.

4. *Retroactive Inhibition*. By this term psychologists understand the tendency of mental activity to impair the recall of memorized material, if this activity is placed between the time of learning and the time of recall. The fact itself is certain, as proved by common experience and by psychological experiments. Retroactive inhibition is strongest, when the interpolated material is similar in form, though of different content, to the original material memorized; it also occurs when the mental operations of the interpolated activity are similar to those of the original task.

Muller and Pilzecker have advanced the theory that the strenuousness of interpolated activity hinders the consolidation of the memory trace. Their theory is the *anti-consolidation* theory of retroactive inhibition. Many psychologists prefer the *transfer or interference theory* of DeCamp and Webb. According to this theory, the interpolated and original traces become a single mixed set, or the traces of the original material are used with the traces of the interpolated material and become modified thereby.

Forgetting is due either to the natural fading of the memory trace or to proactive and retroactive inhibition.

5. *Recall and 'Recognition*. They are distinct functions. We can have recall without recognition, and recognition without recall. If they were identical, the presence of the one would involve the presence of the other. There are a number of *characteristic differences* between recall and recognition.

6. *Pathology and Memory*. The causes of the pathological disturbances of memory are either organic or psychogenic. The former involve a destruction or impairment of cerebral nerve tissue, due to injuries, disease, poisoning, and similar agencies. The latter involve a functional impairment, due to excessive mental strain, emotional shock, hysteria, and so forth. Organic amnesia takes the form of inability to store new impressions, while the power to recall impressions stored prior to the onset of the cause remains relatively intact. *Psychogenic amnesia* takes the form of inability to recall impressions of the past, but the power to store new impressions following the onset of the cause remains relatively intact.

Retention, recall, and recognition are distinct functions. It seems preferable to assign retention and recall to imagination and consider recognition and the estimation of time as the proper functions of memory.

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1 *Psychology*, 9th ed. (Longmans, Green, 1930), p. 165

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3 *Experimental Psychology* (H. Holt, 1937), pp. 64-68

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Chapter 10

INSTINCT

SO FAR WE HAVE EXAMINED THE EXTERNAL SENSES AND THREE OF the four internal senses.

The purpose of the entire process of sensory knowledge is to make us acquainted with ourselves and with the objects of the external world, so that we may be able to adjust ourselves to our environment in accordance with the needs of our *well-being* as individuals and as members of a species. The individual must live, and the race must survive; that is the law of nature. In brutes and men the knowledge acquired

by the senses must serve the ultimate demands of the well-being of the individual and of the species. Knowledge thus acquired, however, is insufficient to achieve the realization of the well-being of the animal organism in all its necessary phases. This realization is achieved to a great extent through the activity of the fourth and last of the internal senses — *instinct*.

The Concept of Instinct

The term *instinct* (Lat., *instinguere*, to incite, to goad) connotes a drive, an urge, an *impulse to action*, analogous to the prodding of an animal by a goad or spur, urging it to move forward toward a goal. The term designates the impulsive tendency toward actions which are conducive to the *well-being* of the individual or of the species, either by attaining what is good and useful or by avoiding what is evil and harmful. The term also implies that the impulse to such actions is a *native endowment* of the organism, independent of whether or not the individual has a 'logical understanding' of the purposiveness of such actions or of the good to be attained and of the evil to be avoided. Finally, the term is usually employed to designate the impulse to a definite set of actions serving the well-being of the individual or the species prior to any learning by experience on the part of the individual performing the actions.

Besides this dynamic element in instinct, there is also the *cognitive element*. Even though the term 'instinct,' as commonly used, is viewed primarily as referring to action, instinct does not exclude knowledge. As a rule, and perhaps always, men and animals acting instinctively are aware of their actions, even if they are not aware of the 'why and wherefore' of such actions; they know what they are doing when they do it, though the 'reasons' for their action may be little understood or not understood at all.

Such is the general concept of 'instinct' in popular parlance. This concept is sufficient as an approach to the internal sense under discussion. How far this concept is justified, will become clearer at the end of our investigation.

The Existence of Instinct

In order to determine whether such a thing as instinct exists, the behavior either of men or of animals can serve us as a guide in our investigation. In the case of human behavior we have the advantage of introspection; but we also have the disadvantage that intellectual activity controls our actions to such a degree that it is difficult to discern where instinct ends and intellect begins or how far they intermingle. In the case of animal behavior we have the advantage that we know that intellect plays no part in the action; but we also have the disadvantage that we can arrive at a knowledge of the mentality of the animal only by inference and not by direct observation. Instinct, if it exists, will certainly appear in a purer and clearer form in animals than in men, because of the fact, as we will see later, that they are not influenced by an intellect and will. For this reason it is customary to base the study of instinct more on the actions of animals than of men.

Animal behavior manifests instinct.

A few typical cases will show conclusively that animals possess an *innate impulse, antecedent to all individual experience*, determining them to certain *uniform, purposive actions, useful for the individual and the species*.

Animals perform some actions in virtue of an *innate impulse*, prior to experience. Flourens narrates the incident of a beaver that was captured soon after birth and placed in the Jardin des Plants in Paris, where it was reared in a cage. When the beaver was fully grown, an experiment was tried with the animal. Soil, twigs, and water were placed at its

disposal. The beaver, although in no need of a hut, went to work without any hesitation and built the typical hut of its species. This beaver had never seen a beaver hut and could not have learned the plan and principles of construction from its parents nor from individual experience. What is the explanation? Only one explanation is possible: upon sight of the building material it had the impulse, fixed in its nature, to build a hut in a definite way according to a definite plan, and the typical beaver hut was the result.

Another example. W. S. Ritter placed a number of trap-door spiders, as soon as they were hatched, in a dish containing moist earth. Though still immature, each spider began its nest according to the standard pattern of the nest made by the mature spiders, only smaller in size so as to fit the size of its immature body. The lid or trap door of such a nest is a most ingenious contrivance, and the little spiders fashioned the lids with utmost nicety and skill, although they had never seen a nest and could not have learned the procedure from any other spider. Here again we observe a sequence of actions which manifest an innate impulse, independent of any prior experience.

Birds, even when reared in a cage from the time they are hatched, will always, when liberated, build a nest of the same material and pattern as the other birds of the same kind, although they have never seen a nest built. Spiders, too, will spin the typical web of their species, without ever having seen a web or the spinning of a web. Ducklings will take to water and swim, immediately after they have been hatched. The leaf-roller insect will construct its nest in a leaf, thereby solving incidentally a most intricate problem of

geometry, under circumstances which preclude the possibility of learning by experience or in any other manner. The life history of animals is replete with instinctive actions which manifest innate impulses.

That such actions are the result of an *impulse*, and not of a rational understanding of their purposiveness, should be equally clear. If they were due to intellectual insight or a process of reasoning, one would be constrained to place animals on a higher mental plane than man, because some of these actions, always performed unerringly and unfalteringly, are eminently purposive in character and highly ingenious in pattern. Man could not solve some of the problems involved in such actions without considerable study and preliminary education. Notwithstanding the ingenuity displayed in instinctive behavior, animals reveal no signs of genuine intellectual insight. On the contrary, the behavior of animals shows that they have an almost irresistible 'drive' to perform a determined set of actions, but have no 'understanding' of the intrinsic reasonableness of their actions.

The action of the beaver mentioned above manifests an impulse, but no understanding, because it had not use for a hut under the circumstances. H. Fabre, the eminent French naturalist, narrates many incidents of animal behavior which reveal phenomenal mental obtuseness in what is otherwise an apparently highly intelligent performance. On one occasion he experimented with a *sphex*, a type of solitary wasp. This particular type stored grasshoppers in an excavated nest as food for its young. The routine is as follows: the *sphex* brings the grasshopper to the rim of the

nest, enters the nest to explore its condition, returns to the top, and then drags the grasshopper into the nest. While the wasp was exploring the interior of the nest, Fabre removed the grasshopper a short distance; the wasp, returning to the top, saw the grasshopper, brought it back to the rim of the nest, and went to explore the interior once more, although it had done so only a moment before. Fabre repeated the experiment over and over, always with the same results. This behavior on the part of the wasp shows an impulse to perform a certain set of actions according to a definite plan, but it also shows a complete lack of understanding of the purpose of the plan. On another occasion, Fabre made an experiment with a honey bee. The bee is to all appearances a very intellectual insect, since it solves a logarithmic problem in the construction of its cell. Fabre wished to test the mental insight of the bee. A bee had already partially filled a cell with honey. He pierced the bottom of the cell, so that the honey flowed away. The bee continued to put honey into the cell and add wax material to the walls. The bee made thirty-two trips, collecting honey and building material, but not once did it occur to the bee to investigate why the cell was always empty of honey. Impulse was present, but no reason or intellectual insight.

Instinctive actions are eminently purposive in themselves, but the animal performing them evidently carries them out because of an impulsive drive and not because of any understanding of their aptness. Whenever unusual circumstances break the routine of the sequence or frustrate its purpose, the impulse still persists, and the animal attempts to carry the action through to its normal

conclusion, although the continuance of the action can serve no useful purpose.

While animals possess a certain amount of individuality and adaptability in instinctive actions, as will be pointed out a little later, their actions always follow a definite *uniformity* of pattern. Each kind of bird builds its nest in the same fashion and of the same general materials as the rest of its kind; this characteristic can be observed in the swallow, the sparrow, the canary, the woodpecker, the wren, the ostrich, the eagle, etc. Bees build their cells alike the world over. Rabbits, woodchucks, gophers, chipmunks, moles, foxes, etc., make their burrows in the same way as their fellows. The wolf, the cat, the dog, the lion, the tiger, the otter, etc. — all hunt according to the method of their type and that uniformly. There is no tendency on the part of the animal to improve on the method of its action or to use other means to accomplish the same end; the course of the action is set, and the animal runs faithfully through the course.

Instinctive actions are not random performances, but purposive. Some involve a marvelous complexity of coordinated movements, occupying a considerable length of time. When it is stated that instinct drives to 'purposive' actions, this simply means that these actions are, as a matter of observable fact, *purposive in themselves*, adapted as means toward the realization of a definite end or goal.

IF WE SEEK THIS PURPOSE, WE FIND THAT IT CONSISTS IN THE *well-being* of the individual and of the species.

As for the well-being of the *individual*, all the instincts governing the search for food and self-defense belong to this category. Animals know instinctively what foods are good or harmful for them, and they know just how to go about acquiring the food they need. This instinct is more specialized in some animals than in others. Some types of birds will starve to death, if their particular kind of food has been destroyed through a wide area, even though the food of other birds or animals be present in abundance. As for self-defense, each class of animals has its own method of defense in time of danger, and the members of each species react to danger in the same general way. To quote Muckermann: "For what other reason but to seek protection from danger do worms contract the segments of their body, hedgehogs roll themselves into balls bristling with spikes, snails retire into their shells, turtles withdraw their heads and legs and hide themselves in the sand, young snakes jump into the mouth of their parent, chickens seek protection under the wings of the hen?" The fact of general uniformity in the actions of the members of the same species shows that such behavior is instinctive.

The technique required for the well-being and *preservation of the species* is never learned by the individual animal. Whatever may be the process of reproduction, sexual or asexual, the perpetuation of the species is maintained by a sequence of wonderfully coordinated actions directed toward this end in virtue of an instinct rooted in the inmost nature of the animal, and this instinct cannot be denied. To quote Muckermann again: "Nor can any other explanation than 'purpose' be given for

those actions by which animals preserve their species. Or why do they always deposit their eggs in places which offer the most suitable food for their offspring? Why do mosquitoes drop their eggs into water, the only place where the young can develop, cabbage-butterflies deposit them on the under side of the cabbage leaf, *sitaris* in the nest-entrance of *Antophoras*? Why does the fly *Gastrus equi* paste them on the breast of a horse, where they are licked up by the horse's tongue and forwarded into the stomach, the only place where the maggots find their specific and necessary nourishment? Why do several species of solitary wasps fasten their eggs on the bodies of living but paralyzed spiders, caterpillars, and grasshoppers? Why does the great water-scavenger, *Hydrophilus piceus* build a little boat for its eggs, and *Lochemusa*, *Xenodusa*, *Atemeles* . . . bring them into the nest of ants; why in short, does every species find those places and conditions which are best adapted to secure the welfare of its offspring? There can be no question of chance where such a universal experience confronts us with such wonderful facts, and it is consequently evident that a 'purpose' in finding suitable nourishment, in protecting the individual and propagating the species, is an essential constituent of all instinctive actions of animals."¹

Such are some of the facts, taken from among millions, which show the operations of instinct and thereby reveal its nature. Summing up the essential features of instinctive actions, we can now define instinct, with William McDougall, as "*an innate disposition which determines the organism to perceive (to pay attention to) any object of a*

*certain class, and to experience in its presence a certain emotional excitement and an impulse to action which find expression in a specific mode of behavior in relation to that object."*²

Instinct and Experience

In considering instinct, as expressed in the definition just given, one is liable to draw the conclusion that instinctive activities are so stereotype in character as to be beyond the modifying influence of experience. Such a conclusion would be erroneous. Instincts can be *modified* to a certain extent by the experience of the animal.

Some birds use pieces of string, cord, paper, cloth, and similar objects in the construction of their nest. In the beginning these birds could not have been prompted by their instinct to use such artificial products, for the simple reason that the birds made nests before man made such articles. Barn swallows now frequently attach their mud nests to the inside of barns, and chimney swallows to the inside of chimneys. This method of nest-building is a modification of their original instinct, because they certainly built nests long before barns and chimneys existed. Canadian partridges construct a little roof over themselves in Canada, for the purpose of shelter; in a warmer climate they omit the shelter roof. Wrens, sparrows, martins, etc., use birdhouses made by man for nesting purposes. The mud-dauber wasp makes its mud nests in hollow trees and overhanging rocks; but it will also make them in structures built by man.

We thus notice that instinct is not a rigid and uncontrollable automatism, but an innate disposition which possesses a certain amount of plasticity and flexibility, capable of being modified and adapted to the requirements of existing circumstances.

Experience and Intelligence

Animals act by instinct. But not always. They also act by learning through experience. Experiential actions often resemble instinctive actions, in so far as they are purposive in themselves and tend toward a definite goal; they are, however, not the result of an innate disposition or drive, present in the animals antecedent to experience. The sense of well-being prompts animals to act, and so they seek to attain what is good for them and to avoid what is evil; and experience teaches them what is good and what is evil. Experiential actions possess a spontaneity and individuality of expression which is lacking in typically instinctive actions.

Pleasure is a good and pain an evil which animals associate with experiential actions, and thereby they learn to perform or avoid certain kinds of activities. The *training* of animals is based on this general principle. Punishment is meted out to them, if they do something undesired by the trainer or refuse to do something desired by him; a reward is given to them, if they do what the trainer desires or omit to do what he wants them to omit.

Animals, however, can also learn by experience *of their own accord*. A cat which burns her paw at a hot stove will refrain from going near it. A dog, once scratched by a cat,

will be wary of the cat the next time. Animals and birds in isolated regions or in refuge areas show at first no fear of man; but it does not take them long to learn to distinguish between those who are kind to them and those who wish to do them harm. In Yellowstone Park the bear, the bison, the elk, and the mountain goat are relatively tame, because they experience no harsh treatment.

While it is true that the general pattern of the instinctive actions of a species is predetermined and uniform, it is equally true that the details are subject to modification and change. The animal, in many cases at least, adapts its method of searching for food, of defense, of escape, of mating, of parental care, to the changing circumstances of the environment.

HAVE ANIMALS *INTELLIGENCE*?

The question has agitated the minds of psychologists and philosophers for a long time, and a considerable controversy has grown up around the problem. Consider the following facts.

William McDougall relates how his son, K. D. McDougall, experimented with a dauber wasp making a nest of mud cells for her eggs. Oddly enough, the wasp proceeded to attach the cells to a suspended wire. While the wasp was away collecting material to finish a nearly completed cell, McDougall made a hole through the blind-end wall of the cell. The wasp returned with a pellet of clay to build the wall, but saw the hole, fussed around in an agitated manner, and finally began to repair the damage with the

pellet that should have been used to build the upper wall. She brought two more pellets, plugged the hole completely, and then continued to build the rest of the wall where she had left off. A number of experiments of this type, but with variations, were made. The result was the same: the damage was always repaired, but the procedure of repair was different in the different instances. This repair work was certainly not included in the instinctive building schedule of the wasp; yet the wasp rose to the occasion and finished the task, notwithstanding outside interference.

Many laboratory experiments have been conducted with animals. Thorndike's experiments are famous. White rats, for example, were allowed to become very hungry, so as to stimulate their food-seeking instinct. Food was then placed in a box, and the rat had to find its way into the box. The box was so constructed that the rat had to push a lever, pull a string, or perform some other operation, in order to be able to enter. The rat invariably proceeded according to a trial-and-error method. When at last the rat succeeded accidentally in tripping the opening mechanism a few times, it remembered the procedure and from there on went through the proper sequence without fail. In this manner a rat can train itself to operate a number of latches before being able to obtain its food. McDougall made a puzzle food box with fourteen interlocking latches, and a white rat finally learned to master the device. Once such an animal memorizes the sequence, it experiences little trouble in opening the box.

Animals, it will be observed, possess a certain spontaneity and initiative in their actions, so that they are

capable of learning by experience; they can also modify the sequence of instinctive actions in a measure, so as to suit them to existing conditions. And so we are back to the question: Do animals possess intelligence?

We can answer this by posing another question: Just what is meant here by 'intelligence'? There is nothing in such animal behavior which manifests true signs of *intellect* and *reason*, if that is what is meant by 'intelligence,' because there is no need to postulate the power of *abstract thinking* and the mental process of reasoning for the performance of their actions. If we examine the behavior of animals carefully, we notice nothing more than the *concrete connecting of concrete acts to concrete ends*. Perceptual insight and memory suffice to explain their behavior. Everything takes place on a *sensory* level.

If, however, we mean by 'intelligence' the 'capacity to improve upon native tendency in the light of past experience,' as William McDougall³ does, then we can admit that animals possess 'intelligence.' The name is of little importance, and a name should be given to the animal's capacity for learning by experience. 'The term is used quite extensively in modern psychology, and so we may as well adopt it. In that case, however, we should draw a sharp line of distinction between human intellect and animal intelligence, the former being the power of abstract thinking and the latter the power of sensory insight based on experience.

Animals, therefore, perform *two 'distinct types of actions'*: actions which result from 'instinct,' instinctive actions, and actions which result from 'intelligence,'

experiential actions. Both types involve *a sensory appreciation or estimation of the concrete usefulness or harmfulness of a perceived object with reference to the animal's organism or to the species*. The origin-principle underlying both types is the *well-being* of the organism or the species, and all actions conspire toward the realization of this well-being as the means toward the end.

Moderns use the term 'intelligence' in diverse meanings. As applied to brute animals, 'intelligence' is nothing more than the general cognitive power of the animal, and this power is one of the factors present in instinctive behavior. 'Instinct' is a complex pattern involving several capacities, cognitive, appetitive, and motor. There is no real distinction between the cognitive power manifested in the stereotyped instinctive behavior and the 'intelligence' as a general cognitive power capable of spontaneous learning; it is the same power which is active in every type of cognition. In both types of action, instinctive and experiential, the animal organism is stimulated to action by the perception of an object or situation presented by the central sense as something useful or harmful for its well-being.

St. Thomas Aquinas calls this cognitive power the *vis aestimativa* (the estimative power). In as much as man perceives the useful or harmful character of particular things not merely in a purely sensory fashion, but also by means of a collation of ideas, he calls this sense in man the *vis cogitativa* (the *cogitative power*) or *particular reason*, thereby distinguishing it from intellectual reason. D. Card. Mercier calls it 'the sense of wellbeing' (*le sens du bien-*

être). T. V. Moore combines the estimative power with the 'common sense' into what he calls the 'synthetic sense.'

Human Instincts

Man, too, is an animal organism. As such he has instincts and acts according to their impulses. Instincts are noticeable particularly in infants and children, because they live more on a sensory level. The adult's actions are so influenced by intellect and will, that he is seldom aware of the force the instincts exert on his conduct. On the other hand, some instincts never come into play until man enters into adolescence and adulthood.

If we attempt a *classification* of the instincts, we discover two fundamental divisions: those which serve the well-being of the *individual* and those which serve the well-being of the *species*. The preservation of the individual and the propagation of the species are the two great purposes which determine instinctive actions. No enumeration of the single instincts is altogether satisfactory, because it is difficult to isolate them out of the mass of intermingling activities.

Instincts of *self-preservation*. Most fundamental is the *food-seeking* instinct. Infants instinctively seek their mother's breast and know, prior to learning by experience, how to extract the milk through the complicated motor mechanism of sucking and swallowing. The food-seeking instinct perseveres through life; man must always seek food to sustain life. Akin to this instinct, but really its reverse, is the natural *aversion* man experiences toward many

substances which might be taken for food but are obnoxious to his well-being. Man also has the instinct of *curiosity*, the insatiable drive to investigate objects and learn what they are; he thereby discovers what objects are useful or harmful for his well-being. Then there is the instinct of *appeal*, expressed by sobbing, weeping, and whining, seeking aid and comfort in personal distress which cannot be relieved by personal effort. Man also has the instinct of *acquiring* and keeping or *hoarding* things, from toys to junk to homes and earthly wealth. The *constructive* instinct is strongly active in children, manifesting itself in games, play-acting, etc. Man also possesses the important communal instinct, the impulse to associate with others and form social groups; this instinct is the foundation of human society and government. In connection with the communal instinct we notice the instinct of *self-assertion*, which seeks to dominate the group, and the instinct of *submission* to the recognized superiority of others. In the face of threatening danger the instincts of *escape* or *combat* are unmistakably present.

Instincts of *race-preservation*. These instincts are too well-known to require more than cursory mention, for we observe them displayed at every turn. The *mating* instinct begins to manifest itself around the age of puberty. From that time on youth becomes sex conscious. Courting and the choice of a mate follow. If the union of husband and wife issues in offspring, the *parental* instinct induces the parent to give utmost care and protection to the children, even at the sacrifice of many personal comforts. There is, without

doubt, no nobler instinct in all nature than the self-immolation of parental love, because it is the most unselfish.

This enumeration of the human instincts, given for the sake of convenience, follows the well-known thirteen instincts given by William McDougall. William James enumerates a larger number; J. Lindworsky accepts but a single instinct (the striving after pleasure and happiness); others give other lists. The list mentioned in our text may not be complete or entirely accurate, but it should serve the purpose of enabling us to understand and appreciate human conduct better.

Nature of Instinct

Following the lines of certain philosophical systems, there are a number of *theories* which must be considered as an attempt to explain the nature of instinct.

Pure Mechanism

René Descartes (1596—1650) defended the purely mechanical concept of an organic body. The essence of every body is extension. To him, every organic body, including that of man, was no more than a machine. “I suppose that the body,” he wrote, “is merely a statue or earthen machine made by God on purpose to resemble us as much as possible.” Speaking of the functions of vegetancy and sentiency, “I want you, I say, to consider that these functions quite naturally follow in this machine from the mere arrangement of the organs, neither more nor less

than the movements of a clock or other automaton, from its weights and works."⁴

Like all other vital functions, the instinctive actions of animals, according to Descartes, are the mechanical actions of a robot, without psychical content. This theory represents mechanism pure and simple, with no place in the system even for a nervous reflex action. Today, extreme mechanism is rejected by all serious thinkers.

The Theory of Tropism

By 'tropism' biologists understand the involuntary movement of an organism or any of its parts, involving turning or curvature and axial orientation, and induced either automatically or in response to one or more stimulating influences. Such influences may be light, heat, electricity, a chemical substance, etc. Plants in a cellar, for example, send shoots toward the direction of the incoming light; seed shoots turn upward, while the roots turn downward, no matter how the seed may be placed in the soil; the amoeba, the *paramoecium*, the earthworm, and, in fact, most animals with a primitive nervous system are subject to tropisms of various kinds. When the organism moves in a direction toward the stimulus, the tropism is 'positive'; when in a direction away from the stimulus, the tropism is 'negative.' The influencing agencies being some form of physical or chemical energy, tropisms are conceived by biologists to be purely physical or chemical reactions, excluding all sensation and consciousness; hence, sensory cognition and appetency play no part in tropisms.

A few biologists and psychologists, among them A. Bethe (1898) and Jacques Loeb (1912), have attempted to explain all vital activity, including 'instinctive' action, in terms of *tropism*. The theory has not met with much success; it is doubtful whether any biologist of note today subscribes to it.

That tropisms exist in the lower forms of animal life can be accepted without dispute. That, however, is a far cry from the assumption that all animal behavior, and especially the highly complex trains of action observed in the instinctive performances of insects, fishes, birds, and mammals, are the result of tropisms. H. Jennings⁵ and S. Holmes, who have made extensive studies of the life histories of protozoa, are convinced that the principle of tropism is inadequate as the total explanation of the actions of even such simple beings as amoebae and *paramoecia*. The tactics of these animalcules manifest real behavior, not tropism, because their actions show individuality and spontaneity, without any observable change having occurred in the environmental medium.

When we apply the theory to the higher animals, it breaks down completely. Only the most deep-seated prejudice of mechanistic materialism could prompt a scientist to consider tropisms as an explanation, for example, of the spawning journeys of the eel and the salmon, of the seasonal migrations of the various species of game fowl, of the nuptial flight of bees and ants, of the nest building of birds, of the courting and mating of animals, of the parental care of mammals for their offspring, and so on. These types of activity may be mysterious and difficult to

explain, but it certainly is erroneous to degrade them to the level of a tropistic mechanism. *Cognition* and *experiential adaptation to circumstances* are too evident to be denied, and these are *psychical* elements far removed from the mechanical character of tropisms.

The Theory of Reflex Action

The *behaviorists* and *reflexologists* contend that all human and animal activities eventuate either visibly in muscular movement or invisibly in glandular secretion as a reflex action in response to physical stimuli. Reflexes may be either unconditioned (unlearned) or conditioned (learned). According to this theory, there is no need to appeal to 'consciousness,' 'sensations,' 'perceptions,' 'intelligence,' 'purposive action,' 'experience,' 'innate propensity,' and similar unobservable and unpredictable factors as an explanation for so-called 'instinctive' actions; all one need assume is a chain of reflexes released through response to external stimuli, the only difference between a simple reflex, such as the pupillary reflex, and instinctive action being one of degree in complexity. 'Psychic factors' must be eliminated and 'reflexes' substituted as the ultimate explanation of all animal behavior, including the behavior usually described as 'instinctive.' As a matter of fact, there is no such thing as an 'instinct,' as something which is an innate drive or urge to perform actions which are conducive toward the welfare of the individual and the species. An 'instinct,' conceived in this manner, is a superfluous concept of psychology. The concept of 'reflexes'

is sufficient to account for all actions usually ascribed to 'instinct.' Such is the attitude and theory of the thorough-going behaviorist and reflexologist, e.g., J. B. Watson.

Unfortunately, however, like the theory of tropism, to which it bears a close resemblance, the reflex theory is an *over-simplified explanation* of the type of animal actions which are grouped together as 'instinctive.' That some of these actions, or portions of the entire train of actions, are reflex in character, is undoubtedly true; but the fallacy of the reflex theory of instinct consists in arguing from the truth of the part to the truth of the whole, from the truth of the particular to the truth of the universal, from 'some' to 'all.'

INSTINCTIVE ACTIONS INVOLVE MUCH MORE THAN REFLEXES, namely, *psychic factors*.

We know that reflexes are responses of the neuro-muscular mechanism to physical stimuli, and these responses, to be genuine reflexes, must be effected through a reflex arc *independent of a determining or modifying conscious process*. Whenever an action is determined or modified by an antecedent or concomitant conscious process or perception or appetency of any kind, it is no longer a 'reflex action' in the meaning of the term as universally accepted in psychology. A reflex action may, or may not, enter consciousness, but the entire action must be carried out on a purely neuro-muscular level without conscious control. Reflex action, we claim, is insufficient as an adequate explanation of instinctive action.

For one thing, the response of an organism to a stimulus (heat, light, pressure, etc.) in a reflex is *direct, automatic, stereotype*. Given the stimulus, the response must follow. Instinctive actions, however, follow a different course. Preparation for the care of the prospective offspring (building a nest, constructing a cell, etc.) occurs only when the offspring is on the way. Birds are uninfluenced by the sight of twigs, grasses, etc., until the necessity arises to construct a proper abode for the eggs that are to be laid. Mud wasps are not interested in caterpillars, spiders, or grasshoppers, until the time arrives for them to lay eggs. The stimuli are thus present, and the reflex actions should take place, if instinctive actions were nothing more than a chain of reflexes; since they do not take place, it is evident that instinctive actions are not mere reflexes.

Again, reflexes are responses to stimuli, while instinctive actions are responses to *objects* and *situations*. Most instinctive performances represent a complex series of many types of actions quite different from the reflex responses to a stimulus such as light, heat, touch, and so forth; they may cover considerable territory and consume considerable time, but they always form a unitary activity, a planned whole, and they always center around definite objects or situations. Watch a bird build a nest, a squirrel collect nuts, a dog chase a rabbit, a mud wasp sting a caterpillar, a bee construct a honey cell, a colony of ants wage war on a neighboring colony, a beaver cut down a sapling, a hawk swoop upon a hen — these and similar typically instinctive actions reveal the operations of a

number of senses in *concerted perceptual responses*, not merely reflexes in response to isolated individual stimuli.

Furthermore, notwithstanding the typical character of the instinctive action, there is a degree of *spontaneity, initiative, and adaptability* in the chains of actions as a whole which is altogether foreign to the concept of a reflex. No two robins, for example, build their nests of absolutely the same material on the same kind of branch in the same kind of tree with the same kind of routine. Yet the final result is peculiarly similar for the purpose in hand, showing that, whatever may be the robins' response to the individual twigs, straws, branches, etc., 'the nest as a whole' is the guiding principle of the series of actions, permitting considerable latitude in the details of construction, so long as the nest as a whole is built. Or, consider a cat stalking a bird among some shrubs. The cat slinks along the ground, stops, crouches, moves forward again, now faster and now slower, taking advantage of every point of concealment, closing in on the unsuspecting victim, and then makes its climactic lunge, sinking its claws into the body of the bird and devouring it. The technique of hunting is typically similar in all cases, but the details change according to locale and circumstances; the instinctive principle is the same, but the execution is adapted to the prevailing conditions. There is very little in common between this type of perceptual action and the stereotype, automatic character of a reflex.

Finally, typically instinctive actions, seemingly so fixed in routine as to resemble the directness and inflexibility of reflexes, are at times *modified* to meet artificially

introduced conditions at variance with the routine of the instinctive actions. One need but recall the amazing performance of the dauber wasp repairing the damage done to its mud cells by K. D. McDougall. The wasp recognized the incompleteness of the cells and promptly went about to set things right by deviating from the routine procedure of its work. Henri Fabre narrates how he interfered with the usual routine of the *sphex* by moving the grasshopper a short distance away from the rim of the excavated nest, while the *sphex* was exploring the interior. He repeated the experiment dozens of times, until he grew tired and desisted, convinced that the unintelligent behavior of the *sphex* would result in an endless repetition of the same performance. Fabre was not patient enough. The Peckhams, husband and wife, also made the experiment of Fabre, but with a totally different result. After many repetitions of the procedure, as in the experiment of Fabre, the *sphex* dragged her prey, without depositing it at the rim as it had done heretofore, directly into the nest and finished her job. This action of the *sphex* manifests a perceptual appreciation of the task to be accomplished and a corresponding modification of the routine procedure usual under the circumstances.

These few incidents of animal behavior are sufficient to show that animals are not mere 'reflex machines,' but are organisms which are actuated in their instinctive actions by impulses set in motion by sensory data synthesized into perceptual wholes.

The Theory of Innatism

While the inner constitutional elements of the animal organism, as expressed in instinctive action, will always remain very much of a mystery, we are now in a position to outline the *true nature of instinct*.

The facts presented demand that the animal, during the course of instinctive actions, have the ability to perceive the various objects and their concrete relations, the immediate task to be performed in connection with these objects, and the present actions required as the task unfolds step by step toward the attainment of the goal as the end-result of the action series. Besides this perceptive ability, the animal must have the *executive ability to begin*, to develop, and to complete the task before it. That they possess this executive ability is obvious from the actual performance of the task. However, neither the ability of perception nor the ability of execution would be of any value, if the animal did not have the *propensity* or inherent impulse to undertake and execute the task under the proper conjunction of the circumstances of time and place. Animals do not perform instinctive actions except in definite circumstances of time and place; but when these circumstances are present, they show that they are driven by an irresistible impulse to begin and to continue the act until the goal is reached.

The intrinsic factors of instinct are *inherited* and therefore *innate*; they are not learned, at least not fundamentally and ultimately, by experience. Many instinctive actions are done but once, have never been observed before in operation, are performed practically at

birth, and are always carried through with unhesitating dispatch and with unfailing accuracy. Animals simply never have the opportunity to learn the sequence of some of these actions by experience. Hence, these intrinsic factors must be innate and inherited.

Two causes seem to unite to produce instinctive action. Certain objects excite the animal's imagination into activity; they are the *objective* cause. Due to a natural disposition present in the animal, the images aroused in the imagination excite the appetency, impelling it to perform certain actions in connection with the object perceived; these images are the *subjective* cause. Instinct, then, would seem to consist in the native power of associating certain images, which has as its object the immediate actions necessary for the task before it. These actions are subservient to the well-being of the individual and of the species and as such are *naturally* and *inherently purposive*.

The Origin of Instinct

In as much as instincts are inherited and innate, and not the result of experiential learning on the part of the individual animal, the question is unavoidable: *What is the origin of instinct?* Instinct emerges from the past into the present; its origin, therefore, must lie in the past, not in the present. Observation and historical record demonstrate that the same kind of animal, everywhere and always, performs its instinctive actions according to a pattern typically the same for all. How, then, was the instinct acquired by the species?

The crux of the problem is this: Since purposive action is the realization of a goal set in the future, with the selection of proper means to attain the goal, it definitely implies the *prevision of the goal and the means* required to attain the goal. Since instinctive actions are purposive, tending to realize the well-being of the individual and the species as a goal set in the future, instinctive actions should also require the prevision of this goal and the selection of its means of attainment. Such a prevision, though, apparently demands *intellectual foresight*. Someone, then, had to set the goal and determine the means for all the instinctive actions of the entire animal kingdom from the very beginning of animal life, provided these instincts have operated in the same fashion throughout the past eras of animal history. If these instincts did not operate in the same fashion throughout the past, but *originated in the course of time*, then how did they originate? They must be accounted for.

The Theory of Direct Creation

The defenders of this theory claim that the Creator, the Supreme Intellect, created the animals, endowing their constitution with all powers necessary for the survival of the individuals and of the species. Since the animals themselves are devoid of intellect and cannot, therefore, set a goal and select the proper means to attain this goal (the well-being of the individuals and of the species), the Creator implanted in their nature the instincts necessary for their preservation. Only the Creator has control over the entire animal kingdom, so that He alone, in their very creation,

could give them these native endowments manifested in instinctive behavior. The prevision of the goal and of the means required to attain the goal resides in the Creator, not in the individual animal; the Creator imposed the law of instinct upon the animal's nature, and the animal carries out the law without knowledge of its intrinsic purposiveness. This theory obviates the preposterous necessity of ascribing a superhuman intellect to subhuman animals, and gives an adequate explanation for the existence of purposive instincts present in all the individuals and species of animals throughout time and space. Since the animals themselves cannot be the cause of the origin of their own instincts, being completely dominated by these instincts, the cause of the origin of their instincts must be referred to the intelligent cause of their very nature, namely, to the Creator.

According to this view, the instincts, complete and perfect, came into existence in the animal nature by virtue of direct creation. These native endowments, then, were handed down from generation to generation to the present time through heredity.

There are *three particularly strong points* in favor of the theory of direct creation. It gives an adequate explanation of the exquisitely *purposive* character of instinct in all its manifestations, without the necessity of ascribing to the animal an intellectual insight into the purposiveness itself; it gives an adequate account of the *uniformity* of instinct in all the individuals of a species; and it also gives an adequate account of the *universal distribution* of instinct in the animal kingdom with respect to time and space.

The Theory of Evolution

The theory of evolution appears in a *variety of forms*, chief among which are the following.

According to *Charles Darwin's* theory of evolution by *natural selection*, the offspring of organisms differ in minor variations from the parents; and if these variations give an individual an advantage over its fellows in the struggle for existence, then by a natural process, called 'natural selection,' those best adjusted to their environment will survive ('the survival of the fittest'), while the others will perish. These small fortuitous individual variations are transmitted by generation and preserved by heredity, and in this manner the gradual accumulation of such variations gives rise to new species. The instincts originated in like manner, beginning with isolated, casual acts and gradually developing in the course of long periods of time into complicated, marvelously 'purposive' sets of instinctive actions. All is, of course, the work of chance, operating through the blind mechanism of natural selection. Most evolutionistic biologists now relegate 'natural selection' to a minor position among the factors operating in evolution.

Herbert Spencer, though an evolutionist, rejected natural selection. According to his view, all actions which are now instinctive were performed in the past *consciously* and *intelligently* for the satisfaction of some need or for the attainment of a definite goal. In the course of time these actions, through constant repetition, became hereditary habits, so that instincts are, so to say, the result of a 'lapsed intelligence.'

Henri Bergson's concept of evolution is unique. All organisms have evolved through the agency of an original life force, an *élan vital*, present throughout nature. Mind in its evolution developed along two different lines, along the line of 'intelligence' and along the line of 'instinct.' Intelligence developed in increasing perfection among the vertebrates and mammals, reaching its peak in man, while instinct developed to its fullest extent in the insects.

Emergent evolution, advocated by *Lloyd Morgan* and many moderns, has as its basic idea the principle that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality. These new properties are not mere resultants obtained by addition or subtraction from among previously existing properties; rather, these new properties have no counterpart in the lower levels and simply emerge' with specific characters not discoverable in the former (lower) levels. It is thus that mind, and with it instinct also, originated.

In all these variations of evolutionary theory, *no intrinsic goal* is assumed to exist for the process of evolution. It is a blind process produced by blind forces; everything just happens to work out this way. Instinct is merely one of these evolutionary products.

IT IS OUR CONTENTION THAT EVOLUTION, CONCEIVED IN THIS fashion, *cannot account for the origin of instinct.*

First, these evolutionary theories are based on the idea of the transmission of properties by generation through heredity. Now, very many instincts are of such a nature that the very existence of the individual and the generation of its offspring depend on the instinct being *perfect*, both as to ability and execution, *from the start*. Such are the food-seeking and mating instincts. Imperfection here would doom the individual and the species to extinction, because no second generation could arise to which anything could be transmitted. Unless, therefore, the first animal of a species were natively endowed with the complete instinct, there would be no future generations in which this instinct could 'evolve.' That being so, how did the instinct originate in this first individual? Certainly not through evolution.

Second, we must bear in mind that certain animals exercise a certain instinct *only once in their life*. The nuptial flight of the queen bee occurs only once. The cabbage butterfly lays its eggs only once and puts them under a cabbage leaf, never seeing its offspring. This larva becomes a butterfly, lays eggs in the beginning of summer on the leaves of a tree (contrary to the action of its parent); these larvae spin a cocoon for themselves on a tree, become butterflies in August, and then they spin their cocoon around the entire leaf with stem and twig, so that the eggs are properly protected for the winter. Thus the butterflies of spring act in an entirely different manner from those of autumn, and this only once in their life. Since they do not see their offspring, they cannot know the purposiveness of their action; but the purposiveness is there. It cannot be a question of hereditary habits or of a gradually acquired

variation or insight, because the butterflies perform the action but once and never know its result. And yet, if the action were not perfect from the start, there would be no second generation.

There are many such instances of instincts. How is it possible for the parent to acquire such an instinct and transmit it to the young, since they have never seen it exercised and have not themselves exercised it before? The parent certainly cannot transmit the instinct to the young present in the eggs, because these young exist already, and the parent first begins to exercise its care for the eggs after the young exist; and not to subsequent young, because it lays eggs only once. The parent does not even know that there is such a thing as an offspring. Yet the omission of a single step in this instinctive operation would be fatal to the offspring.

Third, the *care of the young*, as manifested in many instinctive actions, could never have been learned by the parent nor could it have been the chance result of blind forces of nature. The mud wasp, for example, paralyzes spiders, grasshoppers, and caterpillars by puncturing their motor centers with its stinger. It puts the paralyzed insect in the mud nest, pastes an egg onto the insect's body, and seals the nest, never to return to observe the results. The wasp itself does not eat flesh meat, but its young cannot exist on anything else in the beginning. If the insect were not paralyzed, the egg would be crushed through the squirming of the insect against the walls of the mud nest. But how should the wasp know this, since it never sees the results of its operation? And how should it know that its

offspring needs flesh meat? And how should it know that stinging the insect will stop its movements through paralysis? And how should it know where to sting and how many times to sting? If the very first wasp did not succeed in its amazingly purposive chain of actions, the species would not have survived the first generation. Experience could not have taught the wasp how to proceed, because it knows nothing of the result of its actions; insight is out of the question, for the same reason; a fortunate chance action could never be transmitted through heredity. Hence, again, if this entire set of actions would not be perfect from the start, the species would have become extinct with the first wasp. This example is just one among thousands.

Last, it is difficult to understand, on the principles of these evolutionary theories, how certain animals can transmit through heredity *an instinct they do not possess*, and how certain instincts can survive when their *possessors do not propagate their kind*. We refer to *neuter* insects, such as working bees, etc. "Neuter insects which do nothing to propagate their race can do nothing to transmit instinct or anything else. Yet these neuters do all the work of the community and require the most complicated instincts to do it. To fit them for their object, even their bodily form has often to be entirely different from that of the males and females; and in some species the neuters destined for different branches of work differ entirely from one another. Thus in one kind of ant there are working neuters and soldier neuters, with jaws and instincts extraordinarily different. Yet these neuters are the offspring

of males and females, none of whom, and none of whose ancestors, ever did a stroke of work in their lives.”⁶

No matter what type of the above-mentioned evolutionary theories one may choose to accept, their explanation of the origin of instinct leads to the almost inevitable conclusion that *the effect is greater than the cause*. While the instinctive actions are eminently purposive and intelligent in themselves, neither the animals nor the forces of evolution possess the requisite intelligence to give an adequate account of the rise, development, and survival of the instincts. Evolutionists usually appeal to the unknown ‘conditions of the past’ to gloss over any difficulties they may encounter in their explanation; but such an argument is a plain *appeal to ignorance* which explains nothing at all. So long as there is no intelligence working in or through nature, no adequate explanation for the intelligence manifested by the instincts will ever be forthcoming.

The Theory of Purposive Evolution

Do the arguments just adduced prove that evolution never took place? Not necessarily. Evolution itself, obviously, is not impossible, but it must be a *purposive evolution*. Since, however, purposiveness implies an intelligent foresight into the future, and since this intelligent foresight cannot be ascribed either to the forces of nature or to the animals themselves, the only possible alternative is the assumption that the *Supreme Intelligence endowed nature with a purpose* and with the necessary principles of action to realize this purpose *through evolution*. The required

intelligence would reside not in nature itself but in the Author of nature. It would then make little difference whether evolution were gradual or emergent in character. Animal species would arise, and their instincts with them, whenever the laws of evolution, imposed on nature by the Creator, would produce the conditions necessary for their origin. Hence, if the instincts derived their origin through evolution, this evolution must have been a purposive evolution imposed on nature by the Creator. Such a type of evolution would indeed render an adequate account of the origin of instincts and is acceptable.

Our *answer*, then, to the question of the origin of instincts must be that the instincts originated either through direct creation or through purposive evolution. Whether evolution has actually occurred, is a problem all by itself; and with that we are not at present concerned.

WE HAVE NOW STUDIED THE EXTERNAL SENSES — THE somesthetic senses, taste, smell, hearing, and sight; and also the internal senses — the central sense, imagination, memory, and instinct. These are the *cognitive sensory powers* of man and, more or less, of all animals. Man is indeed an organism endowed with many wonderful powers. But one great fact stands out in bold relief: Man is an *integral organism* manifesting a marvelous unity of nature amid all the complexity of parts and powers.

Summary of Chapter X

The fourth internal sense is instinct. It occupies itself with the well-being of the organism.

1. *The Concept of instinct.* Instinct connotes an impulsive tendency toward actions which are conducive to the well-being of the individual or of the species. This impulse is a native endowment, present in the animal prior to any learning by experience. Instinct also implies a cognitive element.

2. *The Existence of instinct.* Their behavior shows conclusively that animals possess an innate impulse, antecedent to all individual experience, determining them to certain uniform, purposive actions, useful for the individual and the species.

We may define instinct as an innate disposition which determines the organism to perceive (to pay attention to) an object of a certain class, and to experience in its presence a certain emotional excitement and an impulse to action which find expression in a specific mode of behavior in relation to that object.

3. *Instinct and Experience.* Instinct is not a rigid and uncontrollable automatism, but an innate disposition which possesses a certain amount of plasticity and flexibility, capable of being modified and adapted to the requirements of existing circumstances.

4. *Experience and intelligence.* Besides acting by instinct, animals also learn through experience, seeking what is good for them and avoiding what is harmful. Both

types of action involve a sensory appreciation or estimation of the concrete usefulness or harmfulness of a perceived object with reference to the individual or to the species. The animal's capacity to improve upon native tendency in the light of past experiences is often called *intelligence*. This power to estimate what is a concrete good or evil for well-being St. Thomas calls the *estimative power*.

5. *Human instincts*. The instincts of self preservation include food-seeking, aversion, curiosity, appeal, acquisition and hoarding, the constructive instinct, the communal instinct, self-assertion, submission, escape, and combat. The instincts of *race-preservation* include mating and parental care.

6. *Nature of instinct*. There are a number of theories. Pure mechanism considers the body as a mere machine without psychical content. The *theory of tropism* explains all animal actions, including instinct, as tropisms. The theory is erroneous, because cognition and experiential adaptation to circumstances are too evident to be denied. *The theory of reflex actions* interprets all instinctive actions in terms of a chain of reflexes. The theory is erroneous, because all evidence points to the fact that animal actions are determined or modified by antecedent or concomitant conscious processes of perception and appetency. *The theory of innatism* holds that the true nature of instinct involves the *ability to perceive* objects and their concrete relations, the immediate task, and the actions required to perform the task. It also involves the executive ability to carry out the task and the *propensity* to execute the task imposed by instinct. These factors are inherited and *innate*,

not the result of experiential learning. The stimulating object is the 'objective' cause; the natural propensity to carry out the action is the 'subjective' cause; these actions are then naturally and inherently *purposive*.

7. *The Origin of Instinct.* There are a number of theories which attempt to explain the origin of instinct.

The Theory of Direct Creation. According to this theory, the instincts, complete and perfect, came into existence in the animal nature by virtue of a direct creation.

The Theory of Evolution. The theory appears in a variety of forms: Darwin's theory of evolution through natural selection, Spencer's theory of lapsed intelligence, Bergson's theory of a life force, and Morgan's theory of emergent evolution. These theories, as proposed, are inadequate. Many instincts must be perfect from the start. Many are exercised only once in the life of the individual. The instinct of parental care could not have been learned, nor could it be the chance result of blind forces of nature. No logical account can be given of neuter insects and their instincts. Considering the purposive and intelligent character of instinctive actions, the origin of instinct, according to these theories, would mean that the effect is greater than the cause.

The Theory of Purposive Evolution. If instincts originated through evolution, this must be a *purposive evolution*, in the sense that the Creator endowed nature with a purpose and with the necessary principles of action to realize this purpose through evolution.

Hence, instincts originated either through direct creation or through purposive evolution.

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Chapter 11

SENSUOUS APPETENCY

THE EXTERNAL AND INTERNAL SENSES AND THEIR FUNCTIONS HAVE now passed in review. Physical objects act upon the external senses, and these senses, in conjunction with the brain, react with sensations. Bits of information concerning these objects are thus conveyed to the sentient subject, are arranged into perceptual wholes, and then referred back to the stimulating objects. Thereby the properties of these objects, and through these properties the objects themselves, become known in a concrete sensory manner. This mental process is perception, and by its means external objects receive a *cognitional existence within the sentient subject*.

Sense knowledge is one phase of the life of the brute and of man. There is another phase, and it is equally important: it is *sensuous appetency*. Through perception the object is brought into contact with the subject; through appetency the subject is brought into contact with the object.

Concept of Appetency

In a very general way, *appetency*, or appetite, is *the tendency of one thing toward another*. This is clear from the etymology of the term, for 'appetency' is a Latin derivative (*ad* and *petere*) meaning 'to strive for,' 'to seek for,' 'to tend toward,' something. This tendency of one thing toward another is different in different types of objects.

The appetency present in the animal organism is a *conscious* appetency. It is termed 'conscious,' because the animal is aware of the object for which it strives, and this conscious apprehension of the object is a deciding factor in its striving. A double influence is present in conscious appetency: the 'objective' influence of the object attracting the apprehending subject; and the 'subjective' influence of the apprehending subject responding to this attraction by inclining toward the object with a conscious act of striving.

The appetency of animals is the result of a *spontaneous inclination* following conscious apprehension. Conscious apprehension and spontaneous inclination are *psychic* factors which are essential to the concept of appetency in animals.

Depending upon whether the knowledge preceding appetition is sensuous or rational, the distinction is made between *sensuous* and *rational appetency*. The latter is exclusively a human characteristic; the former is common to brute and man. Rational appetency is called the 'will.' In the present discussion we are concerned solely with sensuous appetency; rational appetency will receive a separate consideration in a later chapter.

Whatever may be the type of appetency, that which moves it to action is the *good*, and the 'good' is what is

suitable in some manner for the striving subject. The *well-being* of the organism itself is the all- embracing goal of its appetitive activities, because nothing is so basically good and suitable for an individual as its own being, its own nature.

An animal strives for an object because it satisfies some need, some demand, some exigency, some natural aptitude; it helps the animal in some way, or completes it in some fashion, or gives it pleasure in some form, or actualizes some potentiality of its nature, or has the capacity to realize some end and purpose in it. In a word, the animal strives for something because it is 'suitable' and in so far 'good' for the organism.

The very fact, though, that animals strive for anything at all, makes it clear that they cannot have their *complete actuality* from the beginning. If they had all their entity, if they possessed all the reality they are capable of receiving, they would no longer tend toward, or strive for, anything. To strive for something means that there is still some potentiality in their being which needs and demands realization. And in so far as something is suitable for this fuller realization and actualization of the animal, it will be 'good' for it. What, in particular, is suitable to a being, will naturally depend upon what the animal needs and what some other being has to *offer* for the satisfaction of this need.

Now, all animals have a nature or essence peculiar to themselves as members of a species and as individuals. And each such nature has a very real and definite *purpose or end within itself* which it tends at all times to protect and to

bring to full completion and *perfection*. A thing is 'perfect' when it has everything that it is supposed to have according to the exigencies of its nature. Perfection may be taken absolutely or relatively. Absolute individual perfection is the complete and final actualization of a being in its totality; relative individual perfection is the actualization of a being at a particular stage of its development as demanded by it at this point. In either case it possesses at the moment as much reality as its nature demands. Not everything will suit every type of animal nature, and the same thing will not suit every animal in all the periods of its life. What is suitable for a lion, need not be suitable for man; and what is suitable in infancy, need not be suitable in adulthood.

Each animal nature — and this, of course, includes the nature of man, because man is an animal organism — thus possesses a *specific natural tendency* within itself for its well-being, and things will be 'good' for it in so far as they promote its well-being. Nothing, however, will suit the nature of a being more than the very *entity of this nature*; its entity is an 'intrinsic' good for it. Consequently, all natures or essences are good for the individuals which possess them, and for this reason animals always strive to preserve and protect their existence. On the other hand, any *other beings* which help to develop or actualize the animal's nature will be suitable and therefore good for them; they are an 'extrinsic' good for the animal, and the appetency of the animal is directed toward them as means toward an end.

Reversely, no animal seeks what is harmful to itself. The animal *avoids what is harmful* to its nature, because it is

unsuitable for the satisfaction of its needs. If something harmful confronts the animal, the animal either avoids it or fights it; it never consciously seeks it and strives for it.

Sensuous appetency, then, has *two phases*: the *positive* phase, in which it consciously and actively seeks to attain what is suitable to its being; and the *negative* phase, in which it consciously and actively seeks to avoid what is harmful to its being. In both phases, appetency becomes active after something is consciously *apprehended* as being concretely good or harmful for the animal's being.

From the above it should be clear that sensuous appetency in the brute is closely linked to the *estimative power*. The estimative power enables the brute to recognize what is useful or harmful, good or evil, for its well-being. This knowledge may be acquired through experience, as when a cat or dog learns that certain cooked foods are good or harmful; or it may be instinctive, as when the hen knows that the hawk flying overhead is an enemy and the ducklings know that water is not harmful. The appetency of the brute is, of course, more conspicuous in instinctive actions, because these actions are dynamical in character and represent definite drives and impulses. On the other hand, the appetency manifested in experiential actions are more spontaneous in character and show more clearly that sensuous appetency depends upon the conscious apprehension of objects and situations as useful or harmful. In either case, however, the animal first perceives something to be useful or harmful, and then its appetitive power becomes active, urging the animal to tend toward

what is apprehended as good and to avoid what is apprehended as evil.

There is no necessity to *prove the existence* of appetency in the animal's constitution. The fact is too obvious to be denied. The foregoing chapter can very well be taken as containing the evidence of the appetitive striving of animals. Even a superficial study of animal behavior should suffice to convince the observer that animals possess appetency based on sensuous knowledge.

We can, therefore, define sensuous appetency as *a power in virtue of which a sentient being tends toward a consciously apprehended sensuous good and away from a consciously apprehended sensuous evil.*

Kinds of Appetency

Scholastic philosophers distinguish between two kinds of sensuous appetency: the *concupiscible* and the *irascible*. D. Card. Mercier suggests the more modern terms of 'propensity to enjoy' (*propension la pousse*) and 'propensity to fight' (*propension la lutte*). Mercier's terms, at any rate, explain what the scholastics mean by the more formidable terms of 'concupiscible' and 'irascible' appetencies.

The *reason* for the division lies in the *object* which arouses the appetency. This object may be something which is good and useful simply as such, something enjoyable in itself; no difficulties beset the attainment and enjoyment of such a good, and the animal strives for it *directly*. Or, this object may be something harmful and

disagreeable in itself; here, too, no difficulties beset the avoidance of the evil, and the animal avoids it by merely leaving it alone. An example or two will illustrate the point. A dog finds a bone and enjoys the appetizing morsel as he gnaws it to pieces; on seeing a boy approach whom he has learned to mistrust, he takes the bone between his teeth and leisurely trots off to a more secluded spot to finish his meal. A cat feels the warmth of the stove and curls up comfortably at its side, but it sedulously avoids coming too close, because on a former occasion it touched the stove and was burned. In these cases the attainment of the good and the avoidance of the evil were achieved directly and without any difficulty. Matters, however, are not always so simple. Sometimes obstacles stand in the way of obtaining or keeping a good and of avoiding or removing an evil. Then the animal must fight, and the direct object of appetency is the *removal of the obstacle*. If Fido, the dog, has a bone, and Spitz, another dog, sees this, a fight ensues: Fido fights to retain possession of the bone, and Spitz fights to obtain possession of it, and both fight to remove an obstacle which threatens to hinder them from enjoying the good they seek. A boy with a stick chases a cat, and the cat runs into a shed to escape its pursuer; but when cornered in the shed, the cat turns and fights furiously with naked claws in an attempt to drive its tormentor away. The life history of practically every species of animal will show similar types of behavior, disclosing these two fundamental tendencies.

The concupiscible appetency, therefore, strives directly for what is sensuously pleasant and useful and shuns directly what is sensuously unpleasant and harmful; the

object acts directly on the appetency as agreeable or repugnant in *itself*. The irascible appetency strives to obtain and retain an *arduous good* and seeks to avoid or remove an *arduous evil*; the object presents considerable difficulties and dangers which hinder the animal from obtaining and retaining what is a good or from avoiding and removing what is an evil, and these difficulties and dangers the animal seeks to overcome. It is thus seen that the concupiscible appetency is a more 'receptive' disposition, while the irascible appetency is a more 'active' disposition. The former is grounded on simple concupiscence, the latter on anger.

Aristotelian-scholastic philosophers differ in their opinion as to the *nature of the distinction* between concupiscible and irascible appetency. St. Thomas¹ and many others defend the view that a real distinction exists between the two, so that they are two different powers. Suarez² and others reject this view and claim that it is a single appetency expressing itself in two tendencies; the distinction is a *virtual* one, the foundation for the distinction being the two kinds of tendencies.

Feelings

Feelings and *emotions* are important factors in behavior. Feelings and emotions are mental reactions associated with cognitive and appetitive activity, and are usually grouped together under the common term *affective states*. Feelings are relatively simple states, while emotions are considerably complex in character.

Feelings and emotions are conscious *subjective* states and they differ according to the attitude of the experiencing subject. I look out of the window, let us say, and notice that it is raining. That is an act of knowledge, not a feeling. If I had intended to go on an outing, and the outing must now be called off, I experience displeasure; that is a feeling. Or, if I had intended to sprinkle the lawn and now am relieved of the chore, I experience pleasure; that is a feeling. The same fact and observation, therefore, is accompanied by different feelings, depending on the subjective condition of the observer.

In ordinary conversations the terms 'feeling' and 'emotion' have a rather vague and confused meaning. Psychologists, however, attach a specific meaning to these terms. 'Feelings,' to them, mean the more *elementary* affective states which are ultimate in character and cannot be analyzed or resolved into anything simpler as component states.

All psychologists agree that *pleasantness* and *unpleasantness* are elementary feelings. Formerly, it was customary to speak of 'pleasure' and 'pain.' At present, however, the term 'pain' is restricted to the sensation resulting from the stimulation of the sensory receptors for pain; in its stead they use the term 'unpleasure' or 'displeasure.'

Pleasant and unpleasant feelings may accompany *every type of conscious activity*, all the way from the sensations of the somesthetic senses to the highest operations of intellect and will. Mild pressure is pleasant; excessive pressure, unpleasant. Moderate temperatures of warmth and cold are

pleasant; extreme warmth and cold, unpleasant. Visceral sensations, when the functions are normal, are pleasant; when abnormal, unpleasant. Equilibrium, reported by the static or vestibular sense, is pleasant; disturbances of equilibrium, unpleasant. Proper exercise of the muscles and proper disposition of the bodily members produce kinesthetic sensations which are pleasant; otherwise, unpleasant. Many tastes and odors are pleasant; and many are unpleasant. Some color combinations impress us as pleasant; others, as unpleasant. Tones, harmonies, and melodies are pleasant; discordant noises are unpleasant. We find the same condition with respect to the operations of the internal senses. Depending upon the kinds of sensations presented to the central sense, the perceptions of objects and situations affect us pleasantly or unpleasantly. The recall of such objects and situations through imagination and memory affects us the same way; when we imagine or remember an act of kindness, we have a pleasant feeling, but if we imagine or remember a humiliating insult, we have an unpleasant feeling. Instinctive reactions to something agreeable are pleasant, while those referring to something disagreeable are unpleasant. The same is true of the strivings of sensuous appetency when not instinctive; seeking a sensuous good is pleasant, while fighting off a sensuous evil is unpleasant. Even intellectual and volitional processes are toned with pleasantness and unpleasantness. We experience pleasure, when we succeed in solving a difficult intellectual problem; we experience displeasure, when we are unable to solve it. Many decisions of the will are pleasant, especially when they follow our inclinations

and habits; when in opposition to these, they are decidedly unpleasant.

Pleasant and unpleasant feelings are thus seen to accompany all types of activity.

Kinds of Feelings

The question of how many kinds of elementary feelings there are, is a controversial issue. Many psychologists hold the view that pleasure and unpleasure (pleasant and unpleasant reactions) are the only genuinely elementary feelings. Others are not so sure. Those who maintain a larger number are not in agreement as to the number.

W. Wundt proposed an interesting *tridimensional theory* of simple feelings. There are, he says, three distinct pairs of feelings. The first pair are pleasantness and unpleasantness; some tastes are pleasant, others unpleasant. The second pair are excitement and restfulness (depression); the sensation of seeing a red color, Wundt says, causes excitement, while the sensation of seeing a blue color causes restfulness. The third pair are tension and relief (relaxation); waiting for the striking of a clock causes tension, and then the actual striking causes relief or relaxation from the tension. Wundt conceived these three classes of feeling to be like the three dimensions of space, so that any feeling could be accurately analyzed by placing it somewhere in these dimensions. Some feelings would be described as pleasant, exciting, and tense; some as pleasant, restful, and tense; others as unpleasant, exciting, and tense; others as unpleasant, depressed, and relaxed;

and so forth. Consider the following action in the closing seconds of a football game. The score is six to six, one team having just made a touchdown. The try for the point after touchdown is under way. The ball is snapped, placed, booted. The ball is in the air. This is the critical moment. One half of the crowd is pleasantly affected; the other half is unpleasantly affected. Everybody is tense, excited. It is good! The score is seven to six. The tension is over; relief takes its place. There are shouts of joy and moans of displeasure, surging excitement and numb depression. This incident is an illustration of Wundt's theory.

It is questionable whether excitement and restfulness, tension and relief are elementary feelings. Most psychologists are doubtful. T. V. Moore³ inclines to the view that these six feelings mentioned by Wundt are elementary. He thinks that there may be more, perhaps even as many elementary feelings as the number of emotions, each emotion being built upon the basis of a particular elementary feeling. Other authors suggest various feelings as possibly elementary, but there is no uniformity of opinion on the subject. All agree, however, that pleasant and unpleasant feelings are really elementary.

Pleasant and unpleasant feelings can be divided into *sensory* and *rational*. Aristotle⁴ calls attention to the fact that things and activities differing in kind are completed by things differing in kind. The activities of thought differ in kind from the activities of sense, and so, therefore, also do the pleasures which are their complement. The same line of reasoning applies to unpleasant feelings. His conclusion is sound. They are fundamentally different, as anyone will

recognize who compares the pleasant feeling attending the smell of a fragrant rose with that attending the acquisition of scientific knowledge, or who compares the unpleasant feeling of a gnawing hunger with that of one's failure to master a dominant habit. Because sensory and rational processes are of an entirely different order, the feelings of pleasure and unpleasure accompanying them must also be of a different order.

Aristotle⁵ also points out another division. Feelings of pleasure and unpleasure differ according to the *animal species*. Since each species has its proper function and nature, it will also have its proper pleasure and unpleasure. Horse, dog, and man differ in their pleasures, and Aristotle quotes the saying of Heraclitus that 'asses would prefer sweepings to gold.' Species differing in kind, therefore, also have pleasures differing in kind.

The Nature of Feeling

The question of the *nature of feeling* is also a controversial issue. Many opinions have been voiced on the subject.

Plato was of the opinion that pleasure is replenishment, the satisfaction of a want or need, just as pain or unpleasure is the lack of something which the being requires or needs.

Pleasure, then, is a *transition from pain*. Spinoza and Kant held similar views. Aristotle⁶ has already refuted this contention. Not all pleasures are satisfactions of organic cravings like hunger and thirst. Some pleasures do not follow pain or unpleasure. Aristotle mentions the pleasures

of smell, sound, and sight, the pleasures of learning, the pleasures of memories and hopes; these do not presuppose the lack of anything, as if these pleasures would supply an organic deficiency of some sort.

Pleasure, according to Descartes and Leibnitz, is the *consciousness of possessed perfection*. There is some truth in this contention; the consciousness of perfection possessed does give pleasure. There are, however, many kinds of pleasure of which this is not true. The consciousness of perfection and its possession, for instance, does not enter into such pleasures as are experienced in odors, sounds, and color combinations.

Passing on to the era of *modern psychology*, we encounter a variety of views.

Materialists and sensationalists identify feelings with *sensations*. Feelings and sensations, however, are not identical. First, when sensations are placed in the focus of attention, they become more vivid and can readily be observed and studied; but feelings become diffuse and, so to speak, evaporate when we pay close attention to them and seek to analyze them. Second, sensations proceed from sense organs and are localized in them; there are no organs for pleasure and unpleasure. Third, the senses are activated by specific stimuli; the eye responds to light, the ear to sound, and so on. The feelings of pleasure and unpleasure, however, are experienced with the activation of any and all the senses. Fourth, sensations are the direct result of external stimuli and are referred to external objects; they have the character of a representation of objects. Feelings have no such representative, cognitive

character, but are rather the conscious reaction to such sensations. Lastly, the pleasure derived from intellectual pursuits, such as is experienced in the solution of a philosophical or mathematical problem, has no meaning when interpreted in terms of sensations.

The theory that feeling is an *attribute of sensation*, is favorably accepted by some psychologists. This view is also erroneous. It is true, of course, that pleasant and unpleasant feelings have intensity, quality, and duration, like sensations; it is wrong, however, to say on that account that they are nothing more than attributes of sensations. For one thing, if their theory were correct, then these feelings should cease when the sensations cease. However, pleasant or unpleasant feelings which have accompanied sensations may persist a long time after the sensations themselves have ceased to be present. Again, the attributes of sensation (intensity, quality, duration) correspond in general to the attributes of the stimuli. The attributes of feelings, however, are strongly subjective in their very nature and do not parallel the sensations. Finally, the feelings which accompany the rational processes are not based on sensation at all; hence, they cannot be attributes of sensation.

PERHAPS THE MOST SATISFACTORY THEORY IS THE ONE ADVANCED BY *Aristotle* and held by the majority of scholastic philosophers. St. Thomas Aquinas subscribed to the views of Aristotle on this question.

According to Aristotle, activities, whether sensory or rational, are pleasant in so far as these activities are normal and natural for the active subject. Pleasure is a concomitant quality of every vital function, the result of a free and normal release of vital energy. The proportionate exercise of every vital power is accompanied by an appropriate pleasure. The healthy function of the vegetative organs, muscular exercise, seeing, hearing, tasting, imagination, intellection, volition — all are productive of a certain measure of agreeable feeling.

“Since every sense,” says Aristotle, “is active in relation to its object, and a sense which is in good condition acts perfectly in relation to the most beautiful of its objects . . . , it follows that in the case of each sense the best activity is that of the best-conditioned organ in relation to the finest of its objects. And the activity will be the most complete and pleasant. For, while there is pleasure in respect of any sense, and in respect of thought and contemplation no less, the most complete is pleasantest, and that of a well-conditioned organ in relation to the worthiest of its objects is the most complete; and the pleasure completes the activity. But the pleasure does not complete it in the same way as the combination of object and sense, both good, just as health and the doctor are not in the same way the cause of a man’s being healthy. (That pleasure is produced in respect to each sense is plain; for we speak of sights and sounds as pleasant. It is also plain that it arises most of all when both the sense is at its best and it is active in reference to an object which corresponds; when both object and perceiver are of the best there will always be pleasure,

since the requisite agent and patient are both present.) Pleasure completes the activity not as the corresponding permanent state does, by its immanence, but as an end which supervenes as the bloom of youth does on those in the flower of their age. So long, then, as both the intelligible or sensible object and the discriminating or contemplative faculty are as they should be, the pleasure will be involved in the activity; for when both the passive and the active factor are unchanged and are related to each other in the same way, the same result naturally follows."⁷

These acute observations of Aristotle furnish a neat explanation of the diversified character of pleasure, of its essential subjectivity, and of its spread over the entire mental field from sensory cognition and appetite to intellection and volition; for pleasure is the complement of every type of normal and healthy activity.

Aristotle's theory also explains the nature of *unpleasure* or *displeasure*. Displeasure is the result of an excess or defect in the activity of a power or faculty. There is a minimum and a maximum limit to the exercise of every vital power; to exercise a power below the minimum or beyond the maximum will be disproportionate and therefore disagreeable or even painful. For the same reason continuous pleasure is impossible; the power being limited, its activity is also limited, and so is the pleasure which accompanies it. When the limit is exceeded, the activity is no longer pleasant; it begins to dull and finally turns to displeasure. Change is necessary.

Emotion

Emotions, like feelings, are affective mental states; but unlike feelings, which are simple and elementary, emotions are a complex of constitutive factors. In emotions the individual is deeply stirred, agitated, excited, both in mind and body.

Elements both of *cognition* and *appetency* are dominant factors in emotion; in fact, they are essential to the concept of emotion. The animal nature reacts consciously to the presence of some good or evil, recognizes the good or evil present, and the entire organism grows excited and agitated in its effort to possess the good or avoid the evil. Consider the behavior of an affectionate dog greeting his master upon the latter's return after an absence of a few days. The dog grows tense with excitement, barks joyously, wags his tail, jumps up and down, frisks about, and in every way displays delight on again seeing his friend. And then consider the dog's behavior when another dog attempts to steal his bone. Every muscle is tensed with the readiness to fight, he crouches for the spring, snarls, bares his teeth, barks furiously, lunges at his enemy, bites viciously; he exhibits anger in his entire attitude and in every movement. These are instances of emotion, showing how the elements of conscious cognition and appetency are blended together into a complex affective state involving both mind and body.

Emotion always begins with the *perception* of some object or situation as an alluring good or a threatening evil. Perception is followed by an act of *appetency*, due to the aroused impulse to seek the apprehended good or avoid the

apprehended evil. *Changes* in bodily function then result leading to *behavioral reactions*. In this sequence, perception or cognition is the cause of the emotion, the behavioral reactions are the effect of the emotion, while the act of appetency, together with the concomitant bodily changes, form the agitated experience of emotion itself. This agitated experience, consisting of the appetitive act and the bodily changes, is the *very essence of emotion*; there can be no emotion without either the appetitive impulse or the agitated bodily condition. It should be borne in mind, however, that the cognitive, appetitive, and organic factors are irrevocably linked together in the integral emotional pattern.

That emotions can and do occur on a purely *sensory* plane, is evident from the facts that *brute animals* exhibit many types of emotional behavior. They show joy, fear, anger, lust, courage, aversion, and so on. In this respect brute and man are alike. Man, however, being also rational, frequently displays emotional behavior which is touched off by *intellectual* apprehension and *volitional* appetency. Entire nations can be aroused to intense emotion through the enthusiastic support of an ideal, such as the defense of their liberty. An individual may rise up in anger when a derisive epithet is spoken to him or when his honesty is questioned; he may be filled with exaltation when hearing a stirring piece of oratory or when contemplating a beautiful work or art. The cry 'God wills it!' sent hundreds of thousands of crusaders off to a long and bitter religious war. No matter what the particular cause happens to be, the emotional pattern is always more or less alike.

Bodily resonances are the *expression* of emotion. By 'bodily resonances' we understand the organic, physiological changes which occur in the body as a part of the emotional experience. Extensive experimental studies of these changes have been made, some of which are worthy of note.

The *face* of man has always been recognized as an index of emotion. The emotions play upon the facial muscles as upon an instrument. These muscles are very numerous and mobile, and the changes in emotion are reflected in the changes of facial expression, *Cardiovascular* changes, due to emotional excitement, also occur. These changes manifest themselves in the rise or fall of the blood pressure and in the rate and frequency of the heartbeat. Variations of this type are observed and measured.

Respiration also undergoes changes during emotion. There may be a decrease or increase in the frequency of breathing, or the breathing may become deeper or shallower. These variations are measured by the pneumograph.

In general, it may be stated, that in pleasant emotions the pulse is strengthened and retarded, and the breathing accelerated, while in unpleasant emotions the pulse is weakened and accelerated, and the breathing retarded.

Visceral changes also occur through the excitement of the emotional state. No matter what the type of emotion may be, if the excitement is intense, the adrenal glands pour out more of their secretion of adrenalin into the blood stream. This adrenalin in turn produces an increase of blood sugar. Adrenalin stimulates muscular contraction.

Increased muscular contraction consumes energy, and bodily energy is supplied by blood sugar. The purpose of this metabolic mechanism is apparent. Intense emotional excitement occurs when the animal faces a difficult situation which can be overcome only through a struggle involving considerable muscular exertion. If the animal is not to succumb to fatigue, muscular efficiency must be sustained, and it is sustained by the quick production of sugar through the action of the adrenalin.

If we now attempt a *definition* of emotion, we may describe emotion as an *affective mental state of the animal organism, following the cognition of an object or situation, characterized by strong feeling, by an impulse to action, and by physiological changes in bodily function.*

Kinds of Emotions

The *classification* of emotions is a difficult matter. The objects and situations occasioning them on the 'objective' side, the cognitive and appetitive factors, both sensory and rational, and the bodily resonances accompanying them on the 'subjective' side, are so manifold and variable in kind, quality, and degree, that it is extremely difficult to classify the emotions according to clear-cut types. Some attempts at a comprehensive classification will be enumerated.

The traditional *aristotelian-scholastic classification*, in vogue for centuries, is based on the *concupiscible* and *irascible* character of appetency. According to this classification, there are concupiscible and irascible emotions or, as these philosophers preferred to call them,

‘passions.’ Since the concupiscible appetency strives for the good and flees the evil, there are two fundamental emotions: (1) *love* of a good simply as such, and (2) *hatred* of an evil simply as such. This love and hatred may be referred to absent or present objects. We thus arrive at the corresponding emotions: (3) *desire* for an absent good, (4) *aversion* or abhorrence of an absent evil; (5) *joy* or delight in the possession of a present good, (6) *sadness* on account of a present evil. These six emotions refer to good and evil uncomplicated by a supervening difficulty. When the good is difficult to attain and the evil is difficult to avoid, the irascible appetency is aroused, giving rise to irascible emotions. From this standpoint, we arrive at five emotions: (7) *hope*, which considers the good as absent and difficult, but possible of attainment; (8) *despair*, which considers the good as absent and difficult and impossible of attainment; (9) *courage*, which sets itself against a threatening evil considered as conquerable; (10) *fear*, which considers the threatening evil as unavoidable; (11) *anger*, which is an emotion aroused in the presence of an evil that has actually befallen the organism. Anger has no opposite emotion. The present good calls forth the emotion of joy; the present evil, if it does not provoke anger, calls forth sadness; anger thus has no paired member.

It will be noticed, that the concupiscible and irascible emotions correspond to what modern psychologists often refer to as ‘normal situations’ and ‘emergency situations.’ There can be no question that this classification rests on a solid logical and psychological foundation. The objection is made that the classification is incomplete and rudimentary,

many emotions being omitted; no place is found in the list for emotions like pity, surprise, awe, regret, anxiety, and many others. Many emotions, it is true, are omitted. The list, however, contains only the *primary* and *fundamental* emotions; all others would be blends of some sort, and no classification can enumerate all these.

Maher⁸ gives a classification which is more in accord with the trends of modern schools of psychology. He classifies the emotions as follows: (1) *Self-regarding* emotions, which include self-esteem, self-complacency, self-commiseration, pride, vanity; remorse, self-condemnation, shame; fear, anger, sense of power. (2) *Altruistic* emotions, among them primarily sympathy; its opposite would be antipathy. (3) *Feelings* attached to intellectual activity, among which should be enumerated novelty, surprise, wonder. (4) *Aesthetic* emotions, which are aroused by a contemplation of the beautiful, the sublime, and the ludicrous. (5) *Moral* sentiments, which embrace feelings of obligation, responsibility, approbation, disapproval, remorse, self-commendation, reverential fear, guilt, and so on. With regard to this classification, Maher himself observes that the categories are not mutually exclusive. The question can also be raised whether all of these enumerated items contain the element of excitement and agitation universally associated with emotion; there need not be anything exciting, for example, about self-esteem or disapproval or the sense of responsibility, etc. Generally speaking, however, the classification is serviceable.

W. McDougall's⁹ classification meets with approval in many quarters. He bases his division on the instincts. First,

there are fourteen *primary* emotions, corresponding to the fourteen instincts which he enumerates (the instincts are enclosed in parentheses): fear (instinct of escape), anger (combat), disgust (repulsion), love or tenderness (parental), distress (appeal), lust (mating), curiosity or wonder (curiosity), subjection (submission), elation (assertion), loneliness (gregarious), gusto (food-seeking), feeling of possession (acquisition), feeling of creativeness (construction), and amusement (laughter). Second, there are the blended or *secondary* emotions. McDougall gives a number of instances of the blending of primary emotions, such as scorn (anger and disgust), awe (admiration and fear), gratitude (love and the sense of inferiority), and so forth. Third, *derived* emotions. Among these he enumerates confidence, hope, anxiety, despondency, despair, regret, remorse, sorrow, joy, surprise. While this classification is in many respects a good one, one must object to the fundamental point of division. It seems rather arbitrary to base the primary emotions on the instincts alone. What is 'primary' should be relatively simple and elementary in character; but some of these so-called 'primary' emotions are anything but simple and elementary. Joy and sorrow, for example, seem more simple and elementary than a sense of inferiority or a feeling of creativeness.

AN INTERESTING AND PROMISING ATTEMPT AT A *NATURAL classification* of the fundamental emotions has been made by G. I. Schramm,¹⁰ in view of the results obtained from experiments conducted in late years on animals and

children. Prominent in these researches were M. Bentley, K. M. Bridges, C. Bühler, W. B. Cannon, H. Carr, I. F. Dashiell, P. Furfey, A. Gesell, F. Goodenough, H. S. Jennings, W. Kno, C. P. Richter, G. I. Schramm, M. and I. C. Sherman, E. L. Thorndike, E. C. Tolman, L. S. Tsai, J. Watson, R. S. Woodworth, T. P. Young, and many others.

Schramm distinguishes *three main factors* as responsible for emotional behavior: the nature of the stimulus acting on the animal organism; the nature of the organism reacting to the stimulus; the conditions separating the organism from the stimulus. All three factors have an important bearing on the classification of the emotions, because they give rise to fundamental types of emotional states.

Stimuli, which arouse the emotions by acting on the organism, are objects or situations that affect the perceiving organism as something good or evil, agreeable or disagreeable, for its maintenance. Schramm terms this quality of a stimulus the factor of its 'favorableness' or 'unfavorableness.' For example, the sight of food is a favorable stimulus for an animal, while the sight of an enemy is an unfavorable stimulus.

Much depends, too, on the *nature of the organism*, namely, on its age, health, maturity, native and acquired bodily equipment, etc. In the presence of a favorable or unfavorable stimulus, the organism may have a constitution with marked superiority, or with marked inferiority, or with general competence (superiority-inferiority), making it very easy, or very difficult, or moderately easy (difficult) to obtain the good and avoid the evil. Anatomically, animals possess

distinct structures and powers which enable them to obtain a good and avoid an evil: senses for perceiving an object or situation at a distance (sight, hearing, etc.); bodily members designed for moving toward, or away from, an object (wings, legs, fins, etc.); structures for apprehending and holding an attractive good or fending off and destroying a threatening evil (claws, teeth, stings, etc.); receptors and functions of deep sensibility for intimate contact and possession (organs of nutrition, reproduction, etc.). Schramm groups all this under the factor of the 'superiority,' 'superiority-inferiority,' or 'inferiority' of the organism; for brevity's sake, he speaks simply of the factor of 'superiority.'

The factor of *separating conditions* comprises the elements of time, space, obstructions, etc., which intervene between the stimulating object or situation and the reacting organism. Such conditions obviously evoke different emotions. Depending on the anatomical sub-factors just mentioned, one must distinguish four critical loci or zones in the time and space extension of an emotional behavior period. These are: the point where the organism becomes aware of the stimulus ('point of distant fixation'); the point where the organism seeks to overcome the separating conditions or obstructions ('point of locomotion to obstruction'); the point where the organism makes external contact with the stimulus object by seizure or combat ('point of external contact'); the point where the organism makes intimate contact with, or takes possession of, the objects ('point of intimate fixation'). Schramm calls this

temporal period and situational area of emotional behavior the factor of 'space relation.'

It is on the *interplay of these three basic* factors that Schramm builds up his natural classification of emotional phases, as can be seen in the accompanying table.

A PERIODIC TABLE OF EMOTIONAL PHASES

FACTOR OF ORGANISM'S	FACTOR OF SPACE-RELATION				FACTOR OF STIMULUS'S
	<i>Point of Distant Fixation</i>	<i>Point of Locomotion to Obstruction</i>	<i>Point of External Contact</i>	<i>Point of Intimate Fixation</i>	
Superiority	Orientation Desire	Approach Hope	Success Dominance	Adjustment Elation	Favorableness
Superiority-Inferiority	Orientation Desire	Approach Hope	Success Submission	Adjustment Delight	Favorableness
Inferiority	Orientation Jealousy	Approach Despair	None None	None None	Favorableness
Superiority-Inferiority	Orientation Anxiety	Approach Fear	None None	None None	Unfavorableness
Inferiority	Orientation Repugnance	Approach Courage	Failure Inhibition	Adjustment Depression	Unfavorableness
Superiority	Orientation Repugnance	Approach Courage	Success Vengeance	Adjustment Disgust	Unfavorableness

EXPLANATION OF TABLE: "In the above table it will be seen that the superior organism reacts in an approaching or attacking manner, and the ensuing conflict with an obstruction or resistant stimulus object ends in a success for the organism. The activity of the partially superior organism ends in a partial victory, compromise or submission with dependent maintenance. The completely inferior organism neither surmounts the obstruction nor attains the desired stimulus object. It continues suspended in a vicious circle of desire and despair, or anxiety and fear. The favorable stimulus has an attracting influence in all its factorial situations and yields satisfaction when attained in whole or in part. The unfavorable objective has the opposite effect.

"Among the listed phases, the outer columns are mild reaction phases, since they are essentially fixation states.

The inner columns are of emergency behaviors and involve large muscle activities in overcoming obstructions and resisting stimuli objects. The three upper lines of phases yield satisfying experiences, the lower three are dissatisfying. The top and bottom lines of phases have dominance resemblances, the inner lines list the submissive behaviors, the innermost have no contacts with the stimuli nor permanent adjustments, they are deficiency reactions.”¹¹

Many other classifications have been attempted. None, however, seem entirely satisfactory.

The Nature of Emotion

Emotions are elusive reactions. Though powerful in their expressions when unrestrained and left to run their natural course, they subside rapidly when studied by the subject experiencing them.

Three decisive factors stand out prominently in all emotional reactions. First, emotional reactions follow the *perception* of some object or situation which is recognized as being good or evil for the percipient subject. Second, this perception is followed by an *impulse* to acquire the good or to avoid the evil. Third, there ensues the stage of *mental excitement* and the actual *release of energy* (bodily resonance) in the effort to acquire the good or to avoid the evil. Cognition (perception), appetency (conation), and organic agitation (bodily resonance) are inextricably bound together as factors in all emotional reactions; if one of the factors is missing, there is no genuine emotion.

Some authors incline to the view that emotions are the acts of a *third power* or faculty, radically distinct from the powers of cognition and appetency. It is unnecessary to postulate a third power of this sort. No sufficient evidence has ever been produced to show the existence of this third distinctive power or aptitude. An analysis of emotional states shows that they are nothing more than complex products of *appetency or conation* (striving) in the presence of a perceived good or evil affecting the well-being of the organism. Emotions are essentially a protective mechanism, insuring the well-being of the individual by arousing it to action in procuring what is good and in shunning what is harmful.

One must distinguish between *impulse* and *emotion*; they are often confused. An impulse is always a conscious tendency toward or away from something, a 'wanting to act,' and it need not be accompanied at all by any sort of excitement or agitation. I may, for example, want to eat a piece of candy or take a stroll; that is an impulse, and I may, or may not, carry out the impulse. Ordinarily speaking, however, I do not have a 'strong feeling' about the matter. But if someone were to snatch the piece of candy from my hand, just as I am about to put it into my mouth, I might resent this strongly and 'feel very angry' about it; that would be an emotion. One must, therefore, make a distinction between the 'agitated conscious state which is an emotion and the mere 'tendency to do something' which is an impulse.

It is also well to distinguish between *instinct* and *emotion*. Instincts are always native impulses of some kind

or other, and, since emotions are distinct from impulses, there must also be a distinction between emotions and instincts. Instincts involve actions directed toward external objects, while emotions are more in the nature of internal responses. Instincts are often active over a long period of time, while emotions are as a rule ephemeral in character. Emotion and instinct frequently go together, but not always. A person, for example, may follow the instinct of escape by keeping well away from the edge of a precipice without experiencing the mental agitation of fear on that account. Reversely, a person watching an angry lion in a cage may feel the emotion of fear, but the instinctive impulse to combat or escape may be absent because there is no danger. Again, we may experience the emotion of joy in watching the graceful flight of a bird or the playful gambol of a lamb; it would hardly be appropriate, however, to say that some instinct of ours toward the bird or the lamb were thereby called into action. On the other hand, there are also similarities between emotion and instinct. Both are complex patterns involving cognitive, appetitive, and motor factors; both seem to tug at the autonomic nervous system. Emotion has an essentially appetitive core; instinct, an essentially cognitive core.

There is also a distinction between *emotion* and *feeling*. Feelings are simple, emotions are complex. The feeling of pleasantness or unpleasantness often accompanies sensations directly, as in taste or smell. Sensations, as such, never arouse emotions. Objects and situations, to be capable of arousing emotions, must have a *meaningful* significance for the subject, must be recognized as

something beneficial or harmful; experience and knowledge, therefore, are prerequisite conditions for emotion. A slap in the face, for example, may be painful or disagreeable, no matter whether it be given in a playful or in a vindictive mood. My personal reaction, from an emotional standpoint, will be very different in the one case and in the other: If I realize that the action was playful, I may laugh at it; but if I realize that the action was intended as an insult, my resentment and anger may be very keen and intense, Why the different emotional reaction? The difference cannot lie in the slapping itself, because that action is a single action. It can lie only in the insight into the meaning of the action taken as a whole in the context of the entire situation. In man, at any rate, emotion has its source in intellectual thought.

In the *traditional* view, *bodily resonance* is the ‘effect’ of emotion. Because consciousness is in an excited, ‘stirred-up’ condition, it affects the body, giving rise to a number of physiological changes which are the expression of emotion. In other words, the emotions are the cause of bodily resonance as an effect. The sequence would then be as follows: the perception produces the emotion in the perceiving subject, and the emotion then produces the bodily changes; because a man feels fear, he trembles, and because he feels anger, he clenches his fist and strikes. The *James-Lange* theory of emotion reverses this sequence.

According to this theory, propounded by William James (1884)¹² and C. Lange (1885), the “bodily changes follow directly the perception of the exciting fact, and our feeling of the same changes as they occur *is* the emotion.” As James

puts it in his usual graphic style, "the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry, or fearful, as the case may be." According to this view, perceptions cause bodily resonance, and bodily resonance causes emotion.

James appeals to *three sets of facts* as proof of his theory. He shows that objects excite body changes, and every change of consciousness registers in the organism as in a sounding board. He points out that every bodily change is felt the moment it occurs. Finally, he appeals to the introspective fact that if we imagine a strong emotion and then abstract from this emotion all the feelings of bodily symptoms, there is nothing left of the emotion itself.

The theory is untenable. The facts he adduces are admitted. These facts, however, merely prove that *bodily changes are an integral part of emotional experience*. No one denies that. But his argument is beside the point. What James should prove is that the emotion is the effect, and not the cause, of bodily changes. He does not prove this point; he shows that bodily changes are always present in emotional reactions, but he does not show that these changes precede the emotional excitement.

If James' theory were correct, then *genuine emotions* should be aroused in a subject whenever the proper physiological conditions are present. Consider the following case. In thalamic lesion, hyperactivity in the thalamus follows, and as a result the patients often break out into spasms of uncontrollable laughing or crying. According to

the James-Lange theory, this laughing and crying should be true emotion. The patients themselves, however, confess only to a feeling of shame, because they feel ridiculous for laughing or crying without reason; they felt no gladness in their laughter and no grief in their tears, both laughter and crying occurring against their will and better judgment.

Again, if the James-Lange theory is correct, the recordings of the *plethysmograph* and the *pneumograph* made during experiments on emotional reactions, should precede the emotional state itself. The facts, however, are against the theory. These instruments register a perceptible interval of time between emotion and bodily change, the mental state always preceding the bodily symptoms. Practical application of this principle occurs in the so-called 'lie-detector' experiments, where the mental excitement of telling a lie in the face of damaging admissions is always followed by changes in pulse, respiration, etc., which subsequently show up on the graph. Bodily resonance, therefore, follows emotions as the effect follows the cause. This result is also observed in *hypnotic* experiments. Certain emotions, if suggested, produce bodily changes which, when recorded by the plethysmograph and pneumograph, follow the same sequence as in the case of real emotions: first the mental state, and then, after an interval, the bodily changes.

Furthermore, the work of W. Cannon on the *secretion of adrenalin* during emotional excitement does not favor the James-Lange theory. The perception of danger arouses the emotion of fear, but it takes some time before the secretion of adrenalin produces the physiological changes in the

organism; these changes occur too late to be the real cause of the emotion. When adrenalin is injected into the system of a person, this person feels the sensations of muscular tension, etc., usually experienced under the stress of emotion, but the emotion itself, as a strong affective state of consciousness, is not experienced on that account.

Finally, the visceral changes are *common to all emotional* states. The same bodily changes, for example, occur in deep anger and in deep fear. No reason can be assigned why, according to the principles of the James-Lange theory, the same bodily resonance should produce such radically different emotions. Since anger and fear are specifically distinct emotions, they should be caused by specifically distinct, not common, bodily changes. The cause, therefore, must lie elsewhere.

For these and other reasons, the James-Lange theory must be rejected as an inadequate explanation of the nature of emotion.

Walter B. Cannon¹³ has advanced what he terms the *thalamic* or *emergency* theory of the emotions. The thalamus, as we know, is a part of the brain stem. On the basis of experiments with animals, Cannon showed that animals will manifest all the bodily changes and expressions of emotion, even when the cortex is removed, provided the thalamus is left intact; but when the thalamus is severed from the rest of the central nervous system, the bodily resonances disappear. According to Cannon's conclusions, then, the stimuli for emotional reactions first travel to the thalamus. A double neural action now takes place. A part of the neural activity passes upward to the cortex, arousing

conscious emotional experience; a part passes downward into the motor channels controlling the viscera and the skeletal muscles, thereby producing the bodily changes so noticeable in emotional excitement. The cortex itself, in consequence of the conscious experience, may, and usually does, send nerve impulses back to the thalamus, reinforcing or inhibiting the neural impulses sent to the viscera and musculature. The thalamus, therefore, is a center of coordination for emotional behavior.

In general, the role of the thalamus in emotional responses seems pretty well established; but this role is a subordinate one in the whole context of emotional responses. It does not explain everything. Experience shows, for example, that anger, fear, and very many other emotions are aroused through conscious concentration on *imagined* or *remembered* objects and situations. Here no neural impulse passes through the thalamus in the first place; everything begins with images in the cortex, and from the cortex the neural impulses are probably sent to the thalamus. It will thus be seen that the thalamic theory does not give enough prominence to the *cognitive* element of emotion.

The findings of experimental psychology in the field of emotion bear out the explanation of *St. Thomas Aquinas*,^{[14](#)} in which he insists that emotion involves the psychic factors of cognition and appetition, and also the organic factor of bodily change. Cannon's experiments show that 'emotional expressions' may be present without true emotion; but true emotions, in a normal individual, always imply bodily

resonance as an integral part of emotional experience, something which Aquinas had recognized long ago.

IN LOOKING BACK OVER THE PRESENT DISCUSSION, WE ARE AGAIN struck by the fact that the conative processes of sensuous appetency, together with their accompanying feelings and emotions, are intimately linked with the cognitive processes of the various senses. All are subservient to the welfare of the animal as a whole. Sensuous appetency is another phase of man's mental life which highlights the fact that man is in all truth an integral organism.

Summary of Chapter XI

Sense knowledge is one phase of mental activity; sensuous appetency is another phase.

1. *Concept of Appetency.* In general, appetency is the tendency of one thing toward another. In animal nature it is conscious' appetency, the result of a spontaneous inclination following apprehension. That which moves the appetency to action is the good, the suitable. The animal organism thus seeks what is good or useful for itself and avoids what is evil or harmful for itself. Sensuous appetency is defined as *a power in virtue of which a sentient being tends toward a consciously apprehended sensuous good and away from a consciously apprehended sensuous evil.*

2. *Kinds of Appetency.* Sensuous appetency is either *concupiscible* or *irascible*. The former strives directly for what is good in itself; the latter strives to obtain and retain an arduous good and to avoid or remove an arduous evil. Some scholastic philosophers look upon the distinction between concupiscible and irascible appetency as a real distinction; others, as a virtual distinction.

3. *Feelings.* They are affective mental states and as such subjective in character. By feelings, as distinct from emotions, psychologists understand *elementary* feelings. All agree that *pleasant* and *unpleasant* feelings are elementary. They may accompany every type of conscious activity.

4. *Kinds of Feelings.* Many psychologists recognize only pleasantness and unpleasantness as elementary; others enumerate a larger number, but there is no uniformity of

opinion. Wundt proposed a *tridimensional* theory of simple feelings: pleasantness and unpleasantness; excitement and restfulness; tension and relief.

Pleasant and unpleasant feelings can be divided into 'sensory' and 'rational.' Aristotle contends that pleasure and displeasure differ in the different species of animals.

5. *The Nature of Feeling.* Plato thought that pleasure is the satisfaction of a want, a transition from pain. Descartes and Leibnitz thought that pleasure is the consciousness of possessed perfection. Materialists and sensationalists identify feeling with sensation. Others consider feeling to be an attribute of sensation. According to Aristotle and most scholastics, pleasure is a concomitant quality of every vital function, the result of a free and normal release of vital energy; displeasure is the result of an excess or defect in the activity of a power or faculty.

6. *Emotion.* Emotions begin with the *perception* of some object or situation as an alluring good or a threatening evil; perception is followed by an act of *appetency*, seeking the good and avoiding the evil; *bodily changes* then result, leading to behavioral reactions. Emotion is an affective mental state of the animal organism, characterized by strong feeling, by an impulse to action, and by physiological changes in bodily function.

7. *Kinds of Emotions.* The aristotelian-scholastic classification enumerates eleven primary emotions. There are six concupiscible emotions: love and hatred, desire and aversion, joy and sadness. There are five irascible emotions: hope and despair, courage and fear, and anger. Maher classifies them as follows: self-regarding emotions, altruistic

emotions, feelings attached to intellectual activity, esthetic emotions, and moral sentiments. McDougall divides emotions into 'primary,' based on the various instincts, 'blended' or 'secondary' emotions, and 'derived' emotions. G. J. Schramm classifies the fundamental emotions by distinguishing three main factors as responsible for emotional behavior: the nature of the stimulus acting on the organism; the nature of the reacting organism; and the conditions separating the organism from the stimulus.

8. *The Nature of Emotions.* Three factors are involved in emotions: perception; impulse; mental excitement and bodily resonance. No third power is necessary, in order to account for emotions; they are complex products of appetency or conation in the presence of a perceived good or evil affecting the well-being of the organism.

One must distinguish between emotion and impulse, emotion and instinct, emotion and feeling.

In the traditional view, bodily resonance is the effect of emotion. In the *James-Lange* theory, emotion is the effect of bodily resonance. The arguments of James are beside the point, because they merely show that bodily changes are an integral part of emotional experience, something no one denies. Many facts speak against the theory.

W.B. Cannon advanced the *thalamic or emergency theory* of emotion. The thalamus is the center of coordination for emotional behavior. The theory does not account for emotion arising from imagined or remembered objects and situations.

St. Thomas Aquinas explains emotion on the basis of the psychic factors of cognition and appetite and of the

organic factor of bodily change. Trends in modern psychology confirm his view.

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Chapter 12

INTELLECTION

IN THE FOREGOING CHAPTERS WE CONSIDERED MAN ON THE sensory level of his being, treating those processes which he has in common with brute animals. These processes include sensory cognition, as acquired through the mediation of the various external and internal senses, and sensuous appetency. Though different types of function, they are interrelated and interdependent in many ways, so that they are activities of one and the same integral organism.

Intellectual and volitional activities were also mentioned now and then, but more or less incidentally. Due to the complexity of man's nature, intellection and volition frequently intermingle with sensory function, so that we do not find it easy to exclude them, even when endeavoring to give a description of sensory function as such. The reverse is also true; though we will now discuss the *rational processes* in man, it will not be possible to exclude the sensory processes completely, because the rational processes presuppose the sensory processes as an antecedent requisite condition.

The rational processes are characteristically human functions. These are *intellection*, or rational cognition, and *volition*, or rational appetite. Just as in the sensory field sensory cognition precedes sensuous appetite, so too in the rational field intellection precedes volition. We will, therefore, first discuss the function of intellection and then that of volition.

Intellection

Viewed from the standpoint of psychological experience, it is universally recognized that intellection comprises *three distinct processes*: the formation of ideas or concepts, the formation of judgments, and the formation of inferences.

The *concept or idea* is the intellectual representation of a thing. It is expressed in the definition of a thing. When we say that 'Man is a rational animal,' we give the definition of 'man,' and that is the concept or idea we have of 'man.' It is not the words of the definition that is of importance, but the meaning behind the words; it is what we 'have in mind' in the use of these words that expresses the concept or idea. The words will change from one language to another and even in the same language, but the meaning, and therefore also the concept or idea, is always the same. We could, for example, also define 'man' as 'a material, living, sentient, rational substance'; the words are different, but the idea is identical.

The *judgment* is the pronouncement of agreement or disagreement between two ideas. It is expressed in the declaratory sentence, as when we state that 'Oaks are

trees' and 'Birds are not mammals.' We have the concepts 'oaks,' 'tree,' 'birds,' and 'mammals,' and then express their agreement or disagreement among themselves as they appear to our mind. Here also it is not so much a question of the words used in the sentence as of the knowledge present in our mind.

An *inference* is the reasoning process in which, from truths known, we conclude to a truth previously unknown. Somebody asks: 'Fred weighs more than Jack, and Al weighs less than Jack; does Fred weigh more or less than Al?' We conclude that 'Fred weighs more than Al' and 'Al weighs less than Fred.' From the data given we drew our conclusion; that is an inference.

Concepts, judgments, and inferences are grouped under the heading of 'intellection,' and psychology is interested in the process of their formation. If we have a clear knowledge of this process, we can venture a conclusion as to the nature of intellection.

Attention and *abstraction* play an all-important role in the formation of concepts. They throw considerable light on the inner working of the mind in this connection, and it is imperative to understand their operation.

Attention

By attention we understand the direction of the cognitive process toward an object, an activity, or a thought. Attention brings something within the focus of conscious activity, so that the mind becomes aware of its presence. The object upon which we concentrate our attention may be

of the sensory order, as when we pay attention to the flight of a bird or the color of a flower, or it may be of the intellectual order, as when we pay attention to the products of our thinking processes.

Attention is analogous to vision. The objects which are focused upon the center of the retina are clear and distinct, while those whose image falls upon the peripheral portions of the retina are vague and diffused. At most, we are able to see only a few objects clearly at one time — about half a dozen beans among a scattered group or about half a dozen words on a printed page. Similarly, the range of attention is rather narrow. We are unable to concentrate our attention at one time upon more than a very few items; the others remain vaguely within the outer fringe of consciousness. In order to bring many items into the clear field of attention, we must shift our attention, just as we shift the focal point of the retina, from point to point in successive mental movements.

Attention may be *volitional*, as when we deliberately concentrate our attention away from the book we are reading to the street noises outside. Oftentimes, though, it is *involuntary*, as when a clap of thunder or the shrill wail of a fire engine's siren forces our attention momentarily away from reading. At times, too, attention may be more or less habitual, due to a mental set or attitude, as when we are confronted by a definite task which engrosses our attention to the exclusion of everything irrelevant.

Some psychologists claim that attention is based entirely on the *strength of the stimuli* demanding attention; the strongest stimulus, they say, receives attention. While true

enough in very many instances, it is not universally true. It happens on some occasions that we deliberately turn our attention away from sights or sounds or thoughts which clamor insistently that we give heed to them; we may close our eyes or stop our ears to shut out an unwelcome sight or sound, or inflict discomfort upon ourselves to banish a certain train of thoughts.

There is more truth to the contention of some psychologists that attention is fundamentally a question of *interest*. That interest facilitates attention is natural. Interest, however, is only one factor which normally arouses attention; it is not the total explanation of attention. We may be intensely interested in a certain activity; if we realize, however, that our interest is misplaced or excessive, we can center our attention on something entirely different.

Some psychologists, especially those of a sensationalistic and associationistic trend of mind, advance the *drainage theory* of attention. According to this theory, only a limited amount of nerve energy can be utilized at any one time in perception. For example, when we listen attentively to the song of a robin, this limited amount of available energy in the brain is conducted into the auditory set of nerves and thereby drained away from the nerve paths of the other senses. This is an interesting theory, but it is highly speculative. Some such physiological arrangement may be present, but it would hardly account for those cases where we focus our attention on purely intellectual and voluntary operations or upon our own Ego. Just why the range of attention is so narrow in extent is very much of a mystery.

Behaviorists explain attention by *bodily attitudes*. Because the apparatus of a certain sense is definitely adjusted or 'attuned' to some stimuli, these stimuli produce sensations which force themselves into the focus of our attention. There is, of course, some truth to this claim, but it is only a part of the truth. It does happen at times that we hear certain faint sounds, because our hearing is 'keyed up' for some reason or other. But it is equally true that sometimes we deliberately induce bodily attitudes through antecedent attention, as when we purposely strain our ears to hear the faint ticking of the watch lying before us on the desk.

Whatever may be the ultimate explanation of the basic nature of attention, it is an obvious fact of experience that through attention we direct our cognitive processes, voluntarily or involuntarily, upon an object or set of objects and thereby become aware of their presence before the mind. *Without attention we cannot cognize an object.* To form an idea or concept of an object, therefore, we must focus our attention upon this object.

Abstraction

Attention is the first stage in the formation of an idea or concept. The next stage is that of *abstraction*.

Broadly speaking, abstraction is the intellectual process in which, through an act of selective attention, *we leave out of consideration one or more aspects of a complex total object so as to attend to some other aspect or aspects of this object.* An example will clarify the meaning of this

definition. In looking at the leaves of a chestnut tree, I concentrate my attention, let us say, upon their characteristic 'shape,' leaving out of consideration their color, chemical composition, biologic function, relation to the branches, etc. In separating mentally the 'shape' of the leaves from these other aspects of the complex total object of the 'leaves,' I have performed the mental process of abstraction. By applying this selective attention upon the 'shape,' I draw this 'shape' away (Lat., *abstrahere*, *ab* and *trahere*, to draw away from or out of) from the other aspects or items present; I do not deny the presence of these other items in the leaves, but I ignore them in my consideration and put them mentally aside. Again, I may direct my attention upon the 'color' of the leaves, or their 'chemical composition,' omitting the other items from consideration; this, too, is abstraction in the meaning defined.

Every act of abstraction involves an act of attention, but every act of attention does not involve an act of abstraction. In abstraction we select one item in a *total object* for special consideration ignoring the rest but without denying their presence in the total object. Abstraction thus involves an act of attention focused on the one item to the exclusion of other items. Of all the items present in the total object 'chestnut leaf,' I focused my attention solely on the 'shape.' We may, on the other hand, have attention without abstraction. We may, for example, concentrate our attention on a chestnut tree, and then turn our attention to an oak or an elm standing nearby. Chestnut, oak, and elm trees are distinct entities and do not form a 'total object' among

themselves; each has a separate existence of its own in nature, so that they are different 'total objects.' In abstraction, however, the various items exist together in the same 'total object' as a unit, and it is only *ideally or mentally* that the act of selective attention separates one item from the others and gives it special consideration. Attention and abstraction, therefore, are not identical processes in all respects. Abstraction is a species of attention, a particular type of attention.

Because of this mental separation of items through selective attention, we speak of *positive* and *negative* abstraction. The item selected for special consideration moves into the focus of attention, and we become aware of its presence in a clear and vivid manner. This act of attention is a positive act or process. The abstraction resulting from this act of selective attention is, therefore, a 'positive abstraction,' and the item thus mentally abstracted from the other items present in the total object is said to be 'positively abstracted.' The other items, not selected by the act of attention, thereby automatically move into the outer fringe of attention and are automatically separated or mentally dissociated from the selected item. By the very fact, for example, that we positively abstract the 'shape' of the chestnut leaf from the other items present, we also abstract these other items from the 'shape'; the separation of the one involves the separation of the others. Since the abstraction of the 'shape' is the result of a positive act of attention, the abstraction of the other items is a 'negative abstraction,' and they are said to be 'negatively abstracted.'

There are two forms of abstraction: *generalizing and isolating* abstraction. The formation of concepts cannot be understood without a thorough grasp of these two forms of abstraction.

Generalizing Abstraction

Generalizing abstraction is that form of abstraction in which we separate mentally, through an act of selective attention, *items which are common to a number of individual objects from those items in which these objects differ and then arrange the objects having the common items into a class as a unit.*

There are, for example, many kinds of trees — chestnut trees, oak trees, elm trees, apple trees, pear trees, maple trees, pine trees, etc. They differ in many items, but they also have certain items in common. If we concentrate our attention on the items they have in common, we find that all are ‘woody perennial plants having a single main stem or trunk arising from the soil, their tops consisting of branches and foliage.’ By leaving aside all the items in which they differ and considering only the items in which they are alike, we arrange them all into a single class and designate them as ‘trees.’ This is an instance of ‘generalizing abstraction,’ and by its means we have arrived at the *concept or idea* of ‘trees.’ The items contained in this concept of ‘tree’ are such that they can be applied to any single tree taken individually, such as the elm tree growing on the lawn in front of my house or the solitary apple tree growing in my back yard, and also to all trees taken

collectively as a class, no matter what their kind or number. The content of the idea 'tree,' as expressed in the definition given above, is an *identical and permanent content*, applicable to the whole class and to every member of the class. The content of the idea is thus universal in application, and such an idea is therefore said to be a *universal idea*, i.e., an idea which represents some common nature or attribute which can be applied to *a class as a whole* and to each individual of that class. The product of generalizing abstraction, therefore, is the universal idea.

The fact, whether there exists in the intellect anything like the process of generalizing abstraction, has long been a matter of dispute among English-speaking philosophers. John Locke (1690), in his *Essay Concerning Human Understanding*¹ claimed that he had a general (universal) idea of a 'triangle.' George Berkeley (1710) was convinced that he possessed no such wonderful faculty of abstracting ideas. "For myself," he says, "I find indeed I have a faculty of imagining or representing to myself the ideas of those particular things I have perceived and of variously compounding and dividing them.... The idea of man that I frame to myself must be either of a white, or a black, or a tawny, a straight, or a crooked, a tall, or a low, or a middle-sized man. I cannot by any effort of thought conceive the abstract idea above described."² He is convinced that there are no such things as abstract (general or universal) ideas.

Berkeley's contention is easily tested. Consider the idea of 'man' as advanced by Berkeley in the quotation just given. It is, of course, entirely concrete and particularized, not abstract and universal. And now consider the following

analysis of the idea 'man' as subjected to a process of selective attention and abstraction.

Human beings are individuals, and no two are altogether alike. They possess differences in color, weight, size, bodily formation, mental and emotional peculiarities, etc., which distinguish one human being from another. Some are, as Berkeley points out, white, some black, some tawny; some are straight, some crooked; some tall, some short, some middle-sized. Some are male, others female; some are vicious, others virtuous; some are healthy, others diseased; in age they range from infants to centenarians. Individual men are perceived in this manner and imagined in sense-images; perceiving and imaging in this manner is an everyday occurrence. So far, our selective attention has been directed toward the features in which individual men *differ*. But the mind does not stop with contemplating these individual differences; it can, and does, also focus its attention on the features in which the individual men *agree* and which they have in common. Focusing our attention on the features common to all men, we find that all men, no matter what their individual differences may be, possess a body which exists for itself, independent of all others; man is, therefore, a 'bodily substance.' Like the plants, men take in food, assimilate it, grow; man, therefore, lives and is a 'living bodily substance.' Like the brutes, man has external and internal senses which enable him to obtain sensory knowledge; man, therefore, is a 'sentient living bodily substance.' Unlike chemicals, plants, and brutes, men think, reason; *man, therefore, is a rational, sentient, living, bodily substance*. These features are not sensed or imagined, but

they are true features of man, and they are the features which all men have in *common* and which are *essential* to man as man, irrespective of all individual differences. Now, a 'sentient, living, bodily substance' is termed an 'animal,' and man is thus defined as a rational animal. The individualizing features have been left aside, and the common, essential features have been grouped together. By means of this process of selective attention we have 'abstracted' the common, essential features, ignoring, though not denying, the differentiating qualities, such as 'white,' 'black,' 'tawny,' 'straight,' 'crooked,' etc. The result was obtained by a process of *abstraction*. This definition of 'man' as a 'rational animal' can now be applied in all truth to every single man, because this thought-content is present in each individual; we are thus able to say 'George Berkeley is a rational animal.' But it can also be extended in its application to all men taken collectively as a group, as when we state that 'Man is a rational animal.' Now we have *generalized* the features common to all men, applying the thought-content 'rational animal' to all men as a class and to each individual of that class. We have performed the mental operation of a *generalizing abstraction*, and through it we have arrived at an idea of 'man' quite different from that of Berkeley. Berkeley's so-called 'idea' of man is no idea of all, but a sense-image. Ours is a true idea or concept, namely, the *intellectual representation* of 'man.'

The Chinaman and the Zulu, the Mohawk and the Inca, the Egyptian and the Greek, the Roman and the Englishman, the European and the American — all, individually and collectively, possess the same (not identical,

but like) common human nature or essence. The idea (concept) of this common nature or essence then also applies to all, individually and collectively, and is therefore a truly *general or universal idea*.

There is really nothing mysterious or wonderful about this mental power of abstraction. It is a commonplace thing, used every day in the week. Even children use it constantly. They soon learn to 'abstract' the features common to dogs, cats, horses, men, dolls, dresses, houses, etc. If they did not possess the power of abstraction, it would be impossible for them to point to an object or picture and designate it as a 'dog,' a 'cat,' a 'doll,' a 'house,' and so on; they recognize the individual thing as belonging to a definite class because of some common feature or features present in all members of that class.

We thus see that the process of generalizing abstraction is nothing more than a particular form of selective attention, and the product of this abstraction is the universal idea.

AFTER HAVING DESCRIBED THE PROCESS OF GENERALIZING abstraction which results in the formation of universal ideas or concepts, it is easy to find *evidence of its presence*.

We find this evidence in the *common vocables* or words existing in every language. Nouns and adjectives, in their usual forms, are all universal ideas. They represent items common to a class as a whole and to every member of that class. Among nouns we may mention at random ideas such as 'house,' 'watch,' 'pencil,' 'dog,' 'bird,' 'fly,' 'book,'

'orange,' 'cloud,' and so on. Among adjectives, 'red,' 'soft,' 'small,' 'metallic,' 'bright,' 'transparent,' 'fluid,' and so forth.

Every general *definition* represents a universal idea. The dictionary is a collection of universal ideas defined. Take the definition, for example, of a 'triangle' as 'a figure formed by three lines intersecting by twos in three points, and so forming three angles.' It makes no difference whether the individual triangles be equilateral, isosceles, right-angled, obtuse-angled, or scalene; the definition or idea fits each one individually and all of them as a class.

Scientific *nomenclature* and *classification* consist of universal ideas obtained through generalizing abstraction. The only reason why scientists are able to group the objects of their science into varieties, species, genera, families, etc., is due to the fact that they recognize the features common to many, so that they can be arranged into definite classes and subclasses. Without generalizing abstraction they could describe nothing but individuals.

Generalizing abstraction, therefore, is an ordinary fact of mental experiences found in young and old, in the illiterate and in the educated.

Generalizing abstraction appears in three degrees or grades: *physical, mathematical, and metaphysical*.

Consider again the instance of the 'tree.' My sense image of a 'tree' places before me, either in perception or in imagination, a single object clothed with all the individualizing circumstances of color, shape, size, time, and place. It is either *this* chestnut tree, or *this* oak tree, or *this* apple tree, and so forth. By comparing the various kinds of tree, I abstract those items *common to all 'trees,'* omitting

all the items peculiar to the single kinds of trees and to all individual trees. This degree of abstraction is *physical* abstraction.

It may be a question of leaving all sensible matter out of consideration and concentrating one's attention solely on the *magnitude, extension, and quantity* present in bodies. We then have abstract ideas of a 'point,' a 'line,' a 'plane,' a 'square,' a 'triangle,' a 'circle,' a 'square root,' etc. Our concept of a 'triangle,' for example, is not only divested of color, shape, size, and so on, but also of all materiality. This degree of abstraction is *mathematical* abstraction.

The highest degree of abstraction consists in this, that we divest things of all that distinguishes one kind of thing from another kind of thing (matter and spirit, sensible and supra-sensible, creature and God) and select only those items in which *all things* agree and which they have in common. Such abstract ideas will then apply to all things. Among these ideas are, for example, 'being,' 'substance,' 'good,' 'true,' 'cause,' 'actuality,' and so forth. This degree of abstraction is *metaphysical* abstraction.

Scholastics group these three degrees of abstraction under the common term of *formal abstraction*. They also speak of *total abstraction*. By the latter they understand the abstraction of the universal whole in progressive stages. For example, we abstract or extract the concept of 'man' from Joe and Jane, then that of 'animal' or 'sentient being,' then that of 'living being,' then that of 'substance.'

Isolating Abstraction

The second form of abstraction is *isolating abstraction*. It is the mental process by which, through selective attention, we mentally separate a particular feature from the subject in which it exists. The separation is mental, not physical. We concentrate our attention upon this feature, to the exclusion of others, and consider it in our mind as if it existed independently of a subject. The product of the isolating abstraction is the *abstract* idea.

Language is replete with abstract ideas. Such are ideas like 'whiteness,' 'brightness,' 'softness,' 'transparency,' 'humanity,' 'triangularity,' 'animality,' 'rationality,' etc. The difference between a concrete and an abstract idea should be fairly obvious. 'White' is concrete; 'whiteness,' abstract. 'Transparent' is concrete; 'transparency,' abstract. 'Man' is concrete; 'humanity,' abstract. 'Triangle' is concrete; 'triangularity,' abstract. Concrete ideas always imply a *subject* with an attribute. 'White,' for example, always means 'something white.' Abstract ideas consider the item mentioned *as if* it had *no* subject. The use of concrete and abstract ideas as predicates in sentences reveals their difference. We say that 'The rose is (something) white,' but we say that 'The rose has whiteness.' Or, 'Peter is a man,' but 'Peter *possesses* humanity (meaning 'human nature').' Again, 'The sun is bright' but 'The sun *has* brightness.'

When we turn our attention upon a *quality, attribute, or activity* existing in some thing and make a noun or substantive of it, thereby lifting it mentally out of the subject in which it is found and exists, we use isolating abstraction. By isolating such a quality, attribute, or activity from its subject, we treat the quality, attribute, or activity as

if it existed independently, as if it were a substance, and no longer a mere quality, attribute, or activity belonging to a subject; in other words, we *substantivize* or *personify* the quality, attribute, or activity.

This type of abstraction is very common in our mental operations. We perform the operation so frequently, that we even fail to notice the performance. Read the preceding and the present paragraphs carefully, and note the abstract ideas contained therein. Among them are 'attention,' 'quality,' 'attribute,' 'activity,' 'abstraction,' 'operation,' 'performance.' In nature, as actually existing, we have indeed an 'attending, active, abstracting mind or human being,' but there exists no such thing as 'attention,' 'activity,' or 'abstraction' by itself. We treat these realities as if they existed outside a subject, due to the substantivization of the process of isolating abstraction.

Scientific treatises swarm with abstract ideas of all kinds. Rather than mention the subject-plus-quality on all occasions, scientists simply substantivize the quality, when they desire to speak of the quality in which they are interested. Such a procedure is, of course, perfectly legitimate, so long as we remember that in actual existence the underlying subject is also present, even though not mentioned. Biologists thus speak of 'life,' 'growth,' 'nutrition.' Physicists speak of 'motion,' 'velocity,' 'vibration,' 'sound.' Mathematicians speak of 'magnitude,' 'extension,' 'triangularity,' 'number.' Psychologists speak of 'sensations,' 'appetency,' 'emotion,' 'thought,' 'perception,' 'abstraction,' 'intellection,' 'volition,' 'attention,' and so forth.

It is important to bear this fact about isolating abstraction in mind. Though the underlying subject of the isolated items is not mentioned, *the underlying subject is not denied but implied*.

We thus see that generalizing and isolating abstraction are two very important functions of the mind. They are the instruments which the mind uses to penetrate beneath the appearance of sense into the inner, hidden *nature* of things. They reveal, as Aristotle expressed it pithily, 'what a thing is.' The senses merely perceive 'how a thing appears,' but the intellect understands 'what a thing is.' A 'man,' viewed from the standpoint of the senses, is 'white or black or tawny, straight or crooked, tall or low or middle-sized'; viewed from the standpoint of the intellect, a 'man' is a 'rational animal.' The senses elaborate an image of 'man'; the intellect elaborates an idea of man.' Both the image and the idea are representations of one and the same object, 'man'; but the image is a sensory representation, while the idea or concept is an intellectual representation, and both representations are entirely different in character and content. The sensory image is the product of sensation and perception, the idea or concept is the product of abstraction and intellection.

The Idea or Concept

Intellection consists in the formation of ideas, judgments, and inferences. We must now turn our attention specifically to these mental items.

The *concept or idea*, as was stated before, is the intellectual representation of a thing; that is to say, it represents 'what a thing is.' How many *kinds* of things do concepts cover? How far do concepts extend in the range of objects?

For one thing, we have ideas of the objects of sense and of their attributes. I perceive, let us say, a 'white man,' a 'moving automobile,' a 'red flower,' a 'glowing sun.' Through the process of abstraction I evolve the ideas of 'whiteness,' 'man,' 'motion,' 'automobile,' 'redness,' 'flower,' 'glow,' 'sun.' Anything and everything, which affects the senses and is perceived can become the object of an idea or concept by means of generalizing and isolating abstraction. But we also have ideas of objects and attributes which are spiritual and immaterial and which are not perceived by the senses. Such are, for example, our ideas of 'soul,' 'God,' 'good,' 'evil,' 'truth,' 'error,' 'intellect,' 'thought,' 'infinite,' 'law,' and a host of others. It makes no difference in this connection whether such things actually exist or do not exist; the fact is simply that we have ideas of them. The sum of all the objects and attributes included within the range of our concepts is termed the *material object* of the intellect.

The common, *formal object* of the human intellect is that particular aspect of things in virtue of which they are the object just of the intellect, and not, for example, of the senses; it is that which is 'intelligible' in all things. There must be some intelligible content in all things, material and immaterial, finite and infinite, which represents a *common element* present in everything of which we can form ideas. The common, formal object of the intellect is *being*. The

only intelligible element in which all things (God and creature, material and immaterial, object and attribute) agree is that they are 'things,' 'beings.' *Being, thingness, whatness*, therefore, is the common, formal object of the intellect.

Philosophers make a distinction between the *primary* and the *secondary* formal object of the intellect. The 'primary' formal object is the proper, proportionate, direct, natural, and immediate object to which the intellect turns its attention and of which it forms its ideas; it is, one might say, that particular type of object which the human intellect, by its very nature and constitution, is 'made to know.' Anything else would be a 'secondary' formal object. Now, what precisely is the primary and what is the secondary formal object of the human intellect?

THE PRIMARY FORMAL OBJECT IS THE 'SENSIBLE,' BUT AS ABSTRACT and universal.

In saying that the primary formal object of the human intellect is the 'sensible,' we mean to state that the intellect is so constituted, that it derives its ideas directly and naturally from the *sense objects* presented in sensory experience. And now for the proofs.

First, normal and abnormal psychology reveal the fact that a very close connection exists between *nerve action* and intellectual activity. A normal functioning of the nervous system facilitates rational knowledge, while pathological disturbances interfere with the orderly processes of thinking. One need but remind one's self of the influence of

drugs and of cerebral injuries upon thinking, in order to realize the close connection between nerve action and intellectual activity. Persons blind or deaf from birth can form no adequate idea of color or sound; this fact is definite indication that the human intellect obtains its ideas by turning to the data presented by the external and internal senses.

Second, *consciousness* is witness to the same general fact. It is a common practice in the elucidation of difficult and abstruse problems to have recourse to images and analogies taken from sensible objects. Images and analogies can make abstract ideas clear only on the supposition that the intellect derives its concepts first and primarily from sensible objects. The primitive words of every language are concrete and sensible in character. Anglo-Saxon words, for example, are seldom abstract, but rather concrete, in form. Highly abstract technical terminology, such as is used in scientific and philosophical discussions, is the product of advanced culture and mental development extending over a period of centuries. Even technical terms show their sensible origin in their etymology. Mainly, however, our concept of immaterial and spiritual realities shows that our intellect derives its ideas naturally and originally from material and sensible objects since the terms are negative or analogical in their ultimate meaning. 'Immaterial,' for example, means 'not-material' and 'spiritual' means 'breath-like' (*spiritus*, breath). The only way in which we can express supra-sensible things is to use a sensible term and deny the limitations inherent therein, as when we say that 'the soul is immortal (not

mortal)' and 'God is infinite (not-finite).' This method of using images and analogies makes it plain that the primary formal object of the human intellect is the *sensible*, not the spiritual.

Third, our thinking has the tendency to be accompanied by images of some sort. Whether there is such a thing as 'imageless thought,' will be taken up later. The fact remains that images seem to run along with our concepts. If we think of a triangle,' we will probably find a faint image of a triangle present at the same time. If we think of a 'tree,' a 'fish,' a 'house,' a 'street,' a 'man,' etc., some sort of image of these things will in all probability accompany their ideas. It would take a distinct effort on our part to exclude these images, which would hardly be the case if they were foreign elements intruding themselves upon our consciousness. We must, then, conclude that the materials for the formation of ideas are presented to the intellect by the senses. The sensible, therefore, is the primary formal object of the intellect.

The primary formal object of the human intellect is the sensible, but the sensible as *abstract and universal*.

That we conceive the sensible as abstract and universal, should be clear from what has been said above concerning generalizing and isolating *abstraction*. Sensible objects are individual objects, no two of which are perfectly alike in all respects. If our ideas of sensible objects were concrete and individualized like these objects themselves, they would fit a single object only and could not be applied to a class as a whole and to each individual of that class. What I perceive in nature is 'this elm,' 'this oak,' 'this birch,' 'this pine,' etc.

They are single things perceived singly. There is no such thing in nature like a 'universal elm' or a 'universal tree.' By abstracting the features common to all elms and to all trees and expressing them in a single concept, I obtain the abstract idea of 'elm' and 'tree,' which designates 'what an elm is' and 'what a tree is.' I then extend the idea 'elm' to all elms and the idea 'tree' to all trees, so that these ideas have a universal application. Ideas thus express the *class-nature*, applicable to each and all; they are abstract and universal.

It is because of this character of abstractness and universality, that *words* and *language* are an *intelligible vehicle of ideas*. Words stand for ideas, and ideas stand for the class-nature of things. Because ideas are abstract and universal, the words symbolizing them convey knowledge from one intellect to another which is permanent, unchangeable, and essential, independent of the changing individual things from which these ideas were originally derived. Scientific works would have no lasting value, if the scientists had not abstracted the common and essential features of objects and activities, universalized the information contained in their ideas, and then expressed them in words which are also abstract and universal. Words partake of the nature of the ideas which they represent.

We thus see the truth of the statement that the primary formal object of the human intellect is the sensible, but abstract and universal.

IT FOLLOWS AS A NECESSARY CONSEQUENCE THAT WHATEVER IS *supra-sensible*, spiritual, and extra-mundane is not the primary but the *secondary formal object* of the human intellect. Among such objects must be included 'soul,' 'spirit,' 'God,' and all that pertains to them.

Consider our thinking experience. We experience far greater difficulties in forming concepts of these types of being than we do of sensible objects. It is, for example, more difficult to arrive at a comprehensive and clear idea of the 'soul' than of a 'tree' or a 'triangle.' Ideas of spiritual realities never enter the mind spontaneously, but by indirection and inference; we draw conclusions concerning them from the objects and facts of sense presented in sensory experience. Again, our ideas of spiritual realities reveal their ultimate *sensory origin* by the fact that their basic meaning is derived from concepts having sensible significance. We have an example, mentioned before, in the word 'spirit' which originally meant 'breath.' In thinking of God and His attributes we start with the perfections of creatures (material, finite, powerful, knowing, etc.), deny the imperfections (immaterial, in-finite), and then ascribe to Him these creatural perfections in a boundless manner (all-powerful, all-knowing). Our ideas of purely spiritual beings and realities thus being acquired by a direction of the mind to the ideas abstracted from sensible objects and realities, it is evident that the supra-sensible is not the proper, direct, immediate, and natural object of the intellect of man, but its secondary object.

The present discussion proves the truth of Aristotle's famous pronouncement: *There is nothing in the intellect*

which was not first in the senses. Our knowledge begins with sensory experience and ends up in intellectual ideas.

Idea and Image

Berkeley, it will be remembered, confused his 'image' of man with the abstract and universal 'idea' of man. The same confusion occurs frequently among modern psychologists. It is advisable, therefore, to point out the main difference between ideas (concepts) and images (phantasms).

In speaking of 'image' and 'phantasm,' we include both the 'percept' of the central sense, as synthesized from the sensations aroused by stimuli in the presence of a sense object, and the 'image' of an object which is revived in the imagination in the absence of the original sense object. For the sake of convenience, the terms 'idea' and 'image' will be used.

For one thing, the image is always concrete and individualized, fitting at the most only a few objects at one and the same time; and if the image is very clear and detailed, it can fit but a single object. The reason is obvious. An image is taken from a sensible object and represents this object; an object, however, is always concrete and individual. We indeed have what are called 'general images,' such as the general image of a cat, a fish, a house, a boat, and so forth; we retain in such a general image only the most striking features of a particular set of objects, so that our image is more or less schematic. It is impossible, however, to form an image which would resemble all the

members of even a single class. We cannot, for example, form the image of a 'man' which would adequately fit at the same time a baby, a girl of eighteen, Napoleon, George Washington, a Negro woman, and an Indian. Much less would the single image of an 'animal' fit such heterogeneous types of animals as a spider, a snake, an ostrich, a shark, an elephant, and an amoeba.

We experience no such difficulty in applying an idea to the different kinds of individuals and classes, because the idea is *universal*. Our idea of 'man' as a 'rational animal' fits all individual human beings without exception, no matter what their age, sex, race, color, or personal characteristics. Similarly, our idea of 'animal' as a 'sentient living bodily substance' fits all the heterogeneous types of animals mentioned above.

Another difference is this, that an image becomes very *vague and indistinct with complexity and minuteness of detail*, while the idea remains clear and distinct. It is not difficult to form an image of 5 trees in a row; but it is utterly impossible for me to form an image of 50 (not 49 or 51) trees in a row. Yet my idea of 50 or of 5,000,000 trees is just as clear to me as my idea of 5 trees. Again, I cannot form an image of a geometrical 'lines which has only length and no depth or width; but my idea of such a 'line' contains no depth or width, as my definition of a line shows.

Finally, in many instances we have very clear ideas of things, but we are incapable of forming any *reasonable image* of them. Since we speak of such things as 'economics,' 'law,' 'virtue,' 'soul,' 'life,' 'God,' 'will,' 'knowledge,' 'ignorance,' 'death,' 'inference,' 'abstraction,'

‘psychology,’ etc., and even define them, we certainly have ideas of them. If we search our mind, however, we find no proper image of such ideas. Or, can we invest ‘abstraction’ with anything like shape, weight, size, color, sound, and similar qualities, so prominently present in our images? To put this question is to answer it.

Experimental psychology also has supplied evidence which shows that ideas are different from images. If ideas are images, then it must be impossible for ideas and images to become *separated in experience*. But they do occur separately in temporal sequence. Laboratory experiments, made to determine the time required for a meaning (idea) and for visual or kinesthetic images to appear relative to the same object, definitely show that ideas and images do not appear simultaneously. The images appear later than the meanings or ideas.³ This time difference proves that ideas and images are different as entities.

Pathology also furnishes evidence along these lines. In the chapter on the central of synthetic sense, instances were cited where damage to the cerebrum caused serious interference with the operations of this sense. Persons so afflicted did not recognize an object or a picture or a drawing placed before them; the image was present, but it had no meaning for them, so that they could not state what the image represented. They had, however, clear ideas of these things; because, when asked about them, they talked intelligently and understandingly concerning these things, thereby showing that they knew ‘what the thing is,’ even though the image itself conveyed no meaning to their mind. Ideas, therefore, must be distinct from images.

From the evidence adduced it should be apparent how utterly erroneous is the view of James Mill, as expressed in the following passage: "If I say I have the idea of a horse, I can explain distinctly what I mean. I have the ideas of the sensation of sight, of touch, of hearing, of something with which the body and actions of a horse have impressed me. These ideas combined, and so closely, that their existence appears simultaneous and one. This is my idea of a horse."⁴ On the contrary, this is not an idea, but an image.

The Judgment

Ideas lead to judgments. A judgment is an *act of the mind pronouncing the agreement or disagreement of ideas among themselves*; or, to express the same meaning in different words, it is an *act of the intellect affirming or denying one idea of another*.

The judgment always appears in one of two ways: it will either *affirm* or *deny*. In stating that 'The rose is a flower,' I affirm the agreement between the two ideas 'rose' and 'flower.' And in stating that 'The whale is not a fish,' I deny the agreement (or, affirm the disagreement) between the two ideas 'whale' and 'fish.'

Psychologically, the following stages occur in the intellect in the formation of a judgment: two ideas are presented by the intellect to itself for consideration; the meanings of the two ideas are grasped and understood separately; these meanings are compared with each other; the intellect perceives their mutual agreement or disagreement; then follows the mental expression or

pronouncement of their mutual agreement or disagreement, and this pronouncement is the judgment proper. Here is an example. The two ideas 'man' and 'animal' are presented to my intellect. A 'man,' I understand, is a 'rational, sentient, living, bodily substance,' and an 'animal' is a 'sentient, living, bodily substance.' I now compare these two meanings with each other. I perceive that the thought-content of 'animal' as a 'sentient, living, bodily substance' is included in the thought-content of 'man' as a 'rational, sentient, living, bodily substance,' and in so far both thought-contents are in agreement with each other. I now express or pronounce this agreement in the mental judgment that 'Man is an animal.' If I were to compare the two ideas 'whale' and 'fish,' I would go through the same procedure, but I would perceive that the thought-contents of 'fish' does not agree with that of 'whale' (for the whale is a mammal, not a fish), and I would pronounce their disagreement by the judgment that 'The whale is not a fish.' Depending upon the ideas compared, my judgment will contain an affirmation or a denial.

Three elements, then, enter into the composition of a judgment: two ideas, and the mental act pronouncing their agreement or disagreement. One idea, the subject-idea, is the one 'about which' something is said; and the other idea, the predicate idea, is the one 'which is said about' the other. The two compared ideas are the matter of the judgment, because they are the materials which enter into composition in the judgment. The act pronouncing their agreement or disagreement is the *form* of the judgment, because this pronouncement constitutes the very essence of

the judgment as a judgment, distinguishing it from the concept and the inference. From the standpoint of its 'matter,' the judgment is a composition of two distinct elements, the ideas; from the standpoint of its 'form,' the pronouncement, it is a single intellectual act fusing the two ideas into one or separating them from each other. Such is the nature of the judgment.

The *foundation* of the judgment consists in the *intellectual insight into the logical relations* which exist between the subject-idea and the predicate-idea. The mind perceives that the subject-idea is contained (or not contained) within the class-extension of the predicate-idea, and that the thought-content or comprehension of the predicate-idea is contained (or not contained) within the thought-content or comprehension of the subject-idea. Correspondingly, the intellect pronounces its judgment of agreement or disagreement.⁵ These relations, it will be observed, are of a *logical* nature and entirely different from the sensible relations which exist in the associative bonds present between images, due to contiguity in space or time, similarity, or contrast. The judgment is not a connection between images, but a composition of ideas.

Judgments are not just private exercises of the intellect combining and separating ideas. Ideas being representations of things, they convey to us the meaning of the things for which they stand, and in so far the judgment is a *representation of reality*. Every judgment presupposes and implies the existence of reality, and this is known as the 'existential import' of the judgment.

Judgments thus contain within themselves the *claim of truth*, although the fact is also acknowledged that at times they may be false. *Truth* and *error* lie in the judgment. When the intellect compares two ideas with each other and pronounces an agreement or disagreement between them, it actually compares two things with each other and judges about their agreement or disagreement among themselves as they are in reality. Hence, if a judgment coincides with reality, it is true; if not, it is false. In consequence of this relation between ideas and things, we are not at liberty to judge as we please. Because in reality things are (or are not) so and so, the mind has no choice but to represent reality as it actually is or, at least, as it judges it (perhaps erroneously) to be. The mind *accepts* the truth, it does not make it; and it accepts the truth, because it is determined by the objective evidence furnished by reality itself.

The judgment, therefore, is the product of an intellectual insight, and *not of the will* and its deliberate choice, as Descartes and Malebranche claimed. Nor are some fundamental judgments dictated by blind *instinct*, as Thomas Reid maintained. Emmanuel Kant also is wrong, when he asserted that we judge as we do because of *innate mental categories* which have no bearing on reality as it actually exists. These theories are contrary to all the evidence of experience. It is only in the case of *doubt* that the will, for practical reasons, may demand the assent of the intellect to a judgment.

The Inference

The intellect forms concepts; it forms judgments. It has also a third type of operation: it forms *inferences or ratiocinations*. Inferences are the products of the reasoning power of the intellect. Inference, in general, is defined as the *process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them.*⁶

We find that the basic *construction* of an inference contains the premises, the truth of which is already known, and the conclusion which follows from the premises with necessary consequence. Because the premises are true, the conclusion must also be true. The conclusion is contained implicitly in the premises; in drawing the conclusion, we merely state explicitly what the premises stated implicitly. The intellectual *insight* into the logical *relations* existing between the premises on the one hand and between the conclusion and the premises on the other constitutes the psychological factor which compels the intellect to draw the conclusion and to acknowledge its truth and validity.

As a typical illustration of an inference, we give the following example of a categorical syllogism:

All residents of the fifth ward vote in the fifth-ward
school;
Steven S. Jones is a resident of the fifth ward;
Hence, Steven S. Jones votes in the fifth-ward
schoolhouse.

The logical relations between the premises and between the conclusion and the premises are clear. *If* (or, *since*) all

residents of the fifth ward vote as directed; and if (or, since) Steven S. Jones, upon inquiry, is found to be a resident of the fifth ward; *therefore* it follows with logical necessity that he must vote in the fifth-ward schoolhouse. No other conclusion can be drawn from these premises, because this conclusion is implicitly contained in the premises.

Psychologically, the knowledge of the premises must *precede* the knowledge of the conclusion, with a priority in the order of *nature* and in the order of *time*. The conclusion depends for its truth and validity on the truth and validity of the premises; without the premises the conclusion cannot be drawn. That, however, which depends on another for its existence must, in its very nature, succeed and not precede this other upon which it depends. Hence, since an inference is a question of knowing, the knowledge of the premises must precede the knowledge of the conclusion, so far as the elements of the inference are concerned. And since it takes a certain amount of time to cognize each premise and the conclusion individually and the logical relations existing between them, the knowledge of the conclusion must be temporally later than the knowledge of the premises, even though the final insight into their mutual relationship is an instantaneous act of the intellect.

The premises are the foundation of the conclusion; they contain the conclusion implicitly. It is only because this necessary relationship between the premises and the conclusion is understood by the intellect, that we are entitled and compelled to draw the conclusion. Premises and conclusion form a *constructional* and *logical unit*. In order, then, that the intellect be able to make the inference,

the intellect must embrace in a single psychological act the premises and their mutual relationship; otherwise the intellect would not have the insight that the conclusion follows with necessary force from the logical relation of the combined premises.

Some modern psychologists have attempted to explain the reasoning process as a *fusion of images*. Applied to the example of the categorical syllogism given above, the process might be conceived to go along the following lines: an image of a section of the city, containing a school building; the image of a man (Steven S. Jones), included in the general image of the first image; the image of the man fusing with the image of the schoolhouse, as the man enters the building. It takes but a moment's reflection to see how utterly inadequate such an explanation really is when compared with the actual process of an inference. The intellectual *insight* into the *logical relations* between the judgments is the basis of the inference, not the mere juxtaposition and fusion of images. It is on the basis of the *abstract principle* that 'What is true of the logical whole must also be true of every part of that logical whole,' that I draw the conclusion that Steven S. Jones must cast his vote at the designated place. All residents of the fifth ward form a class, a logical unit or whole, and what is true of this whole class must be true of every one belonging to this class; Steven S. Jones belongs to this class, is a member of this class as a logical unit or whole; and so he must vote in the place assigned to the class. We have here a general principle applied to an individual instance, not a mere fusion of imaginal elements.

Intellectual activity, or intellection, is of a *totally different order* than sensory activity, because sensations and images alone cannot account for the formation of ideas, judgments, and inferences. Nevertheless, intellection would be impossible without antecedent sensory knowledge, because the senses furnish the raw materials from which the intellect abstracts ideas and then proceeds to utilize ideas in the formation of judgments and inferences. Sense and intellect are not foreign to each other. Man is a sensory-intellectual being, a rational animal, an *integral organism*.

Summary of Chapter XII

The rational processes of man's mental life consist of *intellection* and volition.

1. *Intellection*. It comprises three distinct processes: the formation of ideas or concepts, the formation of judgments, and the formation of inferences.

2. *Attention*. It is the direction of the cognitive process toward an object, activity, or thought. Some psychologists base attention on the 'strength of the stimuli'; others, on 'interest.' Some favor the 'drainage theory' as an explanation of attention. Behaviorists attempt to explain attention by 'bodily attitudes.' Without attention we cannot cognize an object.

3. *Abstraction*. It is the mental process in which, through an act of selective attention, we leave out of consideration one or more aspects of a complex total object so as to attend to some other aspect or aspects of this object. Abstraction is either *positive or negative*.

4. *Generalizing Abstraction*. It is that form of abstraction in which we separate mentally, through an act of selective attention, items which are common to a number of individual objects from those items in which these objects differ, and then arrange the objects having the common items into a class as a unit. The product is a *universal idea*, applicable to the class as a whole and to each individual member of that class. Evidence for the existence of universal ideas is found in the common vocables of language, in definitions, and in scientific nomenclature and

classifications. There are three degrees or grades of abstraction: physical, mathematical, and metaphysical. Abstraction may be either *formal* or *total*.

5. *Isolating Abstraction*. It is that form of abstraction in which, through an act of selective attention, we mentally separate a particular feature from the subject in which it exists and consider it as if it existed independently of a subject. The product of this abstraction is the *abstract idea*.

6. *The Idea or Concept*. An idea is the intellectual representation of a thing. The material object of the human intellect is the sum of all the objects and attributes included within the range of our concepts. The common, formal object is that particular aspect of things in virtue of which they are the object just of the intellect, and not, for example, of the senses. The formal object of the intellect is 'being' in general. The primary formal object of the intellect is the proper, proportionate, direct, natural, immediate object to which the intellect turns its attention and of which it forms its ideas; anything else would be a secondary object.

The primary formal object is the *sensible*, but *abstract* and *universal*. The secondary formal object of the intellect is the *supra-sensible*, spiritual.

7. *Idea and Image*. Images are concrete and individualized; ideas are universal. Images become vague and indistinct with complexity and minuteness of detail, while ideas remain clear and distinct. We have clear ideas of many things of which we are incapable of forming any reasonable image.

8. *The Judgment.* It is an act of the mind pronouncing the agreement or disagreement of ideas among themselves. It appears as an affirmation or denial. It contains three elements: two ideas, and the mental pronouncement of their agreement or disagreement; the ideas are the 'matter,' and the act of pronouncement is the 'form,' of the judgment. The foundation of the judgment consists in the *intellectual insight into the logical relations of the subject and predicate.*

9. *The Inference.* Inference is the process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them. Inference is based on the *intellectual insight* into the *logical relations* existing between the premises and conclusion. Psychologically, the knowledge of the premises must precede the knowledge of the conclusion, with a priority in the order of nature and in the order of time. The intellect must embrace in a single psychological act the premises and their mutual relationship.

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2 *A Treatise Concerning the Principles of human Knowledge*. Introd. 10, 14

3 See T. V. Moore, *Cognitive Psychology* (Lippincott, 1939), pp. 334 ff 150

4 *Analysis of the Phenomena of the Human Mind* (London, 1869), Vol. 1, Ch. 6

5 For an elucidation of the 'extension' and 'comprehension' of ideas, see the author's *The Science of Correct Thinking* (Bruce, 1935), PP. 28 ff

6 The various types of inferences are treated extensively in Logic. In psychology we presuppose that the student is familiar with these types. See the author's *The Science of Correct Thinking*, Parts 3 and 4

Chapter 13

THE ORIGIN OF IDEAS

MAN HAS ALWAYS CONSIDERED HIMSELF SUPERIOR TO THE BRUTE. Evidence for this superiority was found in man's power to think. When philosophy came into existence in ancient Greece, the problem of the nature and origin of ideas in the human mind was bound to arise sooner or later. The problem received a sharp impetus under Socrates. Plato, Socrates' disciple, made it the very heart of his philosophic system. And from that time on up to the present day, the problem has engrossed the attention of the greatest thinkers. The problem can be formulated briefly as follows: If ideas are essentially different from sensations and images, *how do ideas originate?*

In the preceding chapter it was shown that ideas are fundamentally distinct from sensations and images because of the *abstract, universal* character of ideas. Nevertheless, ideas are derived somehow from the sensible and are rooted in the sensible. This truth will receive confirmation from a study of the various systems of philosophic thought which have been advanced in the course of the centuries as an explanation of the origin of ideas.

Roughly, all theories on the subject can be grouped into three main classes: the theory of *innate ideas*; the empiricist or sensationalist theory; and the *peripatetic or aristotelian-scholastic theory*. The first group overemphasizes the function of the rational mind in the formation of ideas; the second overemphasizes the function of the senses; the third seeks to emphasize the function of both the rational mind and the senses in proper proportion. The problem will be treated along the lines indicated by these groups of theories.

Plato's Ultra-Realism

Plato (427-347 B.C.) was aware that the world of sense and sense objects is in a state of continuous change. From the fact of continuous change he concluded that there is nothing real and stable in the sense world. The universal ideas, *however*, have a content which is stable, real, unchangeable, eternal; the knowledge acquired through universal ideas is truly 'science.' Unless we are willing to admit that the scientific knowledge acquired through universal ideas is an illusion and a fiction, these ideas must be the representation of objective reality; and since the reality of the sense world is always changing and not eternal, it cannot be the reality of the sense world which is represented in the universal ideas. Hence, the existence of universal ideas in the human minds demands the existence of a supra-mundane world of *pure essences*, which are stable, real, unchangeable, and eternal and of which the

universal ideas of man are a true representation. These pure essences Plato called *Ideas*.

The Ideas alone have reality in the strict sense; they exist as real entities (noumena) apart from the world of sense (phenomena). The objects of the sense world are but faint, changing replicas or imitations of the eternal, unchanging Ideas; the Ideas are the eternal prototypes or exemplars of the objects of the sense world. The universal ideas of the human mind are true representations of these noumenal Ideas and cannot have their origin in the changeable and changing objects of this visible universe. It follows, according to Plato, that men's souls must have had a *pre-existence* in a former life in the noumenal world, where they contemplated the Ideas as these Ideas existed in themselves. On being united to the body in its present earthly existence, the soul forgot the knowledge of the Ideas, but the universal ideas thus acquired slumber in the soul until awakened; they lie *innate* in the recesses of the mind. For every object existing in the universe (tree, dog, sky, house, rose, etc.) there exists a corresponding Idea in the noumenal world. On seeing such an object in the present life (some individual tree, dog, etc.), we *remember* what we have known before and have forgotten: the innate slumbering universal idea is awakened and brought to consciousness. Hence, Plato's theory of innate ideas is also called the *theory of reminiscence*.

Criticism. For one thing, Plato supposes that the connection between body and soul in man's earthly life is *forced* and *unnatural*; the relationship between the two is *extrinsic*, similar to the relationship between a horse (body)

and its rider (soul). In this view, death should be a welcome event, a release for the soul from the imprisonment in the body. We know, however, that man dreads death. Man is by nature, as all evidence proves, a *psycho-physiological integral organism*. The dread of death shows clearly that the union of body and soul is natural. If their union were merely extrinsic, it is inexplicable how the union of the body with the soul could blot out the knowledge of the Ideas formerly contemplated, because the body could not possibly influence the inner activities of the soul.

Aristotle opposed Plato's theory on the grounds that it is poetic and fantastic and contrary to the *testimony of consciousness*. If we actually had a former existence, the awakening of the innate universal ideas should also revive the memory of this previous existence itself. But we have no such memory. The theory is pure assumption on the part of Plato.

Finally, in the foregoing chapter it was pointed out how we acquire our universal ideas from sensible objects through a process of *abstraction*. There is no need to have recourse to a noumenal world of Ideas and a previous existence in order to explain a process of knowledge which is as natural to man as sensation and perception.

Descartes' Ultra-Spiritualism

R. Descartes (1596—1650) taught that man's body and soul, though united, are two intrinsically independent substances. The essence of the soul is *thought* or 'thinking,' and the essence of the body is *extension*, and the two have

nothing in common. There can be no cognitional communication between body and mind, because the disparity between them is too great. The body is merely a machine (Chap. 10). 'Corporeal movements' reach the brain, and at the *occasion* of their presence the mind produces the ideas or representations of external and extended objects entirely in itself and by itself. Descartes denied the necessity of innate ideas which would be something distinct from the intellect itself. Because the intellect is innate to man, the ideas of the intellect are also innate, in the sense that a disease is innate to the man who is born with the disposition for this disease. The intellect, according to Descartes' theory, is the exclusive cause of all knowledge. Descartes thus considered ideas to be present in the mind from the beginning as 'dispositions,' and these dispositions are not derived from sense objects; ideas are *potentially* existing and subsequently become actual. His theory amounts to innatism.

Most of Descartes' followers assert that at least some fundamental ideas are innate, such as the ideas of 'God,' our own 'existence,' 'good,' 'evil,' 'free will,' and others. We have a 'habitual' knowledge of these, and this knowledge becomes 'actual' when the intellect turns its attention to these innate 'forms' of knowledge.

Criticism. Descartes placed an *ultra-spiritualistic* interpretation on the mind and an *ultra-mechanistic* interpretation on the body; the result was an ultra-dualism in the concept of 'man' which made it impossible to explain human intellectual knowledge in a natural manner. Descartes had no right to restrict the essence of the mind

to 'thought.' If the activities of man are such that the triple functions of *vegetancy*, *sentientcy*, and '*thinking*' are integrated operations of one and the same psycho-physiological *organism*, then Descartes committed an unpardonable error in limiting the essence of mind to 'thought' alone. That man is an integral organism is amply proved in the preceding chapters. Descartes' ultra-dualism is thereby disproved and with it the necessity of trying to explain the origin of our ideas through innatism.

All bodily and sensory functions are accompanied by *coenesthetic* (common general organic) sensations of some sort, making us aware of the body and bodily conditions as our own. Such sensations always involve an obscure feeling of the existence of the 'Ego'; the origin of the idea of the 'Ego' is thus explained, so that there is no need to consider it as innate. As for the ideas of 'God' and other supra-sensible objects, we have already seen that they are analogous ideas developed from ideas derived from sensible objects by heightening their perfections and denying their imperfections.

From all that has gone before, it should be clear that the *sense organs* are not mere mechanical structures and contrivances. They are *vital instruments* of knowledge which contribute actively their own part to the production of knowledge. Since they are extended organs, sensible objects can affect them through stimuli; since they are vital organs, they can respond vitally to the stimuli and furnish a cognitional representation of the objects in perception. Through abstraction from these sense representations the

intellect, organically united to the body and its senses, can *form ideas*. Nothing more is needed.

The Monadism of Leibnitz

G. Leibnitz (1646—1716) tried to overcome the ultra-dualism of Descartes in a unique way. All beings consist ultimately of *monads*. A monad is an elementary individual being, psychical or spiritual in nature. God is a monad; spirits are monads; the human soul is a monad. Even physical being consists ultimately of monads; thus, the body of man is a system of monads. There is *no interaction* between the single monads. All possess the power of representation,' and each monad in its representation mirrors within itself whatever takes place in all other monads throughout the universe; some do it consciously, like the mind-monads, others unconsciously, like the body-monads. Monads are 'windowless,' so that no knowledge is acquired from with-out but is developed from within. All ideas, therefore, are innate, present from the beginning as dispositions or 'natural virtualities' (*virtualités naturelles*) until evoked into actuality in the consciousness.

Criticism. Monadism is a *gratuitous* theory, artificial in the extreme, without any foundation in fact. The existence of such a universe of monads is a pure assumption. It disrupts the human organism into an aggregate of independent individual monads. It is disproved by the existence of the *nervous system* in man, which centers in the cerebral cortex as the evident center of sensory knowledge in response to stimuli reaching it from the

peripheral *organs*. Monadism leads to *solipsism*, that extreme form of subjective idealism which maintains that man can know nothing but his own subjective internal mental states, without the possibility of ever knowing whether anything objective corresponds to his ideas.

Ontologism

Ontologists, chief among whom are Malebranche (1638—1715), Rosmini (1797—1855), and Gioberti (1801—1852), assert that God and the divine Ideas are the primary objects of the intellect, and the *first act* of the intellect is the *intuition of God*. They base their view on the grounds that material objects can make no impression on an unextended intellect; the intellect, therefore, can derive no ideas from them. The intellect is also too imperfect to derive ideas out of its own nature as such. It beholds them in another spirit, the Infinite Being, whose Ideas are the types and exemplars of all created things. The intellect intuits the Ideas of God and in them acquires a knowledge of creatures. This intuition is possible because God is united to the souls of men in such a manner that one can say that He is in truth ‘the place of spirits.’

Criticism. If God and the divine Ideas were really the primary object of our intellect and the object first known by it, so that we behold the objects of the sense world in Him and in His Ideas, we should be *conscious* of this tremendous fact of experience. Needless to say, we are not. Again, if this supposition of the ontologists were true, the existence of God would be indubitably certain to man; doubt would be

as impossible in this respect as the doubt about our own existence. Experience, however, shows that we must prove God's existence to our own satisfaction from the facts discovered through a study of the universe. Finally, while ontologists assert that we do not intuit the substance of God, but God and His Ideas only in so far as they are in relation to creatures, this distinction is invalid. In God everything is one and the same infinite reality. To behold the Ideas of God means to behold God's *infinite essence* and substance. In that case, however, our ideas of God should be direct and positive, not indirect, analogous, and by negation.

Kant's Transcendental Criticism

Immanuel Kant (1724—1804), alarmed at the trend of thought manifested by the sensationalism of English philosophy, attempted to revindicate the validity of human knowledge and free it from the bane of skepticism prevalent since David Hume. He accepted without question the ultra-realism of Descartes and took as his starting point the principle that the mind of man can know only its own internal states and cannot go outside and beyond the limits of consciousness. He considered it to be the essential error of all previous philosophic systems that they endeavored to make the mind conform to the objects; he would reverse the principle and make the objects conform to the mind. His critique or criticism, therefore, intended to find out whether there *existed a knowledge independent of experience*. *Empirical* knowledge has its sources in

experience (*a posteriori*), while knowledge independent of experience has its sources in the mind (*a priori*). Correspondingly, our ideas will originate either in the mind and be innate or will originate in experience and not be innate. Have we an *a priori knowledge*? Kant is convinced we have.

According to Kant, experience can reveal nothing to us except what is *individual and contingent*; it never reveals anything that is strictly universal and necessary. If, then, our judgment at any time is thought with *strict necessity and universality*, such knowledge cannot have been acquired through experience but must be *a priori* and must proceed directly *from the mind itself*.

Kant admits the existence of noumena or things-in-themselves in the external world, and they affect the senses. The sense faculty responds with an 'intuition' or perception. These impressions are unarranged, chaotic. The chaotic 'manifold' of sense impressions must be arranged in a certain order by means of *two innate sense-forms, namely, space and time*. These forms are present in the mind antecedent to all experience. 'Space' and 'time' are in no way attributes of the things-in-themselves, but are *mental forms* which condition the perception of the things-in-themselves, so that they *appear* as arranged in the order of 'space' or in the order of 'time.' Since all things appear in this double order, 'space' and 'time' are universal and necessary conditions of sense-perception and as such must exist *a priori* (innately) in the mind. The physical objects themselves, the noumena or things-in-themselves, are, so far as we know, spaceless and timeless. We can know

nothing at all about the noumena, because we never perceive them directly. What we 'perceive' and know, therefore, is nothing more than the *appearances or phenomena* of things, and these are subjective in character, possibly without any resemblance to the things-in-themselves. The external, physical world remains forever an unknown X.

Passing from sense-intuition to *intellection* proper, Kant also finds a number of *a priori* forms of the pure understanding, and these he terms the *categories*. According to Kant, to think is to judge. When, therefore, we find judgments that are contingent and particular (e.g., 'This table is square'), they result from experience and are *a posteriori*; but when we find judgments which are necessary and universal (e.g., 'The sides of a square are equal to one another'), they must be the result of an *a priori* element or 'form,' namely, the 'category.' These categories express the necessary and universal relation which exists between the subject and predicate of a necessary and universal judgment or proposition. There are twelve such relations, and for each relation there exists a corresponding innate *a priori* category. They are: unity, plurality, totality; reality, negation, limitation; subsistence and inherence, causality and dependence, reciprocity (active and passive); possibility and impossibility, existence and non-existence, necessity and contingency.

These categories are *empty forms* of intellectual knowledge. The contents of intellectual knowledge must come from experience. After the 'manifold' of sense impressions is molded and arranged by the forms of 'space'

and 'time,' the categories are applied to these sense intuitions; the result is universal and necessary intellectual knowledge. One must remember, however, that this intellectual knowledge never penetrates to the noumena or things-in-themselves, but only to the *phenomena* or appearances. Noumenal knowledge is simply impossible. What the physical, noumenal world is like in itself, is forever excluded from the ken of the human mind.

Reason, in its inferences, leads us to *three fundamental ideas*: the idea of the *soul*, the idea of *matter* or the totality of phenomena, and the idea *God*. As such, these ideas are mere *a priori forms* of the mind and pertain solely to phenomena, having a regulative function only. They are indeed the highest 'forms' of the mind, but they are nothing more than 'forms,' on a level with the forms of 'space,' 'time,' and the 'categories.' Reason, therefore, cannot prove the existence of the soul, of the world, and of God as entities independent of the mind. It is only from the moral law that we know that the soul, matter, and God actually exist; *intellectual* knowledge reaches only as far as the phenomena.

Summing up Kant's doctrine, we find that man is *incapable of transcendent knowledge*; his knowledge cannot contact the noumenal but only the phenomenal. Man's knowledge is governed completely by *transcendental* (i.e., *a priori*, mental) *forms*. Kant's theory is a *transcendental idealism*.

Criticism. Entire books have been written on Kant's theory of knowledge. Kant's views led to the great systems of idealism which flourished in the 19th century. They have

had their day. As a criticism of his theory, we wish to stress the following points.

First, Kant's final conclusion was that our intellectual knowledge is *intrinsically illusory*. The intellect can know nothing of the things-in-themselves as they exist in the world around us; it can judge only of *phenomena*, and the phenomena reveal only the appearances, *not the reality*, of things as they impress the senses. But the intellect and its operations do not belong to the world of phenomena, because they do not affect the senses; they are an integral part of the mind itself. Since they cannot be phenomena, they must be noumena, things-in-themselves. Kant presumes to give us a thorough description of the intellect and its operations. Either, then, Kant actually did acquire a valid knowledge of noumena, notwithstanding the fact that he claimed we can never know the noumena; or, since all noumenal knowledge is impossible and illusory, his entire theory of the intellect and its operations is illusory and therefore false. In either case his theory breaks down.

Second, Kant maintained that a *physical world* of things-in-themselves, even though we can know nothing about it, actually exists. He assumes its existence on the grounds that the impressions made on the senses must be *caused* by external objects. Later on, however, he asserts that the concepts of 'causality' and 'causal dependence' are mere categories, and categories are but 'empty forms' contributed by the mind and without objective validity. Either, then, the category of 'cause' and 'effect' applies validly to noumena and is not an *a priori* mental form at all; or, if it is an *a priori* form, Kant is inconsistent in concluding

from the existence of sensations to the existence of a noumenal world. Besides, Kant assures us that the noumenal world of things-in-themselves is a *chaotic manifold*. In giving us this important information, he claims to know something about the *objective reality* of the world distinct from phenomena. And here again he is inconsistent.

Third, Kant's theory is *contrary to the science of psychology*. He maintains that 'space' and 'time' are subjective 'forms' of the mind, given prior to all experience. The findings of psychology are definitely opposed to this claim. Sensory experience contributes its share to our perception of 'space' and 'time,' as experimental psychology has definitely established. We acquire our knowledge of space and time from a perception of objects which are larger or smaller and which are at rest or in motion. Persons suffering from a congenital cataract have no antecedent knowledge of visual space; after a successful operation, they must acquire knowledge of space through *experience* and *perception*. If the subjective mental form of 'space' were, as Kant claims, a necessary condition for perception, making the perception of phenomena possible, then there seems to be no valid reason why the mind cannot impose the form of 'visual space upon the incoming impressions, even though a person be congenitally blind. The evidence, however, points clearly to the fact that the knowledge of space on the part of the mind is conditioned by the perception of the objects, and not that the perception of space is conditioned by some *a priori form* present in the mind antecedent to experience. But if 'space'

is an attribute of bodies, then so is 'time,' because both are on a par in this respect.

Fourth, Kant's theory is contrary to the fundamental principles of the *physical sciences*. Kant evolved his theory for the expressed purpose of revindicating scientific knowledge and freeing it from the bane of Hume's skepticism. He failed. Science treats of the *physical objects* of the extra-mental world and not of mental constructions; Kant's world, however, is a world of phenomena, and these phenomena are mental constructions which give us no insight whatever into the nature and reality of things as they are in themselves. According to Kant's conclusions, the physical, noumenal world is unknown and unknowable. Science is convinced that it contacts and knows *real things* outside the mind. Science is based on the *objective validity* of the Principle of Cause and Effect operating between physical objects and physical agencies; according to Kant, this principle is an empty *a priori* form merely regulating our judgments and applying only to phenomena. The *laws* which science establishes are considered by scientists to be real laws operating in physical bodies independent of our thinking; according to Kant, these laws merely relate to phenomena within the mind and not to nature at all. Kant states: "It sounds no doubt very strange and absurd that nature should have to conform to our subjective ground of apperception, nay, be dependent on it, with respect to her laws. But if we consider that what we call nature is nothing but a whole ['Inbegriff'] of phenomena, not a thing by itself, we shall no longer be surprised."¹ We are indeed surprised that Kant would accept this conclusion of this theory rather

than see therein the utter fallaciousness of the theory itself which could consistently lead to such a 'very strange and absurd' conclusion. That such a conclusion destroys the validity of science in its very foundations, must be obvious.

Fifth, Kant's theory destroys the foundations of *all intellectual knowledge*. Ideas and judgments are supposed to reflect and represent reality; they are supposed to tell us 'what things are.' Truth and error reside in the judgment. We have shown that in forming judgments we first understand the contents of ideas and then have an intellectual insight into the relation existing between the subject-idea and the predicate-idea. According to Kant, we do not make judgments because we perceive the objective relation of the subject-idea and the predicate-idea, but because a blind, subjectively necessitating law of our mental constitution draws certain sense-intuitions under certain intellectually empty categories prior to our thinking, and we do not know why these particular categories, rather than others, were imposed by the mind on these sense-intuitions. Our 'knowledge' is as blind as the law that produces it. Intellectual knowledge is thus utterly valueless, because it gives us no insight into the nature of the reality our ideas and judgments are supposed to represent.

Kant, in accepting Descartes' ultra-dualistic separation of body and mind, was forced to consider the mind as the sole contributing factor in the formation of universal and necessary ideas, judgments, and inferences. Everything is purely subjective. Subjectivism is the inevitable conclusion of any theory which overlooks the facts that man is an *integral psychophysical organism*.

The theories of innate ideas or mental forms are thus seen to be false, based on false assumptions.

Locke's Empiricism

Descartes' ultra-dualism of body and mind proved to be a fateful legacy for philosophic thought. His interpretation of the mind or soul, being ultra-spiritualistic, led to extreme idealism. His interpretation of the body, being ultra-mechanistic, led to empiricism, sensationalism, associationism, and materialism.

John Locke (1632—1704) followed in the footsteps of Hobbes (1588—1679), who was a sensationalist. Locke strenuously opposed Descartes' doctrine of innate ideas. In the beginning, he says, the mind is devoid of ideas, a 'blank sheet.' All knowledge has its origin in *experience*, in sense-perception. Experience is twofold, *sensation* (perception of external phenomena) and *reflection* (perception of the operations of the mind itself). From both sources we obtain 'ideas.'

Locke's philosophy centers in his theory of the ideas. Here is his understanding of an *idea*: "It being that term which, I think, serves best to stand for whatever is the object of the understanding when a man thinks, I have used it to express whatever is meant by *phantasm*, *notion*, *species*, or whatever it is which the mind can be employed about in thinking."² In this superficial definition Locke unfortunately lumps together as 'ideas' things which might conceivably be radically different in nature, namely, "phantasm, notion, species, or whatever it is which the

mind can be employed about in thinking.” By thus arbitrarily blurring the nature of the ‘idea’ so as to include the images of sense-perception (‘phantasm, species’), he laid the foundation for *sensism*, in which all ‘thinking’ is nothing but a form of ‘sensation.’ Descartes placed all sense-perception in the spiritual mind, thus identifying sense-perception with spiritual activity; Locke here does the reverse, by reducing ideas, at least in part, to the level of sense-perception.

This confusion of ideas and images is present in all his philosophy. He does not hesitate to assert that the Creator can make *matter think*: “I see no contradiction in it that the first eternal thinking Being should, if he pleased, give to certain systems of created senseless matter, put together, as he thinks fit, some degrees of sense, perception and thought.”³

Criticism. For one thing, Locke simply assumes without proof that ‘ideas’ and ‘images’ are identical. This identification of ideas and images wipes out the distinction between sensory and intellectual knowledge simply by *definition*. Again, according to his definition of the ‘idea’ the *idea* is the *object of our understanding*, instead of the *reality of things* being the object of our intellectual knowledge. All we can know, then, are ‘ideas,’ internal states of the mind; in that case, however, we can acquire no knowledge of the material world as it is in itself. If carried out to its logical conclusion, such a theory must inevitably end in subjective idealism. Furthermore, his confusion of ‘ideas’ and ‘images’ led him to the curious conclusion that God can make *matter think*. The empiricism of Locke made

him reduce 'thinking' to a property of matter, because he could not bridge the ultra-dualism of Descartes. But God, as T. V. Moore rightly observes, can no more make nonliving matter think than He can make a square circle. Only on the supposition that man is an integral organism, consisting of body and mind, is it possible to explain how sensations can give rise to images, and images to ideas through the process of abstraction. Finally, since all ideas originate either from sensation or from reflection on mental activities, Locke can give no proper explanation of ideas such as 'God,' 'soul,' 'good,' 'evil,' 'spirituality,' and a host of similar important ideas. We simply do not *experience* such realities in any form. Such ideas, then, should not be present in the intellect at all; they are, however, present and must be accounted for, though not according to the principles of Locke's empiricism.

Locke's empiricism was developed into a complete system of sensism by Condillac (1715—1780) who reduced the entire contents of the mind to 'transformed sensations.' Another offshoot of the empiricism of Locke is the *positivism* of Comte (1798—1857) who maintained that all knowledge is illusory except the 'positive' science of phenomena derived from sensation.

Sensationalism and Associationism

David Hume (1711—1776), accepting the fundamental tenets of Locke's empiricism, was more consistent than Locke and developed a thoroughgoing system of *sensationalism*.

According to Hume, the total content of the mind consists of *perceptions*. Perceptions are of two kinds: 'impressions' and 'ideas' or 'thoughts.' impressions are those perceptions which are more lively and forceful, and they include sensations and emotions. The faint images of these impressions Hume terms *ideas or thoughts*. Impressions (sensations and emotions) are experienced; ideas or thoughts (faint images of sensations and emotions) are revived in imagination and memory. 'Perceptions' thus form the total contents of our mental states, and they are *all we can know*. We can know nothing of objects or the qualities of objects. Even when we think we perceive our own body and its members, we perceive nothing but "certain impressions which enter by the senses." There is no such thing as a 'substance.' The mind is nothing but "a heap or collection of different perceptions united together by certain relations, and supposed, though falsely, to be endowed with simplicity and identity."⁴ Nothing is left, then, for knowledge but *phenomena*, subjective mental states, perceptions. As for the *cause* of the impressions which arise from the senses, Hume professes complete ignorance.

Relative to *universal ideas*, Hume maintains that we find a resemblance between objects and apply the same name to them; then, after a 'custom' of this kind has been established, the name revives the 'idea,' and the imagination conceives the object represented by the 'idea.'

A prominent part of Hume's philosophy is his theory of *associationism*. We speak, for example, of the Principle of Causality, and consider it to be a universally and necessarily valid axiom that 'Every effect must have a cause.' Hume

claims that this axiom is derived from experience. What we perceive is an *invariable sequence of events*: one thing invariably follows an antecedent event, and from this sequence we conclude that the antecedent event 'causes' the one that follows as an 'effect.' We do not perceive anything like the 'production' of one thing by another. From his phenomenalistic, sensationalistic standpoint, Hume could not admit real 'causation.' Whenever we observe one event to occur, we feel the mental compulsion to assert that the other will follow. But whence the mental compulsion to conjoin just these two events as cause and 'effect'? Hume gives as the reason that "the mind is *carried by habit*, upon the appearance of one event, to expect its usual attendant and to believe that it will exist."⁵ In other words, it is the *association of ideas* which compels us to formulate necessary and universal judgments, axioms, and principles. Such judgments, axioms, and principles have *no objective value*, but are mere associations of impressions derived from the succession of phenomena. As for the mental mechanism of association, it finds its explanation in the Laws of Association.

Criticism. First, Hume's explanation of *ideas* as *faint images* of sense-impressions is totally inadequate. Since both are of a sensory character, they are concrete and individualized. Our ideas, however, are abstract and universal. There is, as we have shown, a radical difference between 'sensations' and 'images' on the one hand and 'intellectual ideas' on the other. To ignore or deny these differences is a serious error.

Second, Hume's explanation of *universal ideas* is totally inadequate. The process of forming universal ideas is not at all the way Hume pictures it. We acquire them by a process of abstraction, taking the objective features common to a number of individuals and then generalizing the resultant idea so that it applies to the whole class and to every member of the class. It is not a question of merely labeling objects with a common name. Intellectual insight into the nature of these objective features, not 'custom' or habit, enables us to group them together into a class.

Third, Hume's explanation of the origin and nature of the necessarily and universally true *axioms and principles*, such as the Principle of Causality and the Principle of Contradiction, is totally inadequate. He explains their necessity and universality through *association*. Now, the laws of association are purely subjective laws with a purely subjective result. Consequently, the 'necessity' which we experience relative to the logical connection between subject and predicate in these principles would not be due to anything coming from the reality represented in these judgments, but solely to the *associative force* existing in the mind. It is a subjective and psychological, not an objective and *ontological*, necessity. The mind does not judge these principles to be true because it sees they cannot be otherwise; it *cannot see* them to be otherwise because the mind in its present constitution must judge them to be true. So far as objective reality is concerned, $2 + 2$ might equal 3 or 5 or any other number; and there might be a cause without an effect, or an effect without a cause. If Hume's contention were correct, that our observation of 'invariable

sequence' is the reason for assuming an antecedent event to be the 'cause' of the subsequent event, then we should perforce experience the same psychological necessity of judgment *in all cases* where we notice an invariable sequence in successive events. Experience, however, contradicts this view. For instance, day follows night in an invariable sequence; but no body would dream of asserting that the night is the 'cause' of the day. In an automobile factory one car follows the other on the belt line in invariable sequence; but this association does not compel us to think that the preceding car is the 'cause' of the one following. Reversely, when an explosion occurs but once in our experience, we search for the 'cause' of this 'effect' and are convinced there must be a cause present; here, however, there can be no question of an 'invariable sequence' of events.

Fourth, Hume's theory, if accepted as true, must *destroy all scientific knowledge*. The very foundation of science lies in the Principles of Contradiction, Sufficient Reason, and Causality. If these principles are valid only for our mind and do not apply with inviolable necessity to physical objects in nature, the scientist has no means of knowing whether his conclusions are objectively valid. His knowledge is nothing but a *purely mental construction* which may or may not agree with extra-mental reality. But science treats of physical systems and their operations, not of mental constructions. Since, according to Hume, we can know nothing but our internal states of consciousness, we could never discover whether the external world and other minds

exist at all; driven to its logical conclusions, such a theory can end only in solipsism or in skepticism.

Fifth, Hume's *Laws of Association are valid*, of course, in themselves; they were known and accepted, long before his time, by Aristotle and the Schoolmen. Hume, however, makes an illogical and illegitimate use of them, viewed from the standpoint of his own theory. According to Hume, the *total content* of the mind consists of *perceptions* (impressions and 'ideas' or images). Now, the Laws of Association, considered in themselves, are *not perceptions*, whether impressions or their images ('ideas'). The Laws of Association control, *regulate*, and link together these ideas; they are, therefore, over and above the ideas and distinct from them. According to Hume's own principles, then, they do not, and in fact cannot, belong to the content of the mind at all. Yet they are there.

Sixth, according to Hume, the *mind is its content*. In this view, there is no abiding mind or Ego in which impressions and ideas reside; all we have are perceptions (impressions and ideas) in a continuous flow; there is no mind or Ego distinct from these perceptions. Hume is very emphatic on this point. Theoretically, he denies the existence of 'mind' or 'Ego'; practically, he cannot, and actually does not, get along without a 'mind' or 'Ego.' He speaks continually of 'the mind,' 'we' and 'I,' and such terminology is inconsistent, to say the least. As a matter of fact, a 'mind' or 'Ego' is indispensable and *necessary to his theory*, notwithstanding his denial of their existence. The reason is plain. The Laws of Association, so basic to his theory, are merely the laws *according to which* ideas are conjoined;

they themselves do not do the conjoining. Something, then, must be present which applies the Laws of Association to the ideas and *associates* them; without this 'something' these laws would be inoperative. Hume cannot explain the operation of these laws without a 'mind' or 'Ego' to operate them. Thinking demands a thinker, just as motion demands a moving object.

Seventh. Hume's theory is *atomistic*. It cannot be otherwise. Every sensation, emotion, and idea is a single item of consciousness, similar to an atom in nature. Each, as Hume expressed it, is a 'distinct existence.' Each is a solitary reality, having only an instantaneous existence; it comes, abides for a moment, and is irrevocably gone. No two items exist simultaneously; one succeeds the other in the flow of conscious events. And the important point is this: there is no 'mind' or 'Ego,' distinct in being from these experiences, which would be an abiding reality behind them, capable of experiencing them. Since each item of experience has but a momentary, isolated, and solitary existence, there is nothing present which could hold them together, *compare* them, and *synthesize* them. All we can have is an unrelated, kaleidoscopic succession of items. The formation of *general ideas, judgments, and inferences* should thus be utterly impossible, since there is no 'mind' or 'Ego' present to observe whatever *relations* might exist between ideas or things. But we have such general ideas, judgments, and inferences. Hume's theory, therefore, is utterly false.

Hume himself gave expression to the *dilemma* of the position in which he had placed himself. He said: "There are

two principles which I cannot render consistent; nor is it in my power to renounce either of them, viz., *that all our distinct perceptions are distinct existences, and that the mind never perceives any real connection among distinct existences*. Did our perceptions either inhere in something simple and individual, or did the mind perceive some real connection among them, there would be no difficulty in the case.”⁶ This statement is a frank confession that a ‘thinking mind or Ego’ is necessary to explain our thought processes. But Hume would not accept this conclusion and thereby pronounced the complete failure of his theory of knowledge. He became a skeptic.

Hume exerted a tremendous influence on English and American philosophy, an influence which is felt even to this day.

Imageless Thought

Sensationalism and associationism dominated psychology for a long time. Each philosopher treating of psychological subjects introspected his own personal mind and its operations and then proceeded to make dogmatic pronouncements concerning them. Such was the method employed by Locke, Berkeley, Hume, J. Mill, Bain, Spencer, and other prominent English writers. Experimental methods were not used, for the simple reason that experimental psychology was not as yet in existence. The application of experimental methods to psychology did much to remove personal speculation and place psychology on a sounder factual basis. The first consistent experimental

investigations into the nature of the thought processes began around the turn of this century.

A. Binet (1903) tested the sensationalist theory, to which he subscribed, through experiments on his two young daughters, expecting to find that thoughts were nothing but images. He came to the definite, and to him amazing, conclusion that 'naked thoughts' existed in the mind and that 'images' are extraneous to real 'thinking.'

More extended and systematic investigations along these lines were made by the psychologists of the *Würzburg School*, prominent among whom were Oswald Külpe (1862—1915), K. Marbe, and K. Bühler. Using the method of proposing questions and problems to their observers, they attempted to find out just what takes place in the mind in the formation of ideas, judgments, and inferences. In this manner they hoped to settle the question whether *ideas are identical with images* or whether *thinking transcends imaging*.

Sifting the evidence obtained from the subjects concerning their experiences, it was found that images of various types usually were present in the thought processes. The evidence, however, revealed a clear distinction between *knowing* and *sensing* or *imaging*. 'Understanding' and 'insight' were something totally different from the images. 'Meaning' was something over and above the images flitting through the mind during the process of thinking. In many instances, the subjects claimed, ideas were present, but no perceptible image; they experienced *imageless thought*. In any case, whenever images were present together with ideas, the images were

recognized as merely accompanying the ideas, as adventitious to thoughts, and not as constitutive of, or essential to, the meanings. Usually, too, the images were soon forgotten, while the meanings, the ideas, the knowledge remained and were remembered. The psychologists of the Würzburg School soon learned that a distinction had to be made between the 'picturable and unpicturable contents of conscious processes' (*anschauliche und unanschauliche Bewusstseinsinhalte*). They mean that some contents of our mind can be 'pictured' or 'imaged,' such as a 'house' or 'horse,' while other contents cannot be 'pictured' or 'imaged,' such as a 'negation' or the 'will.' The latter are ideas. Ideas, therefore, are not images, even when images accompany ideas. From these and similar facts brought to light in the psychological laboratories of the Würzburg School, Bühler drew the general conclusion: "What enters into consciousness so sporadically, so very accidentally as our images, cannot be looked upon as the well-knitted, continuous content of our thinking."⁷

The main point about all these experiments is not whether thoughts can occur without images, but whether thoughts are identical with images. These psychologists have adduced considerable evidence in favor of *imageless thought*; but the evidence is not conclusive, and further experiments will have to be made. They have, however, definitely established the fact that *ideas are not images*. Sensationalism has thus been disproved on experimental grounds.

Later experiments, made by R. S. Woodworth, G. H. Betts, T. V. Moore, R. Clark, A. Willwoll, J. Lindworsky, and

others, have confirmed the findings of the Würzburg School.

In general, the Würzburg School agrees with the teachings and principles of the traditional aristotelian-scholastic philosophy concerning abstraction, universal ideas, judgments and inferences, as expounded in the foregoing chapter. Experimental methods thus furnish positive proof that intellection is a supra-sensuous process.

E. B. Titchener (1867—1927), the noted head of the department of psychology at Cornell University, disputed the findings of the Würzburg School. On the strength of the experimental studies conducted under his guidance, he claimed that his observers always thought in images. Titchener, a sensationalist himself, contended that all thought processes can be reduced to ‘sensations,’ so that the ‘sensation’ is the ‘structural unit or element’ of everything occurring in consciousness; his theory is therefore sometimes referred to as *structuralism*, but it is really nothing more than a form of sensationalism.

Titchener denies that there are ‘unpicturable meanings’ of ideas. He himself, he says, always imaged meanings, even ‘meaning’ itself. Here is his description of ‘meaning’ as he images it: “I see meaning as the blue-grey tip of a kind of scoop, which has a bit of yellow above it (probably a part of the handle), and which is just digging into a dark mass of what appears to be plastic material.” One of his subjects saw meaning’ as the “unrolling of a white scroll”; another saw it as “a horizontal line, with two short verticals at a little distance from the two ends.”⁸ Here we have, if images are really ideas, three distinct individual meanings of

‘meaning’! These irrelevant images are not what we *understand* by ‘meaning’; ‘meaning,’ as any dictionary will disclose, is that which is signified by an idea or word and which is expressed in a definition, the comprehension or intention of a word or idea, and that is something very different from the images mentioned above.

The egregious fallacy of the Cornell method consisted in the presupposition that ideas and images are identical; the subjects were instructed to *look for images* in their thought processes. They neglected ‘ideas’ in the search for ‘images.’ Thus, Dr. Geissler was told to look for the meaning of the sentence ‘Did you see him kill the man?’ He reported that he had “No meaning all the way through.”⁹ By ‘meaning’ he meant ‘image.’ He had no ‘image,’ but he certainly *understood the sense* of the sentence; any child would understand that. In other words, he had an ‘idea’ but no ‘image.’ If anything, such a report bears out the main contention of the Würzburg School that *images are only accessory products* of the thinking process.

It was the abuse of the introspective experimental method of the Cornell School that called forth a denunciation from Watson and prepared the way for behaviorism.

Gestaltism

Besides the Würzburg School of experimental psychology, the psychology of *Gestalt or configuration* has risen in opposition to sensationalism. There are really two Schools of Gestalt. The Old School originated with *F. Brentano*, in

1874. He had been trained in scholastic philosophy, and he stressed the supra-sensuous character of thought. But it was the work of two of his students, *A. Meinong* and *C. von Ehrenfels*, who developed the ideas of Brentano into what is now known as the Psychology of Gestalt. In particular, it was von Ehrenfels (1890) who showed that 'configurational qualities' exist in many types of perceptions, so that we apprehend these complex perceptions as 'wholes' rather than as mere 'aggregates' of sensory impressions. Meinong came to the conclusion that in Gestalt, in many instances, meanings are involved which are more than the resultants of sensations and cannot be explained on the basis of sensation, because they are altogether *objects of a higher order*, namely, conceptual or intellectual. This view was, of course, diametrically opposed to the 'atomistic' sensationalism prevalent in psychology at the time and practically amounted to a return to scholastic psychology, because over and above the sensory data of perception there must be the interpretative thought process as the configuring principle. Since Meinong taught at Gratz, the Old School of Gestalt psychology is often referred to as the *School of Gratz*.

The *New School* is called the *School of Berlin*, because *M. Wertheimer* and *W. Koehler*, who, together with *K. Koffka*, were mainly responsible for the new development of configurational psychology, taught at Berlin. These authors extended and deepened the researches begun by their predecessors of the Old School, especially by applying the experimental methods of modern psychology to the problem of configuration in perception. The New School

began with an essay by Wertheimer on the perception of movement, written in 1912. Today Gestaltism is receiving considerable attention and has a large following.

The final conclusion of the studies of the Gestaltists can be condensed into the statement: Perception is not the mere sum of individual 'atomistic' sensations, but the resultant of the total sensory impression.

Unfortunately, the School of Berlin opposed the intellectualism of the parent School of Gratz and attempts to explain all configuration on the basis of sensory perception, ignoring entirely the *intellectual interpretation* of the cognitive processes. The pathology of perception, as noted in cases of cortical blindness and in persons operated on for cataract (see above, Chap. 7), reveals the fact that configurations may be 'apprehended' and yet not 'understood.' Over and above perception, therefore, we have supra-sensuous thought processes dealing with intellectual meanings. The School of Berlin is still caught in the web of *sensationalism*, although it stands in opposition to the old-style sensationalism of Hume and his followers. Nevertheless, it is a step in the right direction.

For three centuries the ill-fated ultra-dualism of Descartes has played havoc in the minds of philosophers. System after system has been devised, only to be found in the end to be inadequate. Slowly but steadily experimental psychology is forcing philosophers and psychologists into recognizing that man is not pure spirit nor pure matter, but a unitary being composed of a material body and of a sentient, intellectual mind, an *integral organism*. We will next consider the peripatetic theory.

Summary of Chapter XIII

There are three main classes of theories which attempt to explain the *origin of ideas*: the theory of innate ideas; the empiricist or sensationalist theory; and the peripatetic theory.

1. *Plato's Ultra-Realism*. In order to account for the unchangeable and universal character of universal ideas and scientific knowledge, Plato postulated the existence of a supra-mundane *world of Ideas* or pure essences. Man must have lived in this world in a former existence, contemplating the Ideas, and he recalls them in the present existence. Universal ideas are thus innate.

Plato's theory presupposes that the relation between body and soul is *unnatural* and *extrinsic*; this relation however is natural and essential. We should be able to *remember* our former existence; but we do not.

2. *Descartes' Ultra-Spiritualism*. Descartes taught that body and soul are two intrinsically independent substances. The body is a mere machine; the intellect is the exclusive cause of all knowledge. Ideas are *potentially* innate and subsequently become actual.

Descartes overlooked the fact that man is a psycho—physiological *organism*. Sense organs are *vital instruments* of knowledge, and ideas can thus be formed through a process of abstraction from sense images.

3. *The Monadism of Leibnitz*. Every being consists of monads, all of which are without contact with other monads

but have 'power of representation.' All ideas are innate as 'natural virtualities.'

Monadism is a gratuitous theory. If the theory were correct, there would be no need of sense organs and a nervous system. The theory leads to *solipsism*.

4. *Ontologism*. The theory claims that man intuits *God* and the *divine Ideas* in their relation to creatures and knows the objects of the world thereby.

This theory is contradicted by consciousness. If we beheld the divine Ideas, we would behold God's essence; but our knowledge of God is *indirect, analogous*, and by *negation*.

5. *Kant's Transcendental Criticism*. There is a noumenal world of things-in-themselves; of this world we can know nothing. The noumena affect the senses. Sense impressions are cast into the molds of *two innate a priori mental forms*, 'space' and 'time,' giving us phenomena. In the intellectual field there are twelve *innate a priori* judgment forms, the 'categories.' Reasoning is government by three *innate a priori* forms, the ideas of 'soul,' 'matter,' and 'God.' None of these 'forms' have objective value, but they are the conditions which make knowledge possible; they are present in the mind antecedent to all experience and therefore innate. The necessity and universality of ideas, judgments, and inferences are derived from these innate forms.

The theory is false. It makes knowledge *illusory*. We can know nothing of the external noumenal world; yet Kant knows that it is a 'chaotic manifold.' The theory is contrary to the science of *psychology* which shows that sensory

experience contributes to the perception of 'space' and 'time.' It is contrary to *physical science* which treats of a real, not a merely phenomenal, world. It destroys *intellectual knowledge*, since it bases knowledge on the blind compulsion of mental 'forms' instead of 'insight.'

6. *Locke's Empiricism.* Locke considers the *object* of the intellect to be the *idea*; and he confuses the idea with the phantasm or image. He contends that *matter can think*.

The object of the intellect is *reality*, not the idea. By confusing 'idea' and 'image,' he wipes out the distinction between intellectual and sensory knowledge. 'Thinking matter is as impossible as a 'square circle.' Locke cannot explain the origin of supra-sensuous objects, such as 'God,' 'good,' etc., because we do not experience them.

7. *Sensationalism and Associationism.* According to Hume, the total content of the mind consists of *perceptions*, namely, 'impressions' and 'ideas'; the latter are faint images of impressions. All we can know are phenomena. The universality and necessity of judgments rest on *association*: because we observe an invariable sequence of events, we judge the antecedent events to be the 'cause' of the subsequent events.

'Ideas' are not 'faint images' of sense-impressions: ideas are abstract and *universal*. Universal ideas are the result of abstraction. Axioms and principles are the result of intellectual *insight*, not of association. His sensationalism destroys all scientific knowledge, because all knowledge would be but a mental construction. The Laws of Association are *not perceptions*; they control and regulate perceptions. He eliminates the 'mind' or 'Ego,' but the Laws

of Association demand something that *applies* them. Hume's theory is *atomistic* and therefore excludes the possibility of *synthesis*.

8. *Imageless Thought*. The experimental methods of the Würzburg School disproved the identity of 'images' and 'ideas.'

Images usually accompany ideas; but they are *accidental* and *accessory*, not essential to ideas. Many thoughts, some of these psychologists insist, are 'imageless.'

Titchener defends sensationalism. His method was faulty, because his subjects were instructed to look only for images in their processes.

9. *Gestaltism*. The School of Gratz arrived at the conclusion that 'meanings' cannot be explained by sensation, but are objects of a *higher order*. The School of Berlin explains configuration or Gestalt on the basis of sensory perception, ignoring the *intellectual interpretation* of the cognitive processes. The School of Berlin, although it disproves the 'atomism' of Hume, is sensationalistic.

What most of these systems overlook is the fact that man is an *integral organism* consisting of body and mind; hence their errors in explaining the origin of ideas.

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Chapter 14

ARISTOTELIAN IDEOGENY

THE FORMATION OR GENESIS OF IDEAS IS TERMED *IDEOGENY*. There is one theory which offers a far better explanation than any of the theories discussed in the preceding chapter. It is in fundamental agreement with all the data brought to light by modern experimental methods, though this theory itself was not developed and formulated on the basis of experimental method but on the basis of wide observation, acute introspection, and logical deduction.

The theory dates back to *Aristotle* (384—322 B.C.), perhaps the greatest philosophical genius of all times. Because of his custom of strolling about while discussing problems with his pupils, the followers of Aristotle were named ‘peripatetics,’ and his teachings ‘peripateticism.’ His theory of the origin or genesis of ideas in the human intellect is therefore often referred to as *aristotelian or peripatetic ideogeny*.

Aristotle’s philosophy was adopted by the Schoolmen or scholastics of the Middle Ages, and they developed his doctrines along many lines. The combination is usually styled *aristotelian-scholastic philosophy*. To St. Thomas Aquinas (1225—1274), the pre-eminent medieval

philosopher, must go the credit of having introduced Aristotle's complete philosophy to the Western World and then developing it into a grand Christian world-synthesis. Due to his epoch-making work, history has linked his name to that of Aristotle and characterizes this rejuvenated peripateticism as *aristotelian-thomistic philosophy*.

It is the aristotelian-scholastic theory of ideogeny which will be outlined in this chapter.

Intellect and Thing

That man's ideas contain a true knowledge of the external world, is the conviction of all mankind; it is also the conviction of scientists and psychologists who are not prejudiced by philosophical theories. The epistemologist¹ has the duty to prove that this conviction is rationally justified. The problem before us consists in giving a satisfactory account of the various stages which intervene between the things of the world as they are in themselves and the ideas representing them as formed by the intellect.

Now, it is an axiom of aristotelian-scholastic psychology that ***nothing is in the intellect which was not first (in some manner) in the senses*** (*Nihil est in intellectu quod non fuerit prius in sensu*). The axiom is in perfect accord with everyday experience and with experimental psychology.

We have no innate ideas. That was shown in the discussion of the various theories of innatism. As far back as our memory reaches, we are conscious of *three successive states of mind* concerning knowledge. At first we are in

ignorance relative to a subject matter (for example, history, geometry, language, etc.), so that we are in a state of 'potential' knowledge only. Then, we acquire a knowledge of a subject matter by learning, so that at the time we possess 'actual' knowledge of it. Finally, this actual knowledge recedes into the storehouse of memory, remaining there in a latent condition but capable of being recalled; this latent knowledge is called 'habitual.' The study of the knowledge process of infants and children confirms this view; they show no signs of ready-made innate ideas, but acquire their ideas and knowledge as just indicated. By a process of legitimate induction, therefore, we must conclude that the intellect of man is *originally devoid of ideas, a tabula rasa* or 'blank slate,' and it must acquire its knowledge 'from without.' Our ideas, therefore, have their *source outside the intellect*; they are acquired and formed, not innate and given.

Knowledge implies three things: the thing that becomes known; the subject or intellect that knows the thing; and the process whereby the thing becomes known to the intellect. There must be a union between the knowing subject and the known thing, so that the thing is made present to the subject.

The intellect alone is not sufficient for cognition. Of itself, the intellect is indifferent as to what sorts of things it knows; it is not determined by its own constitution to know just this and that definite thing or this thing rather than that thing. A person blind or deaf from birth through physical disability has no knowledge of color or sound. Somehow, then, the *physical things* must be brought before

the intellect. And this union between thing and intellect must be such that the knowledge thus acquired corresponds to reality; otherwise this knowledge would be false and useless.

The union between intellect and thing can conceivably take place in one of two ways. It might be a *physical union*; in that case the thing itself in its concrete entity would be taken into the entity of the intellect. Or, it might be a union by representation or resemblance; in that case the physical thing itself would remain outside the intellect, but some sort of representation, resembling the physical thing and thereby making it known, would be produced in the intellect. It is obvious, that things do not enter or contact the intellect in their physical entity and existence. When I acquire knowledge of a person or house, that person or house does not travel to me, enter physically into my intellect, and thereby become known to me; nor does my intellect travel to the person or house, envelop it, and thereby come to know it. Intellect and thing remain physically apart and retain their separate existence. Hence, the union between mind and object must be by representation or resemblance.

This representation or resemblance of the thing must be one either *of nature or of image*. The representation or resemblance in the intellect is one of 'nature,' if the thing and its representation in the intellect would exist in the same natural conditions. For example, in such a supposition a windowpane as existing in the world and its representation in the intellect would both be made of glass; if the thing is made of gold or brass or wood, its

representation in the intellect would also have to be made of gold or brass or wood. The representation or resemblance in the intellect is one of 'image,' if it is a likeness of the thing, but differs from the thing in its natural conditions or materials. For example, a photograph or painting of a person is a representation, resemblance, or likeness, but it does not consist of the same materials nor does it exist in the same natural conditions as the person represented. It is obvious, of course, that our representation of a brick wall is not made of brick, and our representation of a windowpane is not made of glass. Nor is such an identical representation required. A photographic image can give us accurate knowledge of the appearance of a person, although the material or nature of the represented person and the representing likeness or image is totally different. A motion picture resembles the persons and scenes it depicts, and we acquire thereby considerable knowledge of them, even though the picture is devoid of the conditions and materials present in the original things. Hence, the representation, resemblance, or likeness present in the knowledge process of the intellect must be one of image. A *cognitional image* suffices and is necessary, in order to make the thing known to the intellect.

The external thing, then, becomes known to the intellect by means of a cognitional image. In as much, however, as the intellect, at first, is in a state of potential knowledge, this cognitional image must in some manner be derived *from the thing*. By what process is this cognitional image made?

Role of the External Senses

We know the answer from the sciences of physics and physiology. Things do not produce cognitional images in the intellect directly. *Forms of energy* (light-waves, air waves, heat, electricity, etc.) issue from the things and impinge on certain nerve terminals situated in certain structures of the human body; these structures and their nerves (sense organs) are specifically designed to act as receptors for these energy influences. The physical stimuli, proceeding from the things, activate the external senses by arousing a nerve impulse which travels along the afferent nerve fibers to receptive centers of the cortex of the brain. The response of this neurological mechanism is a *sensation* of color, sound, flavor, odor, pain, warmth, etc.

The response of sensation to the energy stimuli is not purely passive; it is an active vital process on the part of the sentient subject. The stimuli themselves are not vital and are not sensations; they are physical causes which stimulate the sentient subject to *actively produce within itself the vital response of sensation*. Just what kind of sensation is produced by the sensing subject within itself depends on the type of stimuli proceeding from the object. Sensation, therefore, is not a purely subjective product of the sensing subject. The sensing subject is determined in its sensory response partly by its own vital nature and partly by the character of the incoming stimuli. Sensation is thus seen to be the product of a double factor: one *objective*, the physical stimuli issuing from the external thing; and one

subjective, the vital power of the sensing subject to respond to the particular stimuli with particular kinds of sensations.

That such a process actually occurs, should be clear from what has been said about the sensations in previous chapters. There it was shown that sensation is not a mechanical process in which the sensing subject participates in a purely passive fashion. On the contrary, the sensing subject responds actively by producing within itself a vital modification. This *vital modification*, the sensation, corresponds to the nature of the stimuli activating the senses, but it also differs from them in many respects. Since the stimuli reveal the thing to the sensing subject, this vital modification or sensation is a *cognitional image* of the object, but only an 'image' in its rudimentary stage; it is the first step in making the thing known to the intellect.

Even in this rudimentary stage, it will be noted, the cognitional image is not *physical*, but psychical. It does not consist of material stuff, such as exists in the thing which it represents.

The image is of the nature of the sensing subject rather than of the sensed thing; it is a mental image, not a physical copy. As the seal leaves upon the wax a likeness of itself without giving to it any of its material, so the material things are instrumental in impressing upon the senses their image without the gross conditions of matter.

In order to understand the nature of this cognitional image, even in its rudimentary stage, the body of man must be considered, not as an aggregate of inanimate chemical elements and compounds, but as a *vitalized organism*. Sensations are 'vital' mental products, different from the

physical stimuli to which they are a response. The sensation of 'color,' for example, is something very different from the pattern of ether waves spread over the retina, and the sensation of 'sweet' is very different from the reaction of sugar with the chemical substances of the tongue. If sensations were the exclusive product of the sensing subject, we would have sensations, but no 'representation' or image' of the thing; and if the response were the product of a non-vital sense mechanism, we would have chemical and physical reactions, but no 'sensation.' But if man is an *integral organism*, we can understand how physical and chemical stimuli can affect the vitalized physical and chemical constituents of the senses and arouse in them a vital sensory response. And we can also understand how the sensing organism can respond to the causal action of the stimuli with sensations which are a rudimentary cognitional image capable of being elaborated eventually into a completed image of the thing.

Role of the Internal Senses

The rudimentary cognitional image of the thing, given in the sensations experienced by the sensing subject in response to the various types of stimuli issuing from the thing, is made into a completed cognitional image through the operation of the *internal senses*.

Sensations are in the nature of irreducible and isolated items of mental experience. They are like the single pieces of a jigsaw puzzle. Viewed separately and individually, the pieces are fragments of a picture; put together in their

proper order and position, they form a unified and complete picture (representation, image, likeness, similitude) of a thing or scene. If there were *no central or synthetic sense*, the sensations would remain in their isolated and fragmentary condition. But the central or synthetic sense makes the sensing subject aware of the various sense qualities (a color, a tone, an odor, a flavor, etc.) as occurring simultaneously, combines them, and refers them to some definite thing as a *perceptual whole*. It synthesizes the jigsaw pieces of sensations into a unified *phantasm* of the sensed thing. This phantasm is the total sensory impression or completed cognitional image of the thing furnishing the stimuli which arouse the sensations. The phantasm is the unitive bond between the sensing subject and the thing, making the thing known in a sensory manner.

An example. Before me there is an orange which I proceed to peel and eat. My sight has a sensation of yellowish color on a surface which has a spherical contour; my fingers have a sensation of the texture of the orange, partly rough and partly smooth, together with a sensation of spatial dimensions; my nostrils have the sensation of a fruity odor; as I munch the segments, my tongue has the sensation of sweetness; my mouth has the sensation of pressure and temperature. Each sensation is a separate item mediated by a separate sense; each single sense knows nothing of the sensation mediated by the other senses. If this were the entire story of our experiencing, we would have only a confused and confusing mass of isolated sensations. All these isolated sensations, however, are experienced simultaneously (or nearly simultaneously) by

the one sensing subject; they are combined into a *total sensory impression or phantasm* by the synthetic sense and referred as a 'perceptual whole' to the same thing, the 'orange.' This phantasm is the completed cognitional image presenting the thing to the sensing subject through the mediation of the synthetic sense in co-operation with the external senses.

In the terminology of aristotelian-scholastic psychology, the sensations are the *received or impressed sensible image (species sensibilis impressa)*, which arouses the synthetic sense into action by its presence. The synthetic sense responds to this sensory determinant,' as D. Card. Mercier styles the impressed sensible image, by forming the phantasm or completed sensory cognitional image of the object. The phantasm or completed sensory cognitional image, elaborated into a perceptual whole from the sensations by the synthetic sense, is the *formal or expressed sensible image (species sensibilis expressa)*. For brevity's sake, this completed sensory cognitional image representing the sensed thing is called phantasm. The phantasm, therefore, is formed by the synthetic sense while the thing is *present to the senses* and activates them through its stimuli. This phantasm truly *represents* the thing, because it manifests the qualities and attributes of the thing to the subject by means of the stimuli and of the sensations resulting therefrom.

It must be stressed again, that the phantasm (cognitional image) is a representation of the external thing, but it is a psychical or mental, not a physical or purely material, likeness. The senses perceive color, sound, bitterness,

hardness, etc., but the phantasm itself is not colored, sonorous, bitter, hard, etc. The phantasm is a vital modification of the knowing subject and as such partakes of the nature of the knowing subject. This fact is expressed in the axiom: *The known object is in the knower according to the nature of the knower (Cognitum est in cognoscente secundum modum cognoscentis)*.

Once the phantasm ('expressed sensible image') is formed by the synthetic sense, it is taken over by the *imagination* and stored away. The phantasm does not remain in the imagination precisely as a 'phantasm,' such as it was when formed by the synthetic sense, but as a 'trace,' or 'disposition.' Later on, this 'trace' or 'disposition' can be activated, so that the 'phantasm' or image' will be revived. In the absence of the original thing, therefore, the phantasm or image can be reproduced and contemplated; for cognitional purposes, the phantasm or image *takes the place of the original thing*, and the thing can be studied in its cognitional image as if the thing itself were again present. The thing itself may have been sensed for only a brief period of time, never to be actually sensed again, as when we travel once and only once through a city or country. The recalled image of the thing can be studied at leisure in a sort of vicarious sensory experience; the intellect thereby has a greater opportunity to form ideas of the thing.

Memory also plays its part in this psychological process. It is memory which dates and localizes past experiences and identifies a certain phantasm or image as representing some particular thing *sensed before* at a definite time and

place. It recognizes the object in its cognitional image, so that the intellectual ideas derived from this image are equivalent to ideas derived from the thing itself as represented in the phantasm of the synthetic sense made in the thing's own presence.

These, then, are the two preliminary stages in the total process of the formation of ideas: the genesis of the *rudimentary cognitional image* ('impressed sensible image') of the sensations, produced by the external senses and the cerebrum in response to physical stimuli proceeding from the thing; and the completed or *formal cognitional image* ('expressed sensible image') of the *phantasm*, made by the synthetic sense from the sensations and conserved by the imagination.

Agent Intellect

From the sensory field we pass to the intellectual field. Intellection begins where sensory experience ends.

Ideas are of a higher order than images; ideas are abstract and universal, while images are concrete and individualized. It follows that images cannot be the efficient cause of ideas, because there would be a disproportion between cause and effect. Just as the phantasm had to be formed by the synthetic sense through a sensory process in response to the stimuli in the sense organs, so the formation of ideas must proceed from the *intellect* through an *active intellectual process* in response to the phantasm or image. There are no innate ideas in the intellect, and there is nothing in the intellect which was not first

somehow in the senses; the intellect, therefore, must derive its ideas in some manner *from the senses*. How does the intellect do this?

According to the aristotelian-scholastic theory, the intellect forms its ideas by *turning its attention upon the content of the phantasm (se convertendo ad phantasmata)*. Most scholastics interpret the term 'phantasm,' used by Aristotle and St. Thomas in this connection, as meaning the revived phantasm or image of the *imagination*. Taken in this sense, ideas are not derived from the phantasm made by the synthetic sense in the presence of the stimulating thing. This view is probably erroneous. T. V. Moore,² after an analysis of pertinent passages of Aristotle and St. Thomas, arrives at the conclusion that both understood the term 'phantasm' in a *generic* sense, including the phantasm formed by the synthetic sense in the presence of the object and the revived image of the imagination in the absence of the object. Both types of images are 'phantasms,' and the intellect can form ideas by turning its attention to either one. After all, the *cognitional content* of both is *identical*. The image of the imagination is fashioned from the phantasm of the synthetic sense and is a replica of it. No valid reason can be assigned why the intellect should not be able to turn its attention to the original phantasm of the synthetic sense as well as to the derived image of the imagination; if the intellect can turn its attention to the latter, it must be able to turn its attention also to the former. After all, experience shows that we form ideas of objects while we actually perceive them, i.e., *while we have a percept of them* in the synthetic sense.

Ideas are formed, then, by the intellect in one of two ways: by turning its attention *either* to the phantasm of the *synthetic sense* in the actual perception of the thing or to the phantasm (image) of the imagination in the recalled impression of the absent thing. The result is, in general, the same, because the cognitional content of both types of phantasms is the same: both are a psychical likeness of the perceived thing. The *superiority* of the idea, relative to the phantasm, consists in this that the content of the idea represents the thing as divested of the *material conditions* proper to material things. The senses represent things in the concrete conditions of their individualizing material determinations (shape, size, color, etc.); the intellect, however, represents things as divested of these concrete conditions, by leaving the individualizing material determinations aside and concentrating its attention on the *essence* or '*whatness*' of the thing ('what they are,' instead of 'how they appear'). The intellect divests the representation of its concrete conditions, by the now familiar process of *abstraction*; thereby the 'sensible' becomes '*intelligible*' to the intellect. The 'essence,' or 'nature,' or 'whatness,' is said to be 'abstracted' from the phantasm by the intellect.

When it is said that the 'whatness' or the '*quiddity*' (Lat., *quid*, what; *quidditas*, whatness) is 'abstracted' from the phantasm, we must guard ourselves against placing too literal an interpretation on the term 'abstraction.' It does not mean that the intellect actually 'draws out' the phantasm from the synthetic sense or imagination, immaterializes the phantasm itself, and then takes it over as

an 'idea,' thereby converting the sensible image into an intelligible image. The phantasm remains in the synthetic sense or in the imagination as a sensory representation of the thing, unchanged and intact. The intellect, however, while contemplating the phantasm present in the synthetic sense or imagination, *actively generates within itself* an intellectual representation of the thing according to its essence or 'whatness (*quiddity*),' thereby making the thing *actually intelligible* or understandable for the intellect. Aristotelian-scholastic psychology speaks of this process as 'illuminating the phantasm' and 'abstracting the essence or nature from the phantasm.'

Since the idea is a supra-sensible (because 'abstract') representation of the thing, the abstractive process whereby the idea is formed must be a *supra-sensible process*, and the abstracting intellect must be a *supra-sensible power*. The phantasm, therefore, since it is but a sensory product, cannot make an impression on the supra-sensible intellect by being, as it were, projected on the intellect; for the same reason, the phantasm can neither be converted into an idea nor reside in the intellect. The intellect forms its idea of the thing during the contemplation of the phantasm by means of an naive interpretation of the content of the phantasm.

This interpretation of the content of the phantasm is possible, because the same knowing subject is consciously active in sensation and intellection and is consciously aware of the phantasm and its content as a sensory representation of the thing. Since the one who senses and the one who thinks is the same perceiving individual man, man is not

only aware of the phantasm but also is aware of what the phantasm represents and means; he *interprets* the phantasm as a representation of the thing and thereby knows *what the thing really is in itself*.

Now, this power or capability which actively *modifies itself so as to represent within itself in an abstract manner what is concretely represented in the phantasm*, is termed the *agent intellect*. Some call it the 'active intellect.' St. Thomas and the Schoolmen termed it *intellectus agens*; so the term 'agent intellect' seems preferable.

The agent intellect is a certain instinctive supra-sensory energy or power which acts spontaneously on the phantasm present in the synthetic sense or imagination and generates within itself an *intelligible cognitional image of the thing* represented by the phantasm.

The agent intellect is the principal efficient cause in the formation of this intelligible cognitional image. The phantasm presents the quiddity or essence of the thing, but this quiddity is concretized in material conditions and determinations. I behold, for example, a human being and make a phantasm of him in all his individualized concreteness of shape, color, size, sex, etc. The agent intellect unites its activity with that of the perceiving synthetic sense, drops all the concrete particulars, and abstracts from the phantasm those features which are essential to man as 'man.'

Without the sensory cognitional image of the phantasm the agent intellect can do nothing. When, however, the phantasm is present, the agent intellect naturally and instinctively goes over into its abstractive activity. The

product of this abstractive activity is the *vital determination of the intellect* to the act of understanding, to the *intellectual perception* of the quiddity of the thing represented in the phantasm. This 'vital determination' of the intellect is termed the received or impressed intelligible *cognitional image* (*species intelligibilis impressa*) or the 'impressed intelligible species.' The impressed intelligible species is still not the full and complete 'idea' of the thing, but the immediate preparation for the 'idea'; its relation to the full and complete 'idea' is the same as that of the 'sensations' to the full and complete 'phantasm' of the synthetic sense.

M. Maher characterizes the agent intellect as follows: "The intellectus agens [agent intellect] must be conceived as instinctive or blind; its 'abstractive' action is *productive* of intelligence, not formally intelligent itself. Its function is to *effect* the modification by which the act of intellectual consciousness is immediately awakened. It may be here asked if the action of the *intellectus agens* be *instinctive*, why does it issue into the precisely appropriate activity? Why does it *effect exactly the right modification* to represent the object of sensory impression when the latter cannot directly act upon it? The answer lies in the fact that *both senses and intellect have their source in the same individual soul*, which is so constituted that on the *stimulation of the former the latter sympathetically responds* by a higher reaction of its *own* — somewhat as the appetitive faculty, which conceived as such is blind, tends towards an object apprehended by a cognitive faculty as

good. In both cases it is the soul itself which acts through the faculty.”³

The Potential Intellect

The phantasm, then, is ‘potentially intelligible,’ because it contains the essential elements of the thing in a concrete form; it becomes ‘actually intelligible’ when the agent intellect grasps the essential elements through its abstractive activity. These essential elements must now be fashioned from a rudimentary cognitional image (impressed intelligible species) of the agent intellect into the *completed or formal cognitional image*, namely, into an ‘idea.’

The *power or capacity* of the intellect to *express the essence of the represented thing in an ‘idea’ or ‘concept’* is termed the *potential intellect (intellectus possibilis)*. The term ‘potential’ does not mean ‘inactive.’ It merely signifies that the intellect is ‘receptive’ of the vital determinant or modification (impressed intelligible species) received by it from the agent intellect, before it proceeds to its own activity of generating the idea proper.

This vital determinant having been received into the potential intellect, the potential intellect expresses *in conceptual terms* the nature of the thing represented concretely in the phantasm. In other words, the essential elements of the thing, abstracted from the phantasm by the agent intellect, are gathered together by the potential intellect into a *definition or abstract intellectual representation* of the thing. This conceptual definition is the completed or *formal intellectual cognitional image* of the

object, the 'expressed intelligible species (*species intelligibilis expressa*)' or *idea*. The formation of the 'idea' as an intellectual expression or representation of the thing is now complete. The intellect's abstract idea of man is 'rational animal,' and this idea is obviously something very different from the phantasm of 'man' in the synthetic sense or in the imagination; the phantasm is always concrete and material, while the idea is always abstract and conceptual.

The idea, immediately upon its formation, is a *potential universal*. The idea expresses the nature or essence of the thing, stripped of all individualizing conditions. As such, it represents what this thing has in common with all individuals of the same class. Before the intellect, however, is aware of this, it must compare this thing with things of the same type; it recognizes the fact that this nature is the same in all individuals of the class and then applies the idea to the whole class as a class and to every individual belonging to the class. The idea is now a *formal universal*. Universality is another feature of the idea which distinguishes it from the phantasm, because the phantasm, being derived from an individual thing, is always individualized and never universal.

Aristotelian-scholastic psychologists disagree among themselves as to whether the agent intellect and the potential intellect are two really distinct powers or two phases of one and the same fundamental power. Similarly, they disagree as to whether the phantasm is an (instrumental) efficient 'cause in the production of an idea or merely a necessarily required 'condition.' Furthermore, they disagree as to whether the 'impressed intelligible

species' and the 'expressed intelligible species' are really distinct from each other or merely two aspects of one and the same reality. These are abstruse problems which need not detain us.

The aristotelian-scholastic ideogeny, as here described, is an *ideological theory* which attempts to explain the process of the formation of ideas in the human mind, and as such it must be judged.

Understanding and Reason

We understand some things directly, because they are self-evident to the mind. Among these are the ideas we acquire through the direct perception of things, as when we interpret the things immediately presented to us by the phantasm in sensory experience; we need no 'reasoning' process to understand them. In a similar manner, we understand the meaning of *first principles* and perceive their truth and validity, without the necessity of proving them; they are immediately evident. Such principles are, for example, the Principle of Identity, the Principle of Contradiction, the Principle of Excluded Middle. The power of the mind which perceives the truth and validity of ideas and principles on the basis of direct and immediate evidence is termed *understanding*.

Some ideas, principles, and judgments, however, are not self-evident. They are *derived ideas, principles, and judgments*, the result of a process of elaboration and demonstration from previously acquired ideas, principles, and judgments, and are known through 'mediate inference'

on the basis of definite reasons and proofs. This process is termed 'reasoning,' and the power of the mind which perceives the truth and validity of derived ideas, principles, and judgments on the basis of indirect and mediate evidence is termed reason.

The question then arises: *Are understanding and reason two distinct powers of the intellect, or are they merely two aspects of one and the same intellect?*

There have been some *differences of view* on the nature of understanding and reason. According to Kant, it is the function of the understanding to cognize the phenomena of experience and to arrange the material of experience by means of the innate forms of the categories; and it is the function of reason to conclude from the conditioned to the unconditioned by means of the innate forms of the ideas of 'soul,' 'world,' and 'God.' He seems to view the two as distinct powers. According to *Jacobi*, the understanding is the capacity to know the sensory world, while reason is the capacity to know the supra-sensory realities (God, soul, essence, etc.) by means of a sort of faith without intellectual insight. According to *Hermes*, we know the data of experience by means of the ideas of the understanding, while the ideas of reason enable us to apprehend that which is known in its grounds and causes. A view, similar to that of *Hermes*, was held by *Gunther*.

We hold that understanding and reason are *really identical with the intellect* and merely designate two aspects of one and the same cognitive power.

Understanding and reason both have the same proper, connatural, immediate *object*, namely, the sensible in an

abstract form. They differ only in this that cognition through understanding is immediate, based on the self-evidence of fundamental ideas and principles while the cognition through reason is mediate, based ultimately on the self-evidence of the fundamental ideas and principles from which this cognition is derived. The 'mode' of knowledge is different, but the 'kind' of knowledge is the same. The formal object of understanding and reason being the same, there is no need to consider them as really distinct powers. Again, reason is to understanding as the *imperfect to the perfect*. The essence of all cognition is that things become evident to the knowing subject. Cognition is perfect, when the intellect 'knows' things directly and immediately; it is imperfect, when the intellect must seek reasons and grounds to make them known. Now, the cognition of the understanding is of the first type, while the cognition of reason is of the second type. It is only because of the weakness and limitation of the human intellect that it cannot acquire a full knowledge of all things through direct intellectual perception, but must 'conclude' to their existence by a process of reasoning. Imperfection of cognition, however, does not necessitate a distinct power.

Intellectual Memory

While treating of the sensory memory, it was pointed out that modern psychologists, as a rule, bulk together sensory and intellectual material without distinction in their investigation of human memory. They seem to take it for granted that memory is a single power. This concept of

memory is erroneous. Besides sensory memory, man possesses an *intellectual memory*.

We not only recall and recognize past items of sensory experience, but also items of experience and knowledge which are definitely *supra-sensory* in character.

Since *ideas are abstract and universal*, they cannot be the product of a sensory process and they cannot be stored in a sensory memory. Everything in the sensory memory is concrete and particular, affected by the material conditions of the sensations and of the phantasms of the synthetic sense, just as the latter are affected by the material conditions of the physical things from which they are derived. The *judgments, principles, and laws* which constitute intellectual knowledge and science, even when they pertain to the physical world, are meaningful interpretations, not sensory representations, of reality, and as such far exceed the capacity of the senses and of sensory memory. For example, the definitions, rules, and methods of logic cannot be perceived by the senses, because they are mental realities which emit no physical stimuli and therefore cannot affect the senses; no sensory image of their 'meaning' can be made by the synthetic sense, stored, recalled, and then be recognized by the sensory memory. The truth of judgments and inferences possesses no sensory qualities which could possibly be imaged, but is a matter of intellectual insight into the supra-sensory relations existing between ideas and judgments. We are forced, therefore, to conclude that intellectual memory exists and that it is a power really distinct from sensory memory.

This conclusion is confirmed by *experimental psychology*, although little experimental work has been done to separate the sensory and intellectual factors of memory. Certain facts point definitely to the existence of two kinds of memory, one based on sensory experience and the other on intellectual apprehension.

The *learning of meaningful material* is achieved far more easily than that of nonsense syllables, words, and mere numbers. Ebbinghaus (1885) discovered that we expend only one-tenth as much energy in learning meaningful material as we do for the same amount of meaningless material. His findings were verified by Binet, Henri, Neumann, Reed, and many other investigators. If memory involved nothing more than the recall and recognition of certain printed letters and numbers, it should make no difference whether their combinations contained a meaning or not, because the sensory image would be equivalently the same in all instances. The presence or absence of meaning, however, makes a decided difference. Since the difference cannot be accounted for by the senses and the sensory memory, the difference must be due to the intellect and the intellectual memory.

Similarly, the *curve of forgetting* is much more rapid and much more steadily downward for nonsense material than it is for meaningful material. Intellectual insight makes a great difference in this respect, as studies by S. Austin, A. G. Dietze, G. E. Jones, R. A. Davis, C. C. Moore, and others, conclusively show.

L. V. Zankov, in tests made on morons, discovered that they experienced a sudden development of intellectual or

'logical' memory when about ten or eleven years of age, due to an awakening of intellectual insight at that period, while no change occurred in their rote memory.

Facts of this kind and of a similar nature point to two types of memory. One is sensory, where learning depends on the repetition of sensory impressions; the other is intellectual, where learning depends on the understanding of non-sensory logical relations.

Sensory and intellectual memory, however, are not totally independent. On the contrary, the intellectual memory, to a great extent, is *dependent on the sensory memory*. Intellectual knowledge has its origin in sensory experience, and ideas are derived from phantasms through abstraction. Due to this intimate relationship between sensory and intellectual processes, their mutual influence is bound to be deep and lasting. Any pathological disturbance of the sensory memory will naturally also effect intellectual memory. Word-blindness, for example, brought on by disease or injury of the brain, interferes with recall and recognition of words and their meaning; but it does not interfere with the understanding and recognition of logical relations, ideas, and principles as such.

According to the principle that 'entities should not be multiplied without good reason,' we accept the view that *intellectual memory is identical with the intellect itself*, and not a power distinct from the intellect. The knowledge retained by the memory and then revived at a later period is identical with that originally acquired by the intellect, and we are conscious that this knowledge is the same. There seems to be no valid reason for assuming that intellectual

knowledge is 'acquired' by one power and 'retained' by another. On the other hand, it is logical to assume that the knowledge, which at first was actual, simply becomes 'habitual' by being reduced to the condition of a *trace* or *disposition* in the intellect, capable of being activated anew and recognized as having been present before. Nothing more seems to be required.

If we now summarize the salient facts pertaining to the origin and nature of ideas, we note the following *stages in the developmental process*:

First, the external things send forth certain forms of energy which impinge on the sense organs. The vital subject responds through its sense mechanism with sensations, and these sensations are a rudimentary cognitional image of the external thing. This cognitional image is 'rudimentary,' because the sensations, as such, are only isolated items of experience.

Second, in the presence of these sensations, the synthetic sense combines them into a perceptual whole by forming them into a unified phantasm and referring them to the external thing which they represent. The phantasm is the completed or formal cognitional image which makes the thing known to the knower in a sensory manner. The imagination conserves the content of the phantasm as a dispositional image which can be revived and recognized by the sensory memory.

Third, when presented with the phantasm or image, the agent intellect abstracts the essential elements of the thing from the concrete conditions in which they are found in the phantasm or image, thereby making the phantasm or image

intelligible. These abstracted essential elements are the rudimentary intelligible cognitional image of the object.

Fourth, the agent intellect presents these abstracted essential elements to the potential intellect, which now goes into action and mentally expresses this intelligible content in conceptual terms, thereby forming the idea of the thing in an abstract and universal manner. The 'idea' is the completed or formal cognitional image of the external thing in the intellect and is stored away in the intellectual memory for future recall and identification.

While much of this is speculation, the theory gives a rather neat explanation of the deep problem of bridging the sensory and intellectual processes involved in the origin and development of ideas.

Summary of Chapter XIV

This is an account of ideogeny according to Aristotle and the scholastics.

1. *Intellect and Thing.* There is nothing in the intellect which was not first (in some manner) in the senses. There are no innate ideas; they have their source outside the intellect; the intellect must derive them from the things. Hence a union between intellect and thing by means of a *cognitional image* is demanded.

2. *Role of the External Senses.* In the presence of the stimuli proceeding from the thing, the sentient subject actively produces within itself the vital response of *sensations*. These sensations represent the thing and are the *rudimentary cognitional image* of the thing, the 'impressed sensible image.'

3. *Role of the Internal Senses.* The central or synthetic sense combines the isolated sense qualities into a perceptual whole and refers them to the same definite thing. The result is the phantasm, the completed or *formal cognitional image* or 'expressed sensible image' of the thing. The phantasm completes the knowledge of the thing on the sensory level. The phantasm is taken over by the imagination as an image which can be recalled and can be identified by the sensory memory.

4. *Agent Intellect.* The intellect forms its ideas by turning its attention upon the content of the phantasm either of the synthetic sense or of the imagination. By means of abstraction, the intellect grasps the essential elements of

the thing represented in the phantasm, leaving aside the individualizing material determinations, thereby making the phantasm 'intelligible.' This power or capacity of the intellect, whereby it actively modifies itself so as to represent within itself in an abstract manner what is concretely represented in the phantasm, is termed the *active* or *agent intellect*. The result of this abstractive process is the *impressed intelligible cognitional image*, the 'idea' in a rudimentary form.

5. *The' Potential intellect*. The power or capacity of the mind to express the essence of the represented thing in an 'idea' or 'concept' is termed the *Potential intellect*. The essential elements, after being abstracted from the phantasm, are presented by the agent intellect to the potential intellect; the latter expresses the elements in conceptual terms by gathering them together into a *definition* or *abstract intellectual representation* of the thing. This 'idea' is the completed or *formal intellectual cognitional image* of the thing ('expressed intelligible species').

6. *Understanding and Reason*. The power of the intellect which perceives the truth and validity of ideas and principles on the basis of direct and immediate evidence is termed *understanding*. The power of the intellect which perceives the truth and validity of ideas and principles on the basis of indirect and mediate evidence is termed reason. They are not distinct powers, but merely two aspects of one and the same intellect.

7. *Intellectual Memory*. Ideas are abstract and universal and as such supra-sensory. The judgments, principles, and

laws which constitute intellectual knowledge and science are meaningful interpretations, not sensory representations, of reality. Such mental items, therefore, exceed the capacity of the senses and of sensory memory. Hence, *intellectual memory* must be really distinct from sensory memory. Intellectual memory is identical with the intellect itself and not a power distinct from the intellect.

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Moore, T. V., *Cognitive Psychology*, pp. 462-472. — Maher, M., *Psychology* pp. 305-313. — Brennan, R. E., *General Psych*, pp. 327-334.

¹ See the author's *Reality and the Mind* (Bruce, 1936), Ch. X—XII

² "The Scholastic Theory of Perception," in *The New Scholasticism*, Vol. VII (1933), pp. 222 ff. In opposition to Moore's interpretation, see the article, "Phantasm and Phantasy," by F. A. Walsh, in *The New Scholasticism*, Vol. IX, 1935, pp. 556—233.

³ *Psychology* 9th ed. (Longmans, Green, 1930), p. 308

Chapter 15

VOLITION

SO FAR WE HAVE DISCUSSED THE MENTAL LIFE OF MAN AS IT appears in sense-perception, in sensuous appetency, and in intellection. Sense-perception makes us acquainted with the objects of the universe and with our own bodily states and conditions. Sensuous appetency seeks to bring us into union with objects which are recognized as sensuously good for us and to remove us from objects which are recognized as sensuously evil. The intellect penetrates the concrete appearances of things and cognizes the sensible in an abstract and universal manner, thereby arriving at a knowledge of 'what things are.'

There is still another phase of man's mental life which must be added to these. It is *volition*, the activity of the *will*. Just as sensuous appetency is the counterpart of sense-perception, so volition is the counterpart of intellection. There are two kinds of cognition, and there are two kinds of appetition.

The Concept of the Will

The best approach toward an understanding of the will is an examination of those types of experiences which reveal the acts of the will in everyday life. During the course of a day we set our will in action hundreds of times. Here are a few characteristic samples.

The alarm clock rings in the morning, and the father of the family becomes awake. The bed is comfortable, he is drowsy, and he feels a strong urge to snatch a little more sleep; however, he *resists* the impulse and gets up. He goes over to the wardrobe and, after a few moments' hesitation, *selects* his brown suit. At the breakfast table he makes a number of *decisions* as to quantity and quality of food; although he had *resolved* long ago to take only light breakfasts and *usually kept his resolution*, this morning, being rather hungry, *he changes his resolution* and eats a large portion of ham and eggs instead of the customary cereal and toast. Being of considerable corpulence, he *detests* walking and *prefers* to use the car to go to business; nevertheless, *desiring* to reduce his weight by some form of exercise and consenting to his wife's advice, he strolls to his office. Upon entering the office, he notices that his secretary is wearing a canary-yellow ensemble. He *disapproves* of this type of garb during business hours and *feels tempted* to make a caustic remark; on second thought, however, he *refrains* and, *forcing himself* to be pleasant, extends the usual greeting. Opening his mail, he reads the letter of a customer who makes a number of very unreasonable demands. He *hates* the tone of the letter and, momentarily *yielding* to his emotions, utters a few explosive epithets; on seeing the startled expression on the face of

the secretary, he expresses his *regret* over his *impulsive action*, admitting that he *should have had better control* over himself. The letter annoys him greatly. He *feels inclined* to give a point-blank *refusal* to the demands and to answer in a revengeful spirit of pique; but he also realizes that he *ought* to overlook the truculent tone of the letter from a *motive* of Christian charity and patience; finally, he needs the profits to be derived from this business for rearing his growing family which he *loves* very devotedly. What shall he do? It is a momentous decision for him to make, and he knows he *should not* act hastily in the matter. He deliberates for some time about the course he should pursue and then *decides*, for the sake of the welfare of his family, to accede to the demands. Having made his *choice*, he thinks he deserves a *reward* for his virtuous act, selects one of three cigars he carries in his pocket, lights it, and smokes contentedly in the realization that he has exercised great will power. And so the day passes, similar incidents occurring continuously.

In this brief description we notice a number of attitudes and acts of the will. Emotions and sensory impulses are present, and so are considerations of an intellectual, social, and moral character. The person in question makes decisions to act and not to act, to perform one kind of act rather than another; he makes a selection between various objects of equivalent value, and he chooses between moral good and moral evil. He is conscious of influencing motives, but also of freedom of choice and responsibility of action; he acts on impulse, but he also acts after serious deliberation. His intellect proposes different motives and methods of

procedure, but he himself determines the issue by making whatever decision and choice he prefers.

‘Resisting,’ ‘selecting,’ ‘deciding,’ ‘resolving,’ ‘detesting,’ ‘preferring,’ ‘desiring,’ ‘consenting,’ ‘approving,’ ‘disapproving,’ ‘feeling tempted,’ ‘refraining,’ ‘forcing oneself,’ ‘hating,’ ‘yielding,’ ‘regretting,’ ‘losing control,’ ‘feeling inclined,’ ‘refusing,’ ‘loving,’ ‘acceding,’ ‘choosing’ — all these mental states and experiences involve attitudes or acts of the will with reference to objects, persons, and situations. The feature common to all such states and experiences is a conscious inclination toward an intellectually perceived good and a conscious aversion from an intellectually perceived evil.

Whatever may be our ultimate judgment concerning the *will* and its nature, the will is conceived and defined as *rational appetency or the power to strive for an intellectually perceived good and to shun an intellectually perceived evil*. The exercise of willing is termed ‘volition.’

The Object of the Will

Experience shows that we strive for *material*, concrete, particular objects which seem good to us, such as food, sleep, money, exercise, health, and so forth. Over and above the sensible good, we strive also for the things of a supra-sensible and *spiritual* character, such as scientific knowledge, virtue, fame, esteem, and the like. Since our intellect abstracts the universal concept of ‘good in general’ from the single good objects, we strive for *good in general*,

without a view toward any particular kind or class of objects.

When we perceive that this universal concept of good is realized in any 'particular' good, we can strive for this particular good, because it partakes of the general good which we have come to know and toward which the will inclines. Since we find the concept of the 'good in general' exemplified in material and immaterial things, the will is capable of striving for both classes of objects.

To have a universal concept of the 'good in general,' is an *intellectual* acquisition. Man abstracts that which is 'good' in all types of objects classified as 'good' and expresses the content of the 'good' in conceptual terms, formulating an intellectual definition of the 'good.' Something is 'good,' if it is suitable to a thing; abstractly speaking, *goodness* is the *suitability of a thing to a natural tendency or appetency*.

The general concept of the 'good' leads us to a consideration of what is the 'adequate' and the 'formal' object of the will.

The *adequate object* of the human will is *everything that is good*.

Every conscious *appetitive* power or appetency extends as far as its corresponding *cognitive* power. Sensory appetency can strive only for something that is a sensible good; it is limited to the concrete, material, particular, because the senses are restricted in their knowing capacity to the concrete, material, particular. The human will, however, has no such limitations. The intellect, absolutely speaking, is capable of knowing whatever is (ontologically) true. And since everything that is (ontologically) true is also

(ontologically) good,¹ the intellect can apprehend all things under the aspect of 'goodness,' and the will, in consequence of this, can embrace with its striving power anything and everything that contains reality of whatever kind. *Everything*, therefore, that possesses 'being' and *is a being* (God and creature, the material and immaterial) *belongs to the adequate object of the will* as a rational appetency, because every being is a 'good' in some form or other.

The *formal object* of the human will is *the good as good* (*bonum qua tale*), provided it be *suitable to the willing subject* in some manner.

By this assertion we claim that the will cannot desire a good object in so far as it is an evil in any way, but only *in so far as it is a good strictly as such*. Nor can the will ever desire an evil precisely as an evil. Whatever the will desires it must desire under the aspect of a 'good.'

The will is an appetitive power, and it is the essence of an appetitive power to strive for things, so as to bring about a union between the striving subject and the desired thing. Now, if it were possible for an appetitive power to strive for the evil as such and shun the good as such, it would by its very nature seek the *destruction* of the subject. An appetitive power of this kind, however, would be a perverse and contradictory reality, a useless and destructive tendency, existing in man as an integral part of his constitution; the creation of such a being, however, would be contrary to the wisdom of the Creator.

Again, the will is given to man as the rational complement of his intellect, in order that he may strive in a better manner than the sentiently cognitive brute for that

which is conducive to his rational nature. Now, the natural tendencies of the brute are directed exclusively toward the good. Consequently, the human will also has as its natural object the good exclusively, otherwise it would be *less perfect* than the sensory appetency of the *brute*; in fact, it would be much *worse*, because the will dominates the sensory appetency in man and can hinder it from executing its natural tendencies. It follows, then, that the proper and formal object of the will is the 'good as such.'

In order, however, that the will be able to strive actually and effectively for a thing, this thing must be a *good for the subject* using the will; it must be *suitable* in some manner to the subject and must be intellectually perceived as such by the subject. Only the good is desirable, and it is desirable only because it assists in some manner toward perfecting the individual person who strives for it. After all, the will is a personal power, given for the benefit of the person possessing it; otherwise there would be no relation between will and object for this particular person.

The will itself is said to be blind, because it is not a cognitive power; it is an appetency or appetitive power. The intellect must furnish the necessary judgment as to whether a particular thing is a good or evil for the person; the will then strives for the good and shuns the evil. Ultimately, of course, it is the *human person who thinks and wills*; the human person perceives the goodness in a thing with his intellect and strives for it with his will, perceives the evil in a thing with his intellect and shuns it with his will.

Types of the Good

In as much as the adequate object of the will is everything that is good, it is well to know the different classes of the good. The main divisions of classification are as follows:

Ontological, Physical, Moral Good. A thing is an *ontological good*, when it is a good in its very entity or reality. Every being, since it possesses a certain amount of entity or reality, is an ontological good, because its entity or reality is suitable for the tendency of its own nature to be what it is and to perfect itself and to retain its perfection.

A thing is a *physical good*, when it satisfies the demand of the *nature of a being*: Each being has its own specific and individual nature, and as such it has a very definite end and purpose. What suits one nature does not necessarily suit another. The physical exigencies of man, for instance, differ from those of a horse, a cow, a bird, a fish, or a tree. Whatever suits such a specific or individual nature, perfecting it in some way, is a physical good. Thus, for man sight, hearing, well-functioning organs of digestion, etc., are physical goods.

A thing is a *moral good*, when it has everything demanded of it by the *moral law*. An action, for example, may be physically perfect, but it may contravene the moral law; in that case, it would be physically good but morally evil.

Absolute and Relative Good. An *absolute good* is anything suitable *to a being itself*, irrespective of other beings. Any reality which a being possesses, whether substantial or accidental, is an absolute good for that being;

in man, for example, all bodily structures, organs, powers, and functions are absolute goods. A *relative* good is anything which is suitable *to another being*; food, drink, clothes, shelter, etc., are relative goods for man.

Objective and Subjective Good. An objective good is anything that is a good in *itself*. Any absolute or relative good, as just defined, is an objective good in this sense. By *subjective* good we mean the actual possession of an objective good. An artistic painting, for instance, is an objective good in itself; it becomes a subjective good for me, if I acquire it as my own.

Real and Apparent Good. A good is *real*, when it is judged to be good for a being, and it *actually is* good for that particular being. The nature, bodily limbs, senses, intellect, will, etc., are real goods for man. Something is an apparent good, when it is judged to be good for a being, but it is actually not good for it. A certain kind of food many seem a 'real' good for a critically ill patient, but it may be very harmful; under the circumstances it is an apparent good, even though it is something which, in itself and for itself, is ontologically good. Similarly, pleasure is a physical good; but if its enjoyment is in opposition to the moral law, it is an 'apparent' rather than a 'real' good, because the moral law must stand higher in man's estimation than pleasure.

Disinterested, Delectable, and Useful Good. A *disinterested* good (*bonum honestum*) is any good considered merely as giving perfection, irrespectively of any pleasure derived through its acquisition or from its possession; health, knowledge, virtue are such. A *delectable* good (*bonum delectabile*) is a relative good which gives

pleasure and enjoyment. What is really desirable here is the thing itself which gives *pleasure*; oftentimes, however, the pleasure itself becomes the object of desire. Food, drink, companionship, the use of sex, etc., belong to this class. A *useful* good (*bonum utile*) is a relative good which is desired as a *means* to acquire perfection or pleasure; there is always an ulterior end in view when a good of this kind is desired. A game of golf, for example, is a useful good, desired as a means to promote one's health, to gain fame, to obtain the pleasure of companionship, and so on.

Every good is a *value*. Value is that which is 'perfect' or 'perfective.' Value, considered as something which is perfect, coincides with the absolute good, because it is identical with the reality, substantial and accidental, which a being possesses. Considered as something perfective, it coincides with the relative good, because its perfection is a good for another being. Everything, therefore, has 'value' in so far as it is a good for itself or for another. 'Goodness' and 'value' are thus seen to be synonymous terms, when viewed in their ultimate, metaphysical implications.

Evil and the Will

Evil is the antithesis of 'good.' Evil is the unsuitability of something for a natural tendency or appetency. It is not a being, but it is not a mere absence of being. It is the absence of a reality which ought to be present, of a reality due to a thing; it is a defect, a privation of reality — the *privation of a required good*.

In view of what has been said about the good as the formal object of the will, it should be fairly obvious that the will cannot desire the *evil as such*. If a being could desire an evil as such, it would strive for its own harm; however, according to all laws of nature, every being tends to preserve its own entity and perfection. The will naturally shuns the evil, just as it naturally desires the good; by the very fact that it is intrinsically necessitated to strive for the good, it is also intrinsically necessitated to shun the evil.

An *objection* is frequently advanced against this view. The opponents point out that people desire things that are *physically harmful and morally evil*. People eat and drink to excess, even though they realize that they are inflicting serious injury upon their system; they desire the amputation of a diseased member of their body; they seek illicit sex pleasure, well knowing that they are committing an immoral act. These and similar facts cannot be disputed.

The *answer* to this is simple. All creatural things are finite, limited in entity and consequently limited in their goodness. Because of this natural limitation of goodness, they are *not suitable* to the specific and individual nature of every other being; and in this respect they are an evil for some beings. In other words, creatural beings are ontologically good; but they are a 'relative evil' to a great many other beings, because they are unsuitable to them. When, therefore, a creatural being is desired, it is desired *because of the goodness* present in it, and not because it is a relative evil. In all such cases, the evil is the 'material' and 'indirect' object of the will, while the good is the 'formal' and 'direct' object of the will. We must remember that the

will is blind and relies on the judgment of the intellect as to whether something is good or evil. The intellect, however, is fallible and often erroneously considers some things as altogether good and desirable which are only partially so or only so in certain circumstances and under certain conditions. Hence, whenever the will strives for something that is evil, it does so solely *under the aspect of a good*.

Experience proves this fact. We may know, for instance, that excess in drink will eventually ruin our health; if we nevertheless drink to excess, we do so because the pleasure derived from drinking is a present physical good which, as such, is desirable. Where the attainment of a physical good contravenes the moral law, we simply choose the minor (physical) good in preference to the greater (moral) good. Similarly, we choose a minor evil in preference to a greater evil, as when we decide to undergo a painful operation rather than die; the operation, however, is not chosen because it is an evil in itself, but because it is, compared with prolonged pain or death, a relative good which will lead to health and well-being for the organism as a whole. Even a person committing suicide does not strive for death because it is an evil, nor does he seek to take his life because he desires to rid himself of a good; he commits suicide because he considers the freedom from shame or sickness or poverty a greater good than living in shame, sickness, or poverty. 'Freedom from misery' is the good for which he is really striving; death is considered to be a useful good to bring about this freedom, a means toward a beneficial end, and under this aspect the suicide strives for

a good and not for an evil. He is mistaken, of course, in his judgment; but that is beside the point.

In all instances where persons seem to strive for an evil, a close examination will show that they desire a 'real' good or, at the very least, an 'apparent' good in the object of their choice. The extreme case may happen that someone deliberately chooses what he knows is an evil for himself; he seems to make his choice out of sheer perverseness of will, entirely against his better judgment. Even in such a case, however, he does not seek an outright evil recognized as such. He chooses an evil through *pride in his ability to choose it*; the exercise of his pride and of his will is the motive of his action, and that appears to be a good for him worthy of choice.

Motive and Motivation

The activity of the will is closely linked to *desire*. Desire is a longing aroused by the conscious representation of an absent good. Some object or experience is represented to the subject and is recognized as a possible physical, intellectual, or moral 'good.' The object or experience thus represented produces in the subject an attraction toward this object or experience, with the result that the will has a natural tendency to seek its attainment; the will is 'moved' toward the attractive object or experience and is said to be influenced by a 'motive.'

A *motive*, then, is anything which prompts or excites the will to action. The object or experience must contain some sort of objective goodness in itself, in order to become a

motive for the will, because only the good is desirable. But the mere presence of objective goodness alone does not suffice to make it a motive. The object or experience must be *apprehended* by the intellect as something good and therefore desirable, for nothing is willed except it be known (*nihil volitum nisi cognitum*). A double factor is thus involved in a motive: the objective factor of the goodness of the object or experience, and the subjective factor of the intellectual knowledge of this goodness on the part of the willing subject. Unless the object or experience be a good in itself, it cannot be desired; and unless the subject knows of its goodness, the subject cannot desire it. The good desired is thus a 'value.' And we can define a *motive as an appreciated value realizable through an act of volition.*

Since the will is entirely dependent on the intellect for the recognition of value (goodness), it is evident that the attractiveness of the motive lies more in the manner in which it is presented by the intellect than in the objective goodness. The objective goodness of one kind of object or experience may be far greater than that of another; yet, if the greater objective value is not recognized as such or not recognized at all, the minor value will have greater force. Similarly, a person may concentrate his attention upon one value, refusing to consider any other; under the circumstances the one value alone will act as a motive. Much, therefore, depends upon the actual knowledge, the intellectual and moral training, and the general temperament of the individual person, whether an object or experience will be a strong or weak motive or even a motive at all. Value is relative to the person desiring it, and for this

reason the *intellectual presentation* of value as a motive is a most important factor in willing.

Motives may be *physical, intellectual, or moral*. Material objects and sensory experiences are physical goods, and as such they are 'physical' motives for volition; examples are food, shelter, wealth, the pleasures of sense. Intellectual attainments also influence the will to action and are 'intellectual' motives; knowledge and science are such values. Objects and experiences, which are commanded by the moral law or are in conformity with it, possess moral value and are 'moral' motives; the virtues belong to this class. We also differentiate between *inner* and *outer* motives. 'Inner' motives regard the self and its perfection, as when we strive for knowledge for the development of our mind; 'outer' motives regard other beings, as when a father strives for wealth in order to support his family. In general, there are as many kinds of motives as there are *kinds of goods*.

By *motivation* is meant the arousal of the will from a state of inaction into a state of action. Modern psychology includes under the heading of motivation various kinds of obscure psycho-somatic conditions, as feelings, organic movements, unconscious and subconscious drives, etc. Such conditions are more in the nature of general sets or attitudes than motives properly so-called. As explained above, a value, in order to be a genuine motive for the will to act, must be appreciated as a value, and hence must *enter consciousness* and be perceived as something desirable. Conscious apprehension is the first condition for motivation. The second condition is that a motive have

sufficient strength to produce volition. We often hesitate to make a decision; it is then necessary to strengthen the motive, so as to help the will overcome its hesitancy. We may give more attention to the good under consideration, examining it from various viewpoints, and thereby convince ourselves that the value is really greater than was at first supposed. Or, we may compare a good with related evils, enhancing the value by contrast. Or, we may induce the will to strive for a certain good by adding some other motives, so that the weak motive receives strength from participation with stronger motives. Finally, we recall past experiences or resolutions, thus influencing the will to act, even though the present motive appears weak and insufficient of itself.

The more powerful the motives, the easier it is for the will to pass from indecision to decision. It must be remembered, however, that motives are only preliminary *conditions* of volition; they 'appeal' to the person to exercise his will. Motives reside in the intellect; the intellect makes the *practical judgment* that this or that thing is desirable and thereby elicits the act of the will. Motives thus set a goal for the striving of the will, and the practical judgment brings the goal into relation with the will. When conflicting motives are present, the relative objective strength of the motives does not, strictly speaking, decide the issue and compel the will to act; it is the person who decides which motive shall have the greatest weight.

Natural and Deliberate Volition

The internal acts of the will are by no means all alike. Volition appears in different modes, giving rise to distinct *types*. The two main types are *natural* and *deliberate* volition.

It lies in the very essence of the will as an appetency to incline toward the good and, as a consequence, to shun the evil. Its ultimate end and purpose is to strive for *happiness* or *beatitude*. By happiness or beatitude is meant a perfect state acquired through the possession of all that is good for a being. Such a state excludes any and every kind of evil; conversely, it embraces every kind of good required for the complete satisfaction and perfection of the nature of the respective being.

The will cannot be indifferent toward happiness. If the intellect proposes happiness to the will as an object for its volition, the will must approve of it and consent to it; if the will acts at all, it must incline toward it with love and desire. It is *not* free in this respect. Man seeks his happiness with necessity, not through choice. Since the good is the formal object of the will, and since happiness or beatitude is fullness of good, the will, by its very nature, must strive for it. Because of this fact, this type of volition is termed *natural* volition. The only choice in this matter within the power of the will is to divert the attention of the intellect away from the thought of happiness and force it to think of something else. Under no circumstances, however, can the will be really indifferent toward happiness; much less can the will's attitude toward it be one of displeasure or aversion, because that would contradict the inmost nature of the will as a rational appetitive power of man.

Generally speaking, we experience the possibility of preference and choice in volition, when values are presented to the will for acceptance. As stated before, creatural beings possess only limited goodness and they are not suitable for every kind of being to the same degree; they may be desirable from one viewpoint and undesirable from another. Particular objects and experiences satisfy our wants only partially. When such values confront the intellect and the will, none of them are so attractive as to compel acceptance to the exclusion of the rest. The situation demands an examination of values, a weighing of motives, a consideration of alternatives. After some *deliberation* over the respective merits of the particular values proposed, a preferential choice is made among these conflicting values, and the will goes into action. This type of volition, which results in consequence of a deliberation, is termed *deliberate* volition.

When a preference is given to a value after careful deliberation, so that we are conscious of the reasons for choosing as we do, our choice is said to be *reasonable*. When we have not the time for careful deliberation, or are not inclined to give much thought to reasons for preference, and resolve our hesitancy by making an impulsive and offhand decision, our choice is said to be *impetuous*. When we make a decision through force of habit, by following the line of least resistance, by submissively giving way to other people's suggestions, and so forth, our choice is said to be *acquiescent*. When we decide on a course of action which is important, beset with difficulties, and which involves serious and prolonged effort,

our choice is said to be *grave*. And when our choice runs counter to cherished interests and demands a painful renunciation and struggle, all for the sake of a duty to be performed, our choice is said to be conscientious.²

Voluntary Control

By *voluntary control* we understand the control which the will exercises over the powers and actions of the human organism. This control, as it is commonly conceived, is exercised by the will by means of a 'command': the will issues a command to a power to go into action, and the action follows.

Everyday *experience* convinces us that we have voluntary control over powers and actions of our own person. Through an act of the will we direct the course of our thoughts in solving a problem; we set the associative mechanism of the imagination going, consciously combining and dissociating images according to a definite plan; we control the movements of our eyes and of its focusing apparatus, forcing them to look at the objects we desire to inspect; we command our tongue and lips to speak, our legs to walk or run, our hands to write or type or manipulate a machine, our body to stand erect or lie down or bend forward; and so on, with a hundred and one different kinds of actions.

Voluntary control, however, is not universal, nor is it uniform in effectiveness. Some activities of the human body are *not subject* to voluntary control. We need but mention the activity which takes place in the *cells*. The functions of

the *vegetative organs* can be controlled only *indirectly* by the will. The metabolic processes go forward day and night without interruption. The will cannot stop the beat of the heart, the digestion of the stomach, or the secretion of the kidneys by any direct command. In directly it can influence their action; for example, through the withholding or selection of food materials, the injection of drugs, the arousal of emotional states, over-exercise, dissipation, etc. We have also indirect control over the functions of the *external senses*, mainly by control of the stimuli which activate the senses. Once the stimuli have impinged upon the sense organs, we cannot hinder them from carrying out their proper functions; but it is possible for us to control, at least in many instances and to a considerable extent, the chemical and physical agencies which influence these organs and thereby also their functions.

We have *direct*, though not absolute, control over *bodily movements* through the striped muscles, over the activities of the *internal senses*, and over the *intellect*. That we normally control the movements of our bodily members in walking, writing, etc., by a direct act of volition, is evident from experience. Though much of the activity of the synthetic sense, the imagination, and sensory memory is spontaneous, their activity is also to a great extent subject to the direct control of the will. Regarding the intellect. the will cannot, of course, compel it to deny an obvious fact or principle, nor can the will force it to accept contradiction. It can and does, however, direct the attention of the intellect to this or that fact or principle, and thereby it directly controls its activity along certain lines of thought. Similarly,

when the evidence is conflicting and certitude is impossible, the will can influence the intellect to resolve its doubts by forming a definite opinion. It happens quite frequently that the intellect passes a judgment on a matter, not so much according to objective evidence, but according to the inclinations and desires of the will. Shakespeare expressed this fact saying that "The wish is father to the thought." Many erroneous opinions, snap judgments, hasty generalizations, and prejudices can be traced to the direct control of the will over the activity of the intellect.

Concerning voluntary movements, one phenomenon deserves particular consideration; it is the *gradual mechanization* of such movements under the influence of volition. Many movements involve the coordinated activity of a large number of nerves and muscles in an intricate series of part movements. Psychologists speak of such a neuro-muscular co-ordination as a *kinetic unit*. Kinetic units are present in movements of everyday life, as walking, lifting, grasping articles with the hands, etc., and in skilled actions, as typewriting, playing a musical instrument, pole-vaulting, etc. One need but watch an expert musician play a piece on a piano, in order to observe the marvelous co-ordination of nerves and muscles required for this performance. The remarkable thing about these movements is the fact that the will merely intends the *series in general*, and then the movements follow almost unconsciously and mechanically; oftentimes, as we know, the performance is actually carried out unconsciously. How are kinetic units established?

Some kinetic units are not acquired and learned; they are *hereditary*. John B. Watson and M. G. Blanton, through observations made on infants, have established the fact that children possess some kinetic units from birth as a native endowment. Examples are: the neuro-muscular co-ordination required to fixate and follow a moving light or object with the eyes, grasping an object with the whole hand, kicking, and so forth. In most cases, however, the component parts of a complicated movement must be pieced together by *direct volition*. Repetition fuses the component parts into a kinetic unit, so that less and less attention and voluntary control need be given to the component parts. Frequent repetition then makes a habit of the entire movement. As a consequence, all that is needed in order to carry out the entire movement, without any conscious attention to the details, is to make an initial act of the will intending the movement as a whole, and the neuro-muscular system takes care of the rest. Voluntary movement has thus become gradually 'mechanized.' We intend, for instance, to walk to a friend's house; having willed the action, we automatically walk along the street, our attention being engrossed by the things we see. Similarly, a pianist, after deciding to play, let us say, the 'Humoresque,' renders the composition with flawless accuracy, practically unconscious of the movements of his arms and fingers while he imagines the melody.

Bodily movements, therefore, may be actually, virtually, or habitually voluntary. A movement is *actually* voluntary, when it is willed directly here and now, as when I decide at this moment to write these words. It is *virtually* voluntary,

when a particular movement is a component part of a kinetic unit and I will the entire unit; by deciding to perform the entire movement as a whole, I virtually will the component parts of the entire movement. When, for example, the entire movement of an extended stroll is actually willed, the single steps are virtually included in this general act of volition. A movement is *habitually* voluntary, when at present it is mechanized through a neuro-muscular co-ordination which, though built up on a former occasion through repetition by means of distinct voluntary acts, now carries out the movement automatically without attention and without conscious voluntary control. A stenographer, for example, acquires 'word-habits' which enable her to type entire words, even when conversing with someone. Kinetic units, except for the limited number which are inherited as native endowments, must be acquired through direct voluntary control. Once acquired, however, we need but will the *end-result* of the entire action; association and habit complete the action. Directing one's attention or volition to the component parts of the action nearly always exerts a disturbing and inhibiting influence upon its smooth performance. Kinetic units are but another illustration of the fact that man is an integral organism in which everything conspires toward his general well-being.

What N. Ach (1905, 1910) called *determining tendencies*, is of a similar character. In his experiments on volition, Ach discovered that the subjects, after making an act of the will or resolution to perform a certain task, carried out this task even when they no longer adverted to the resolution formerly made. Having accepted the task of

multiplying the numbers which would be flashed on a screen or of making a rhyme to a nonsense syllable when given, they performed the task, notwithstanding the fact that their mind was diverted at the time by other thoughts and they had forgotten about their former resolution. Ach rightly concluded that such results were intelligent operations and could not be accounted for by the mere association of images. Accordingly, he postulated the existence of some sort of psychic force which, acting subconsciously, proceeded from the resolution and carried out the task to a correct conclusion. This force he called a 'determining tendency.'

There seems, however, to be no need of postulating such a psychic force distinct from the will and other powers of the mind. J. Lindworsky³ (1922), an eminent authority on the will, opposed Ach's concept of the determining tendency as a new force. He pointed out that 'voluntary attention,' when applied to an image complex, is sufficient to explain the facts. Whenever we will something and include it in a specific resolution, we must turn the intellect toward the task intended, thereby giving attention to the objective of our willing. The image complex involved in the performance of the task is thus singled out and strengthened in preference to others. Kinetic units accompany such an image complex to a great extent. Since a particular image complex is thus favored, it will lead to the desired operation in consequence of the initial resolution, even when the resolution itself is not immediately present in consciousness. In this respect the

execution of the task resembles virtual or habitual voluntary actions.

The Existence of Volition

The question before us now is not the question of the freedom of the will; rather, it is the question whether *volition* exists as an operation distinct from previously considered and acknowledged mental states. It is also the question whether man possesses a *will* distinct from other mental powers. If volition is not a distinct type of operation, then the will does not exist as a distinct power or man; on the other hand, if volition is a distinct type of operation, then its existence also demands the will as the power from which it proceeds.

The existence of the will and of volition is denied or ignored by many modern psychologists. If they do speak of 'voluntary control' or 'voluntary action,' it is done in deference to popular views and expressions; their explanations show that they identify volition with some other elements of mental life which are decidedly not 'voluntary' in the philosophic sense of the term, namely, sensations, images, feelings, or sensory appetitions.

T. V. Moore⁴ sums up the evidence for the existence of volition as a distinct mental operation under the following comprehensive headings:

Facts of Attention. Practically all books on modern experimental psychology, when treating of the mental process of attention in man, distinguish between *involuntary* and *voluntary attention*. The facts themselves

are plain. If someone shrieks into our ear, or if a fire engine's siren wails past us on the street, or if we fall and hurt ourselves painfully, or if someone pushes us forcefully, or if a bright light is turned on when we are in a dark room, or if we inadvertently take a pinch of quinine into our mouth — our attention is drawn to the circumstances, no matter how occupied our mind may be. We simply cannot avoid noticing these things; we involuntarily give our attention to them, because they *force* themselves upon our attention. In many instances, however, our attention is *deliberately decided* by ourselves, *directed* toward something which is in no way conspicuous, and *personally controlled* throughout the duration of its existence. We can, for example, direct our attention upon a particular blade of grass, a particular page in a book, a particular spot on the wall, a particular person in a crowd, etc., and then deliberately direct it to a different blade, page, spot, person; and this is done simply because we decide to do so, without there being anything in these things to attract our attention in a special manner.

Resolving on a Task. When a task is proposed to us by somebody, or when we propose a task to ourselves, we are conscious that it rests with us to accept or refuse it. When we resolve to accept the task, we experience a certain *determination* on our part to carry out the task, and this determination is something very different from the accompanying sensations, images, feelings, and motives. These latter may drop out of consciousness after a while, but the determination of the resolution may persevere for hours, days, and even years, influencing the very course of

our life. Sensations, images, feelings, and intellectual acts of insight are fleeting realities, while the resolution is a persistent fact of mental life extending over and beyond these passing states.

Reaction-time Experiments. Psychologists have made experiments with subjects relative to the time required to make a choice to do something or not to do it, and to make a choice to do one thing or another thing. In all experiments of this kind, it was found that the subjects arrived first at a stage of readiness or preparedness to go into action, but the action itself would not follow until a distinct choice had been made and the command or fiat had been issued to proceed with the action. This '*command*' or '*fiat*' was distinct from an understanding of the various actions contemplated and the particular action chosen. The command was a distinct element in the total process.

Control of Emotions. While it is not possible to control our emotions directly, it is possible to control them indirectly, namely, by a direction of our attention. Bringing the causes of the emotion into the focus of our attention, intensifies the emotion, as when we think of the insult which causes our anger. However, when we concentrate our attention on the emotion itself and analyze it, our emotion evaporates rapidly. It is precisely the *effort to divert our attention away* from the cause of emotion toward the emotion itself that manifests voluntary control, because under these circumstances we work in opposition to the natural stimulus of the emotion.

Inhibition of impulses and Desires. Impulses and desires are the springs of action, and normally they lead to the

execution of the actions prompted by them. We observe this fact plainly in the brutes; they actively strive for the sensory good and actively shun the sensory evil. In so far as man has a sensory nature, he is on a par with the brutes and in many respects acts accordingly. Not always, however. Many times he curbs and *inhibits* his natural impulses and desires, often under conditions which entail great effort and sacrifice. Although the natural impulses and desires drive to action, the action fails to result. Man thus acts or desists from acting from a sense of duty or because of an ideal of conduct which he has set for himself to follow. Now, a sense of duty and an ideal of conduct, placed in opposition to impulses and desires in this manner, is something rational and supra-sensory, and demands the activity of an appetency which is also rational and supra-sensory.

Readjustment of the Mode of Life. It happens occasionally, through illness, financial reverses, death in the family, the collapse of a business, etc., that a person is forced to adopt an entirely new plan of life. The readjustment required is both difficult and painful. By shirking this responsibility, one could follow the line of least resistance and avoid much unpleasantness; by changing one's mode of life completely, one must follow the line of greatest resistance and make many sacrifices. Natural inclination prompts persons to adopt the former course. Yet it occurs not infrequently that persons adopt the latter; but in doing so, they are conscious of a great effort, a momentous decision, and a strong determination, in opposition to their inmost natural wishes and inclinations. The existence of volition as a unique mental state, as an

internal act of a distinct mental power, is most evident in experiences of this kind.

Moore is right, when he concludes that no kinesthetic sensations, no feelings of being happy or sad, and no complex of images can account for these facts. The facts demand 'volition' and a 'will.'

The same conclusion must be drawn from the *experiments on volition* made by Ach. In the course of the experiments, his subjects experienced various kinds of sensations, feelings, emotions, images, and intellectual judgments. What distinguished volition from these mental states was the fact that they clearly perceived the *Ego-in-action* in every deliberate decision as the *originator* of the act of willing, and not merely as the subject in which volition occurred. It was precisely this *active interposition of the Ego* in deciding an issue and in making a deliberate choice which manifested the act of the will to them as an experience distinct from all other conscious processes. The experimental work of A. Michotte, Prüm, and of H. M. Wells on the psychology of choosing confirmed the data of Ach. The voluntary action of choice was effected by a definite decision made through an active interposition of the Ego.

Volition, then, is an operation *differing in kind* from other operations and elements of our mental life. As such, it must be the activity of a *specific power*, the will; and the will is in truth, as previously defined, a 'rational appetency.'

Summary of Chapter XV

Besides sense-perception, sensuous appetency, and intellection, man experiences volition, the activity of the will, as a phase of his mental life.

1. *The Concept of the Will.* Man's everyday life manifests many attitudes and acts which reveal the activity of the will. The will is conceived and defined as *rational appetency* or the power to strive for an intellectually perceived good and to shun an intellectually perceived evil.

2. *The Object of the Will.* We strive for material and spiritual things which seem good to us. From the individual things which are good the intellect abstracts the universal concept of the 'good in general.' 'Goodness' is the suitability of a thing to a natural tendency or appetency.

The *adequate object* of the human will is *everything that is good*.

The *formal object* of the human will is the *good as good*, provided it be *suitable to the willing subject*. Whatever is an object of the will, is striven for under the aspect of a 'good.'

3. *Types of the Good.* We distinguish between the ontological, the physical, and the moral good; between the absolute and the relative good; between the objective and the subjective good; between the real and the apparent good; between the disinterested, the delectable, and the useful good. Every good is a 'value,' recognized and appreciated as something perfect or perfective.

4. *Evil and the Will.* Evil is the privation of a required good. By the fact that the will is necessitated by its very nature to strive for the good it is also necessitated to shun evil. When people desire things that are physically harmful or morally evil, they do so because they consider such things to be a 'good' for them.

5. *Motive and Motivation.* A motive is an appreciated value realizable through an act of volition. A *double factor* is involved in a motive: the objective factor of the goodness of the object or experience, and the subjective factor of the intellectual knowledge of this goodness on the part of the willing subject.

Motives may be of a physical, intellectual, or moral character; there are also inner and outer motives.

By *motivation* is meant the arousal of the will from a state of inaction into a state of action. Motives reside in the intellect; the intellect makes the *practical judgment* that this or that thing is desirable and thereby elicits the act of the will.

6. *Natural and Deliberate Volition.* Since the good is the formal object of the will, and since *happiness* is the fulness of good, the will, by its very nature, must strive for happiness; this kind of striving is *natural volition*. Volition is said to be deliberate when, after a consideration of the respective merits of particular values, a preferential choice is made.

7. *Voluntary Control.* By voluntary control we understand the control which the will exercises over the powers and actions of the human organism. Experience proves that we exercise voluntary control, though this

control is neither universal nor uniform. We have *no control* over the functions of the cells. The functions of the vegetative organs and of the external senses are subject to *indirect* control. We have *direct* control in some measure over bodily movements, over the activities of the internal senses, and over the intellect. Voluntary movements have a tendency to become gradually 'mechanized.' Some kinetic units are hereditary; most of them, however, are acquired by direct volition through repetition of acts. Movements may be *actually, virtually or habitually* voluntary. *Determining tendencies* resemble virtual or habitual voluntary actions.

8. *The Existence of Volition.* That volition, as a distinct type of mental experience, actually exists, is proved from the facts of *attention*, from *resolving* on a task, from *reaction-time* experiments, from the *control of emotions*, from the inhibition of impulses and desires, and from *readjustments* of the mode of life.

Experiments on volition reveal the Ego-in-action in every deliberate decision as the *originator* of the act of willing, so that the active interposition of the Ego manifests the act of the will as an experience distinct from all other conscious processes. The act of willing, therefore, demands a *specific power*, the will.

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1 'Goodness' and 'truth' are transcendental attributes of 'being,' so that every being, in so far as it is a being, is also 'good' and 'true.' These attributes are essentially identical. See the author's *Domain of Being* (Bruce, 1939). Ch. XIV.

2 See William James, *Principles of Psychology* (H. Holt, 1931), Vol. II, Ch. XXVI, pp. 535 ff

3 *Training of the Will*, 4th ed. (Bruce, 1929), pp. 28 ff

4 *Dynamic Psychology*, pp. 312 f

Chapter 16

FREEDOM OF WILL

MAN HAS A WILL — A SPECIFIC POWER WITH A DISTINCTIVE activity. It reacts to the motives presented to it by the intellect. Motives are values which prompt the will to conative action; and usually the will seeks to attain the value which is perceived to possess the greatest amount of realizable good under the prevailing circumstances.

The influence of motives brings up the problem of the *freedom of the will*. It would seem that the predominant motive must always prevail over the will and force it to act. If this were so, freedom of the will could hardly exist. Yet it is the universal conviction of mankind that man has a free will. On what grounds is this conviction based? Is it a rationally justified conviction? Or is it merely an illusion?

The question is of paramount importance, because the entire structure of man's individual and social life rests upon the concept of the freedom of his will. If the human will is free, man is indeed the most privileged creature in the universe; but if it is not free, our entire educational, social, and moral system must be discarded or revised.

Statement of the Problem

The term 'freedom' is used in different meanings. In order to avoid confusion of thought, it is imperative to clarify the concept of freedom as it applies to the will.

In the *widest* sense, freedom is the *absence of external coercion* or restraint which hinders an appetency from expressing itself in external action. A man locked in a room or held by physical force, so that he cannot do as he pleases or is forced to do what he does not want to do, lacks external freedom; when the restraining force is removed, he has 'freedom from coercion.' This type of freedom applies to bodily movements and has nothing to do with the will.

In the *strict* sense, freedom means the *absence of intrinsic necessity or determination in the performance of an act*. Something is 'intrinsically necessary,' when it is determined by its very nature to be what it is and to act as it does. This type of 'freedom' applies to the will when we speak of 'free will,' and we mean that the will is free from intrinsic necessity or determination in at least some of its acts. Hence, when it is said that the will is 'free,' it is implied that the will is not necessitated by its nature to act in a determined manner, but is *capable of choice even when all the conditions for acting are present*.

The advocates of free will do not claim that the will is free in every respect. They admit that it is governed by intrinsic necessity or determination in seeking happiness, as was pointed out in the foregoing chapter. They also admit that the will in many circumstances acts impulsively

and indeliberately. They admit further that certain mental states and conditions make it impossible for the will to exercise its freedom or impair its freedom to such an extent that responsibility is wholly or partially lacking. Such states are sleep, profound absent-mindedness, delirium, pronounced narcosis, hypnosis, marked emotional unbalance, insanity, and in general all disturbances of attention which hinder the intellect from giving proper consideration to a motive. These factors, however, are extrinsic to the will itself.

The *conditions* required for the exercise of free will are: a normal state of attention; an objectively indifferent judgment of the intellect; and a conflict of motives resulting from such an objectively indifferent judgment.

A normal state of *attention* is required. The will can desire only what the intellect proposes to it as good. Obviously, then, anything that interferes with the normal state of attention interferes with the proper judgment of the intellect and thereby with the proper act of the will. An *objectively indifferent judgment* of the intellect is required. In order that a free choice of the will be possible, the intellect must judge that a certain object or act or situation is good under one aspect but evil under another; if the object or act or situation were judged to be altogether good and therefore essential for happiness, the will would of necessity strive for it, and freedom of choice would be impossible. Given this objectively indifferent judgment, a *conflict of motives* arises, and that is a condition which is also required for the exercise of free will. The will cannot desire an evil as such; it can desire only a good. In order,

then, that the will be able to exercise its freedom, it must choose between two or more goods which act as motives; in other words, there must be a conflict of motives, before there can be a choice between them. The freedom of the will consists precisely in this that it has the power of self-determination in arbitrarily choosing between conflicting motives. The intellectual judgment which presents an object or act or situation to the will as 'objectively indifferent,' that is to say, as being something which is neither altogether good nor altogether evil, is termed the *root of freedom*. Since the will itself is 'subjectively indifferent' toward the presented motives, the freedom of the will is sometimes termed the *freedom of indifference*. And since this subjective indifference enables the will to make an arbitrary choice between motives, the freedom of the will is also designated the *freedom of choice*.

The will exercises its free choice in three distinct ways, and correspondingly we distinguish between *three types of freedom* in the acts of the will.

First, there is the *freedom of exercise or contradiction*. The will can choose freely between willing and not willing, between acting and not acting. Since it is a question here of the will exercising or not exercising its power of choice, it is called 'freedom of exercise'; and since exercising and not exercising are contradictory opposites, it is also called 'freedom of contradiction.' A person, for example, can freely choose between studying and not studying, between eating a piece of candy or not eating a piece of candy.

Second, there is the *freedom of specification*. From this point of view, the will can choose freely between one object

and another object and therefore also between one act of the will and another act of the will; it specifies which kind of object or act shall be the goal of its choice. A person, for example, decides freely whether he shall study or take a stroll, whether he shall eat a piece of chocolate or a caramel.

Third, there is the *freedom of contrariety*. The will possesses the freedom of choosing freely between a moral good and a moral evil. Good and evil are contrary opposites. A person, for example, can choose freely between telling the truth and telling a lie, between acting chastely and acting impurely. The freedom of contrariety can be reduced to one of the first two, since it is a choice either between acting or not acting or between one object and another object.

From the above it should be clear that the freedom of the will does *not consist in motiveless* volition. The will cannot act without a motive of some kind, because it can desire an object or an experience only in so far as it is intellectually apprehended as 'good.' Nor does it consist in *causeless* volition. The self or person possessing the will is the cause of the free act of the will. The will is not a thing apart, existing and acting independent of the person or self who is the abiding subject of the will. The motive is the moral cause, and the person or self is the efficient cause. It is permissible to say that the will is the cause of its own act, provided it be understood that the will and its act must ultimately be referred to the person or self as the agent operating through the will.

Free will is *defined as the ability of the will, all conditions for action being present, to decide whether to act or not to act and whether to act in this manner or in that manner.* From a psychological standpoint, free will is the ability to choose arbitrarily between conflicting motives through the active interposition of the Ego. Many authors define it briefly as 'the power of self-determination.'

The *essence* of the freedom of the will, as just defined, consists in indetermination, so that the will, no matter what the strength of the conflicting motives or the nature of the antecedent external and internal conditions for action may be, is *not determined to act by necessity*. This doctrine is therefore designated as *indeterminism or libertarianism*. This indeterminism, however, is not absolute, because in the pursuit of 'happiness' the will is, as stated before, determined. We advocate, then, a relative or moderate *indeterminism*.

Determinism

The doctrine opposed to free will is styled *determinism or necessitarianism*. Modern psychology has adopted the former term. According to this doctrine, the will is not intrinsically free, but is determined by the antecedent psychical and physical conditions and causes to act as it does; it is necessitated in its volition. Determinism appears in a variety of forms.

Among the ancients, many held the view that the entire course of man's life is predetermined by an inexorable *fate* or *destiny*. Astrology is akin to this. Some Christian sects

denied the existence of free will; the activity of creatures is only apparent, because *God alone* is active. In modern times, we find free will denied by *materialists and pantheists*. The materialists admit the existence of nothing but matter and material activities. Since matter is governed completely by the necessary laws controlling chemical, physical, and mechanical agencies, there is no place for a free-acting cause like free will. The will is determined in its volition by physical factors, such as the hereditary constitution of man and the environment in which he lives, and by psychical factors, such as images, feelings, emotions, and the preponderance of motives. If 'psychical' factors are mentioned, they are usually considered to be mere refinements and complexes of material factors. The pantheists maintain that all reality is ultimately one, God or the Absolute. The world, man included, is but a phase in the eternal evolution of the Absolute, and this evolution takes place according to laws which operate with inevitable necessity. There is no freedom of action anywhere. Among the materialistic theories denying free will we must place the philosophical systems of associationism, positivism, and behaviorism; the systems of Spinoza, Fichte, Schelling, Hegel, and their offshoots are representative of pantheism in one form or other. All are deterministic.

Some modern philosophers and psychologists speak of the will as if they admitted its freedom of action. Analysis of their ideas and explanations, however, reveals that they interpret 'free will' in a fashion which is either a perversion of the true concept of freedom or which makes the will so dependent on the conditioning factors as to preclude

genuine indeterminacy. It is a case of what William James has described as "soft determinism."

Relative Indeterminism

What, then, is the *true problem* of free will?

It is this: All the conditions and circumstances required for volition being given, is the will, when confronted by *conflicting motives* presented by the intellect in a normal state of attention and deliberation, *compelled and determined to decide for one of the motives* to the exclusion of the others? Or, on the contrary, everything given as just stated, is it within the ability of the will, through the *active interposition of the Ego*, to make an *arbitrary choice* between these conflicting motives, *irrespective of their relative attraction*, by simply *determining itself to choose* any one of the motives and thereby conferring a *subjective preference* on this one over the others? If the former alternative is verified, there is no freedom of the will; if the latter, then the will is truly free in at least some of its acts.

We claim that the will is truly free, as specified, in some of its acts; that is all that is needed to disprove the universal determinism advocated by the determinists. The proofs for the truth of the freedom of the will are of three kinds: psychological, based on the evidence of our conscious experience; ethical, based on the concepts of right and wrong; and metaphysical, based on the philosophical concept of the will as a rational appetency. These proofs will now be treated individually.

PSYCHOLOGICAL PROOF

As a preliminary observation, it must be stressed that the court of last appeal in matters of knowledge is consciousness; the testimony of our consciousness is the ultimate criterion of natural truth for man. If this criterion is rejected by a philosopher or psychologist, all knowledge must end in universal skepticism.¹ Our consciousness gives indubitable testimony to the fact that our *will is free in many of its acts*.

By means of an *introspective analysis* of the *will in action*, I am conscious that the will is not only capable of arbitrary choice between motives, but actually makes such an arbitrary choice. True, motives are present, and these motives attract the will to action; at the same time, however, I am conscious that these motives do not force the will to action, but leave it *within the power* of the will, notwithstanding the attractiveness of the motives, to act or not to act, to act this way or that way. The will settles the issue through an active interposition of the Ego, by deciding simply *as it pleases*.

Everyday experience proves this contention conclusively. The idea presents itself to me to take a stroll; but I am also inclined to continue with the reading of this interesting book. Both are pleasant to me. What shall I do? I realize that it is entirely up to me 'to make up my mind.' Neither motive is compelling. I decide to take a stroll. Shall I go to the left or to the right? I have no particular preference; there is certainly no necessity to go in one direction rather than in the other. But which shall it be? Let it be to the right; "it makes no difference anyhow." And to the right I

stroll. During this entire procedure I am conscious that in the final analysis everything I do depends upon my *free decision*; my will is not determined, except in so far as it *determines itself* to act.

The fact of free decision is brought out very clearly in so-called *indifferent acts*. I lift my hand, for instance, about six inches above the table, palm upward. I can now deflect it one inch (or shall it be two inches? or three?) to the right or the left; I can also leave it as it is. I can crook my index finger (or shall it be the little finger? or the thumb?); I can also leave the hand as it is. What motive have I for doing any of these things? There is no motive in the actions themselves which prompts or necessitates me. The only motive I can discover is this: I merely *want* to; it is *my will* to do so; I can *do as I like*. The will acts simply because it *decides* to act rather than not act in the described manner, and there is nothing that compels it. The particular actions, taken for themselves, are indifferent; the decision lies completely and freely in the power of the will. Many actions are performed in this way.

In particular, a number of mental processes reveal the free will in action.

Attention. Attention, besides manifesting the existence of volition as a distinctive mental operation, also manifests the 'freedom' of the will. Attention is often *selective* and *preferential*, due to a free decision on our part. In working out a problem, in preparing an address, in pursuing a discussion on some topic, etc., we are conscious of the fact that we *ourselves* direct the marshaling of our ideas, force some of them to dwell in our consciousness longer than

others, divert the entire train of ideas into other channels, recall them for further consideration, dismiss them at our pleasure, and so forth. We can restrict our attention exclusively to motives of less agreeableness, if we so desire, and give these the preponderance. In fact, it lies in our power of the will to be or not to be attentive, and just how long and how intensively to be attentive. In all phases of voluntary attention we are conscious that we are the *free cause* of the operation.

Deliberation. It is a fact of experience that we often deliberate on the merits of conflicting motives, ask counsel from others as to what course we should pursue, and so on. We are conscious that it lies in our power to deliberate or not to deliberate. If we decide to deliberate at all, it is in our power to carry on the deliberation for hours or days or months or only for minutes. We can interrupt and resume our deliberations as we please. No matter what the motives and their strength may be at the moment, we can withhold our decision and look for counter-motives. All the while we are conscious that this process of deliberation is freely inaugurated, freely continued, and freely terminated by the active interposition of the Ego; and this process is perceived to be totally different from the familiar impulsive character of many actions which occur in our life more or less against our will. Motives are present, certainly, but our consciousness is witness to the fact that they do not compel our consent.

Decision in Matters of Conduct. In the course of a temptation, we are irresistibly convinced that consent lies in our free power, to give or to withhold. We are very much

attracted by the allurements of the temptation; to consent means to follow the line of least resistance, while to resist means to follow the line of greatest resistance. We resist, though the effort is very painful, and we know that thereby we are struggling against the preponderant motive, the motive of greatest attraction. It amounts to what William James has called "deliberately thrusting a thorn in one's flesh." The main point here, too, is the consciousness that it would be easy to yield and that the yielding would be a free decision of our will, just as resisting is a difficult matter and is the laborious result of a hard-fought volitional battle freely undertaken. No quibbling can shake our conviction that in such circumstances our will is truly free.

Laboratory experiments confirm the evidence of everyday experience.

A. Michotte and H. M. Wells devised a number of experiments to test the *act of choice*. There is no need to describe the details of the procedure. In Michotte's experiments the subjects had to choose between the addition or subtraction, the division or multiplication, of numbers presented to them. In Wells's experiments the subjects were asked to choose between known liquids and to drink them; the choice was between liquids which were equally pleasant, equally unpleasant, or equally indifferent as to taste. There was nothing difficult about any of the tests. The motives of attractiveness or unattractiveness were, so far as the subjects were aware, balanced so evenly that they experienced no preponderance of motive which induced them to choose one alternative in preference to the other. Here was, to all appearances, the predicament of

Buridan's ass that starved to death — so the story claims — between two equally attractive bundles of hay. Prior to the act of choice itself, there was *neither an objective nor a subjective difference between the alternatives* for the subjects. Yet they made their choice. The subjects were aware of the fact that they *simply decided on one alternative* by an act of self-determination, thereby giving added strength to one motive, although both motives were of equal objective strength and value. It was not the motive which determined the choice; it was the choice of the *Ego-in-action* that determined which of the equal motives shall prevail. By concentration on one course of action, to the exclusion of the other, the *Ego itself* (concretely, the person' or 'will') cut short all deliberation and *decided to act*, without regard to the objective equality of the motive, in favor of one of the alternatives. Deciding to act is but another way of saying that the human will is *free in its choice*, when confronted by conflicting motives. Scientific psychology thus also confirms the freedom of the will.

ETHICAL PROOF

Nothing, perhaps, makes us more convinced of the freedom of our will than our *experiences about right and wrong*.

We experience *joy* and *satisfaction* in many of our actions, because we are conscious that we have done something 'morally good' and have 'performed a duty.' On the other hand we experience remorse and *repentance*, because we have done something 'morally wrong' and have

‘neglected our duty.’ We feel in ourselves the presence of a sense of *obligation* and of *responsibility*. We know that we ought to do something and that it is within the power of our will to do it or not to do it. If we do it, we have the experience of joy and satisfaction; if we do not do it, we have the experience of remorse and repentance. We know, beyond cavil and dispute, that we are *bound by the law* in our conduct; but we also know that we are *not forced* by this moral law. We can, but we need not, obey the moral law.

Conduct of such a sort, however, involves free will. Without the existence of the freedom of choice in such matters, such an attitude toward our own conduct would be both ridiculous and irrational. If the acts of our will are as necessarily determined as the falling of a stone or as the course of an electric current, then there should be *no experience of a difference between right and wrong acts*; all acts are *equally necessary*. We have, however, the definite experience of blameworthiness and praiseworthiness with reference to many of our acts, and we make a clear-cut distinction in this regard.

If we unknowingly and unintentionally injure someone in his person or property, we naturally deplore the fact and express our regret; but we do not feel guilty of any wrong, because we did not will the harm done. If we break a leg in an unavoidable accident, we are sorry; but we do not really reproach ourselves. But if, contrary to our better judgment, we are reckless, fall, and thereby suffer a serious hurt, we feel remorse for our rash action, clearly perceiving that we *ought* not to have done it and *could* have avoided it. Such an attitude, however, has sense only under the supposition

that our will is free in its decisions and not intrinsically determined in its acts.

The *universal conviction of mankind* is in accord with our personal experience in this respect.

All nations and individuals speak of their freedom, of their immunity from necessity. All languages express ideas of right and wrong, virtue and vice, command and permission, merit and demerit, natural defects and culpable delinquencies, praise and blame, reward and punishment, appeal and threat, etc. All men thereby give expression to the conviction that we possess freedom of the will.

Before action, men deliberate, seek and give counsel, exhort and induce others to follow a certain course of action by promises of reward or threats of retribution. All nations have *courts* which punish the criminal for his misdeeds and a police force which protects the law-abiding citizen and curbs the nefarious activities of the lawbreaker. All nations have *laws* governing traffic, business transactions, and public morals. All nations enter into *treaties* with one another, regulating rights and duties, so as to safeguard international peace and promote the welfare of peoples.

Such actions and laws would be foolish and useless, if man has no free will and cannot help acting as he does. This universal conviction of mankind cannot be explained except by the fact that the evidence for free will is inescapable and irrefutable.

The *practical life of the determinist* is also proof for the freedom of the will.

Like idealism, determinism is an unlivable and *unlivable doctrine*. In their dealings with other people and in their

personal conduct, determinists behave, not on the supposition that man in all his decisions and actions is controlled by an inexorable determinism, but in a manner which is patterned on the conviction that man is indeed the lord and master of his conduct. The structure of society is based on the principle of free will and responsibility, and the determinists not only expect others to live according to this principle but do so themselves. They make a contract and carry out its stipulations, and they demand that the other party do the same; they also seek redress before the courts for violations of the contract. They respect the person and property of other citizens, and demand the same consideration for themselves. They believe in the 'rights' and 'duties' of their citizenship, although rights and duties can have no legitimate meaning in a deterministic doctrine. They observe the regulations and laws of their community and country like the ordinary man of the street. They praise and blame people for their actions, forgetting their doctrine of determinism for the time being. Determinists are determinists on *theoretical* grounds; in actual life they are libertarians like the rest of men.

Since all men, including the determinists themselves, behave according to the principle of free will, what could possibly be assigned as the *cause* for this *universal conviction* and *behavior*? Not passion, because freedom, involving ideas of responsibility and punishment, is opposed to passion in this case. Not ignorance, because all humanity cannot remain ignorant for long in a matter of such vital moment. The cause can only be *rational insight*, and this must be based on *truth*, because human nature cannot lead

man into an irresistible error in something which affects his essential well-being and happiness.

METAPHYSICAL PROOF

We have a further proof of the freedom of the will in the very *nature of the will itself*.

The will is a *rational appetency*. Its proper and connatural object is the *good as such*; to this it cannot be indifferent. Since happiness is the fullness of good, the will must desire it and strive for it; in this regard it is not free. Similarly, whatever is perceived by the intellect as a good in every respect, as an essential means to happiness, irresistibly draws the will in its direction.

The reverse is also true. The will cannot desire the evil, provided it is apprehended by the intellect as an evil and proposed as such to the will. Whatever is perceived to be an *evil in every respect*, must be rejected by the will; here, too, the will is not free. The will, by its very nature as a rational appetency, must strive for the good as such.

So far, then, as the intellect perceives *something good* in an object, it is *desirable*; and the will can desire it and strive for it. So far as the intellect perceives *something disagreeable* in an object, it is *undesirable*; and the will can turn away from it and reject it. Now, there is no creatural object which is an absolute good in every respect; all objects have limitations and deficiencies of some sort which make them more or less undesirable. In as much as every object contains some good, the will can desire it; and in as much as it contains some deficiency, the will can reject it.

Since a creatural object is neither absolutely good nor absolutely evil, the will can desire or reject it, depending upon whether attention is centered on it as a good or as an evil. All creatural objects, whether material or spiritual, being partially good and partially not good, the will can strive for them under the aspect of their desirability or reject them under the aspect of their undesirability; the will is not constrained in either direction. In fact, because of this dual aspect of all creatural things, the will is not compelled to act at all. Even the *act of volition itself* can be apprehended by the intellect as something partially good and partially not good, so that it lies within the power of the will to exercise volition or not to exercise it.

The only object to which the will is irresistibly drawn is the absolute good. Concretely, this is the *Infinite Good*, namely, God Himself. However, the will can desire only what the intellect perceives and proposes. If our intellect, while we sojourn here on earth, could perceive God as He really is in all His infinite perfection and goodness, we would be conscious that He constitutes our ultimate and essential happiness in an infinite measure. Unfortunately, we have no adequate concept of God. As Maher rightly observes: "The inadequate and obscure notion of God possessed in this life, the difficulty of duty, the conflict of man's pride and sensuality with virtue, all make the pursuit of our true good disagreeable in many respects to human nature, so that we can only too easily and freely abandon it."² It thus happens that the will is able to love God or not to love Him, to seek Him or not to seek Him, to desire Him or to reject Him.

Hence, the *freedom of the will is the result of man's rational nature*, which enables him to have the notion of a universal good that is desirable in every respect and also the notion of *particular goods* that are partly desirable and partly undesirable. Because of this dual character of particular goods he can decide to exercise or not exercise his power of choice with regard to them, and that is *freedom of exercise*; he can prefer one particular good to another particular good, and that is *freedom of specification*; he can choose between the morally right and the morally wrong, and that is *freedom of contrariety*.

OBJECTIONS AGAINST FREEDOM OF WILL

Our modern era has become so impressed with the progress made by the physical sciences that it is hardly capable of interpreting anything except in physical and mechanical concepts. The spiritual and immaterial is alien to the minds of many modern philosophers and psychologists. In consequence of their materialistic, mechanistic training, the freedom of the will is something 'unintelligible' and 'inconceivable.' Causes, as they come to know them in physical nature, act necessarily, and so it happens that the concept of 'cause' is synonymous in their reasoning with 'necessarily acting cause.' The will as a 'freely acting cause' is to them a contradiction in terms: they see no place for it in a mechanically operating universe.

The *facts* in favor of the freedom of the will are very clear, so far as everyday experience goes; they cannot very

well be denied by these determinists. Yet the freedom of the will is diametrically opposed to the *theoretical assumptions* of their materialistic, mechanical system of philosophy. Loath to admit the error of these assumptions and of their philosophic convictions, they have advanced many objections against the freedom of the will. The point of the attack varies considerably. Some objections are psychological in nature, some are metaphysical, and some are based on the physical, physiological, and sociological sciences.

While many of the arguments against free will are specious and amount to nothing more than sheer quibbling, some of them deserve serious consideration. The more important objections will now be stated and answered.

Unconsciousness of Freedom

J. Stuart Mill (1806—1873) voices an objection against the freedom of the will on psychological grounds. He contends that we *cannot be conscious* of this freedom. To be conscious that we are free in our volition, it would be required, before we act, that we be conscious of the fact that we could really act otherwise than we do. Consciousness, however, Mill claims, merely tells us what we actually do or feel; it never tells us what we are *capable of doing*. In other words, we are conscious of the act of willing, but not of the power of willing; hence, it is impossible to know whether the power is free or determined.

We admit that the power of the will as such is not an object of direct consciousness. Mill, however, failed to note that every act of volition involves the actuation of the power of the will, the *fieri* or *developmental process* of the volitional act itself.

In the developmental process of many volitional acts, I am conscious that they are *elicited* by motives, but the motives *do not determine* and necessitate the acts; *I myself* determine the acts. I clearly perceive that I have here a motive plus something else which makes the impulse of the motive effective; the act of the will is thus eventually determined, not by the motive, but by the will itself. An analysis of the act of volition shows that two factors are required: an impulse flowing from a motive which elicits, but does not compel, me to act; and a *positive consent of my will*, supplementing the deficiency of the objective motive. At times, therefore, I observe that I consent to the impulse originating from the motive, and at other times I observe that I withhold my consent to the impulse originating from the motive; whether the act of volition is set or not set, thus depends on the *active interposition of my Ego* and not merely on the presentation of the motive. So long as the process and *fieri* of volition is protracted and not completed, the final decision to act or not to act, to act this way or that way, rests in my power of determination. The will, therefore, is the master of its own determinations; and as such it is free, because the *consent*, as I know from my internal experience, is a freely exercised act of the will. The experiments of Ach and others, mentioned in the

preceding chapter, have definitely revealed the Ego-in-Action in every deliberate decision.

ILLUSION

Determinists frequently assert that our conviction of the freedom of the will is but an illusion based upon an *ignorance of the causes* which produce the acts of the will. Since we are not conscious of the underlying causes which determine the will to act, we have the *feeling* of freedom in our acts; in reality, however, all acts of the will are determined.

In answer to this objection, we assert, first of all, that an appeal to ignorance is the worst sort of argument anyone can advance. Determinists labor under this ignorance as well as the libertarians. The determinists have no more right to suppose that the unknown causes of our voluntary acts are necessary in their operation than that they are free; we simply could not know whether the will is free or determined under any circumstances.

Secondly, this assertion of the determinists *contradicts the experience of consciousness*, and consciousness is the ultimate source of knowledge in this matter. Our experience tells us that the ignorance of the cause of actions occurring within us does not necessarily induce in us the conviction that this cause is free. On the contrary, when we act on a momentary impulse and without reflection, not knowing why we act, then we are convinced that our act was *involuntary, unfree, and irresponsible*. On the other hand, when we reflect upon a project with careful deliberation,

consider all its advantages and disadvantages, investigate the various means at our disposal, lay out a plan in all its details, weigh all the motives for and against a course of action — in a word, when our knowledge is at its best — then it is that the conviction of the *freedom* of the will and of its choice is greatest. It is, therefore, the incontrovertible testimony of our consciousness that our conviction of freedom is not based on the illusion of ignorance but on the certainty of knowledge.

It is true, of course, that *subconscious motives* often influence the will. A *mental act* or attitude frequently brings about the performance of an external act contrary to our resolutions. If we bear in mind, however, the conditions required for the free exercise of the will, as stated in the first section of this chapter, it will readily be observed that one or the other of these conditions has not been verified. No libertarian claims that *all* acts of the will under *all* circumstances are free, but borderline cases do not invalidate the instances where the requisite conditions are clearly perceived by consciousness to have been verified for the free exercise of the will. While many cases will always remain doubtful, many cases of the free exercise of the will must be allowed by an unbiased observer.

It is the verdict of our consciousness that the will is free in many of its acts. This verdict must be accepted as true; otherwise the truth-value of our consciousness is destroyed, and skepticism is the inevitable result.

THE STRONGEST MOTIVE

It is a stock argument of determinists that the *strongest motive* always does and always must prevail, so that the will is intrinsically determined to yield to the strongest motive; the will, therefore, is not free in its choice.

The objection is invalid. Since the will is an appetency and as such can strive only for what is perceived to be good, it is obvious that the motives draw the will in proportion to the amount of value they contain. Slight values influence the will slightly, great values influence it greatly. It is but natural, therefore, that the will, under ordinary and normal circumstances, should and does strive for the greatest value contained in the proposed motives. It would indeed be most unusual, if this were not the case.

The argument of the opponents, however, to be valid, must prove that man, *under all conditions*, is necessitated to choose what is intellectually apprehended as possessing the *greatest objective attractiveness* for the will.

It will not do to assert, as the British philosopher Bain apparently asserts, that the strongest motive is the one which actually prevails. He is guilty of a begging of the question. Certainly, the motive which is willed is the one which prevails, and in a sense this motive is the strongest. This only means that the motive which prevails actually prevails, but does not settle the question whether the will is *determined or free* in making a particular motive prevail.

The only legitimate meaning which can be attached to the statement that 'the strongest motive always prevails and must prevail' is the deterministic meaning that the *objectively strongest* motive must prevail; the will must necessarily follow the motive containing, among other

motives present, the *more preferable good* considered by the intellect as such.

J. Stuart Mill interprets the 'strongest' motive as the one which is *most pleasurable*, because that is the more preferable good. He contends that the will is constrained to accept this motive and yield to it. We claim that personal *experience* disproves this contention. It is not true that we always choose the course of action which is most pleasurable. Every decent person not infrequently resists temptations, recognized to be most pleasurable, for the sake of an ideal or from a sense of duty, conscious of the fact that yielding to the temptation would be easy and offering resistance to it is most difficult. Soldiers and martyrs prefer death to the violation of their duty, even when excruciating agony accompanies the performance of their duty. To uphold an ideal and to fulfill one's duty under such conditions is indeed the stronger motive, but only because *the will makes it so*; it is not more pleasurable in itself.

Most determinists interpret the 'strongest' motive as the one which, among others present before the mind, represents the *greatest good or value*, without specifying whether or not it be the most pleasurable; such an object or experience, presented as a motive, is the more preferable and as such forces the will into acceptance. The point at issue is this: Is the will compelled to choose the motive which the intellect proposes to it as possessing the greatest value or attractiveness among conflicting motives, so that this particular motive has *objective preference*, considered independently of any action of the will? Or, on the contrary,

can the will (the Ego) confer subjective preference on any of the motives presented, *irrespective of their objective merits*, thereby making an objectively weaker motive the strongest? In the former alternative the objectively 'strongest' motive prevails under all conditions, and the will is determined in its volition; in the second alternative the will itself determines which motive shall prevail, and it cannot be said to be determined in its volition by the (objectively) 'strongest' motive.

Of course, the will in choosing always *prefers* one motive to another and thereby shows that this one pleases it more than the others; but *does this preference of the will correspond to the preceding judgment of the intellect as to preferableness*? If man can act in opposition to this judgment of the intellect and can prefer the weaker motive, then he *determines himself* and is independent of the strength or weakness of the motives proposed by the intellect. Herein lies the crux of the problem of free will.

Ordinarily, the will accepts the side proposed as the better or best; but *not always*. If it were really true that the will always and necessarily prefers that which the intellect perceives to be better or best, how then can it happen that we frequently *deplore* after our decision that we have 'acted against our better judgment,' that we have 'acted foolishly,' having carelessly or obstinately disregarded what we knew to be the better or best course of action? In many instances we act contrary to our own interests, *simply because we so desire*, knowing full well that we are harming ourselves by acting according to the whim of our

will rather than according to the objective merits of the motives as recognized by the intellect.

It is not the objectively strongest motive which prevails against the will and determines it to act; it is the act of the will which determines which motive shall be strongest and shall actually prevail.

INFLUENCE OF CHARACTER

Some determinists, among them Schopenhauer, Wundt, Sidgwick, and others, impugn the freedom of the will on the grounds that *every act of man* is determined by his *character* and by the motives which influence the will at any particular moment. Oddly enough, some of these philosophers and psychologists are reluctant to discard the concept of man's responsibility for his actions; they attempt to reconcile responsibility and the determinacy of character by pointing out that 'character' is to a very great extent the result of man's own actions and habits.

Character, we admit, undoubtedly exerts a great influence on the decisions of our will. Knowing the character of a person often enables us to predict with probability how such a person will act in a given set of circumstances. However, we are not determined entirely in our will acts by the inherited and acquired dispositions of character.

Here again we must appeal to personal experience. We are conscious of the weakness and faultiness of character, of the pressure of long-standing acquired habits, of the frequency of yielding to urgent passions; but we are also

conscious that we can, though no doubt with difficulty, resist the impulses which storm the citadel of the will. Many a drunkard and drug addict has succeeded, perhaps after frequent relapses, in conquering his reigning passion by a persistent struggle of his will.

It is futile for the opponents to speak of 'responsibility' by stating that a person's character is the result of his own actions and habits. If the will is not free but determined, then all the actions and habits which contribute to the formation of character are also determined. Man cannot be held responsible for something he is incapable of doing or avoiding. Responsibility presupposes the freedom of the will.

The Principle of Causality

Many determinists find the freedom of the will 'inconceivable' and 'unintelligible' because, in their opinion, a free act of the will would be an *effect without a cause*. They contend that a free act would violate the *Principle of Causality*.

In answer to this argument, we deny emphatically the supposition that an act of the will, merely because it is a free act, is an effect without a cause. The Principle of Causality is a metaphysical principle, and it is immediately evident. It states that where there is an effect there must of necessity be a cause which produces this effect; that is to say, everything which receives being and existence must receive this being and existence from something or

somebody, because a nonexistent being cannot give being and existence to itself.

We admit the validity of the Principle of Causality in the case of the free act of the will as an effect. A *double cause* is active in its production: a *moral* cause, namely, the motive; and an *efficient* cause, namely, the Ego using the will as power. Hence, the opponents are wrong when they assert that a free act of the will violates the Principle of Causality.

The Principle of Causality demands that every effect must necessarily have a cause; but whether this cause acts in a free or in a determined manner, lies outside the purview of the principle. So long as there is an efficient cause for the effect produced, the principle is satisfied. In order that their objection be valid, determinists would have to prove that the Principle of Causality demands that every effect must be produced by a *necessary* and *not by a free cause*. They arbitrarily change the meaning of the axiom that 'Every effect must necessarily have a cause' into the axiom that 'Every effect must have a necessarily acting cause.' The latter axiom, however, involves an unwarranted assumption which amounts to a begging of the question, because the postulate of a necessarily acting cause is the very point at issue.

Physiological Determinism

Materialistic philosophers and psychologists reduce all mental events, including volition, to the level of *physiological* and *neurological* processes. The older materialists, such as Moleschott, Büchner, Haeckel, and

others, held the crass view that all psychical processes are nothing more than glandular in character. The more refined modern materialists identify volitions with *cerebral functions, motor impulses, or kinesthetic sensations* of some sort. Representatives of this general view are Maudsley, G. H. Lewes, M. Luys, E. B. Titchener, R. H. Wheeler, J. Watson, and many modern psychologists. There is obviously no place in such doctrines for a will capable of free acts.

Physiological and neurological processes play an important part in a man's mental life, because the operations of the senses furnish the materials from which the intellect abstracts its ideas. Any serious disturbance of the physiological and neurological processes is bound to hamper the intellect in its proper functions. Distortions of intellectual judgments, on their part, influence the will adversely, because the will is dependent on the intellect for the proper presentation of motives.

Nevertheless, determinists need more than this dependence of the will on physiological and neurological conditions in order to prove that the will is determined and necessitated by these conditions in its acts. They must prove that it is an *intrinsic dependence*; only then would the will be determined. An extrinsic dependence of the will on these conditions would leave the inner nature of the will intact and free. The *facts* we have adduced are proof that the will can and does determine itself. At any rate, the burden of proof rests on the shoulders of our opponents, and they fail to prove that the will is 'intrinsically' dependent on physiological and neurological conditions.

The will is to the human organism what the pilot is to a ship. The ship does not control the pilot; the pilot controls the ship. He directs the course of the ship by means of the steering gear. If the steering gear is defective, the pilot has difficulty in keeping a proper course; and if the steering gear breaks down completely, his control of the ship is lost. The pilot's dependence on the steering gear is very real, yet it does not determine the pilot's decisions. Under normal conditions the ship obeys the pilot's directions and follows the course he decrees. Similarly, the organism normally obeys the commands of the free will; but when serious disorders hamper or destroy the proper functioning of the organism, the will, notwithstanding its intrinsic freedom of action, suffers from the refractory medium through which it must control the organism.

Just *how* the will controls the organism, so far as it can do so at all, is a *mystery*. Every vital action is at bottom a profoundly mysterious reality which no scientific experiment or analysis is able to explain completely. A thousand difficulties, however, cannot disprove a fact. And it is a fact, as we have seen, that the human will is a power which *determines itself* to act or not to act, to act this way or that way, *as it desires*. It is *free* in its decisions, no matter whether or not we understand fully how the will operates.

The Conservation of Energy

Determinists also raise the objection that the freedom of the will would nullify the *Principle of the Conservation of Energy*. The principle states that the sum-total of energy in

a closed system, such as the universe, is always constant. They argue that the will, in causing bodily movements, introduces new energy into the organism, thereby increasing the sum-total of energy in the universe and overthrowing the principle mentioned.

Now, the Principle of the Conservation of Energy is an *empirical law*, the result of a partial scientific induction, generalized and applied to the universe at large. As applied to the universe, the principle is incapable of proof, because no one can measure the energy of the universe; it may not be true, as scientists generally admit. In fact, present-day physicists defend the view that energy can be converted into mass and mass into energy.³ Hence, even if the action of the will did actually increase the sum-total of energy by a small amount, that would be no reason to deny the free action of the will.

It does *not seem necessary* to admit that the will, in causing bodily movements, introduces any new energy into the organism. D. Card. Mercier explains the action of the will as follows: "The will is not an efficient cause producing mechanical effects. All that the will does is to direct the power of local movement possessed by the organism to some action. This effect does not require the expenditure of any active force, for the action of the will is not transitive, having an external effect, but is immanent. All the energy that is put forth externally comes from the sensitive appetite and the locomotive faculty, which are material faculties subject to the law of the conservation of energy."⁴

Moral Statistics

Determinists frequently quote *moral statistics* as a proof against the freedom of the will. If the acts of the will are really free, they argue, there should be *no uniformity* in human actions. Yet the records show that the number of marriages, illegitimate births, murders, burglaries, divorces, suicides, etc., vary but little in a country year after year. From these statistics they draw the conclusion that moral acts, which are supposedly free, are *subject to laws* and must be determined in their very nature.

We deny the validity of the argument. All men possess a *similar nature*. They are presumably influenced by the same general factors of natural inclinations, heredity, environment, education, and so forth. It is but natural, therefore, that human beings of a certain social level will act in a somewhat uniform manner. To a very great extent, the lives of men are governed by routine and habit, not by serious deliberation and decision. The impulses of self-preservation, of propagation, of parental and filial attachment, of love and hate, of greed and self-interest, are strong and urgent and universal; and men, as a general rule, are more inclined to yield to these influences than to resist. The regularity of these influences explains the regularity of human conduct.

It must be remembered, however, that this regularity is a *regularity of averages*. It is possible to predict the average number of events which will occur, but it is impossible to predict which *individuals* will be responsible for the events. Therein lies the difference between a *moral*

law and a *physical law*. Given all the conditioning antecedents in a specific instance in physical nature, we can predict the effect with absolute certainty, because such an effect is determined by physical law. In the case of a human being, however, we can predict his action only with moral probability, because he is not forced by the conditioning antecedents to act in a definite manner; he probably will act as expected, but he may, being free, act otherwise.

The will exists, and it is free. The objections raised against the freedom of the will fail to prove the determinacy of volitional acts.

Summary of Chapter XVI

It is a universal conviction of mankind that the will is free. Is this conviction rationally justified?

1. *Statement of the Problem.* Freedom means the absence of intrinsic necessity or determination in the performance of an act. The *conditions* required for the exercise of free will are: a normal state of attention; an objectively indifferent judgment of the intellect; and a conflict of motives.

There are *three types of freedom* in the acts of the will: the freedom of exercise or contradiction; the freedom of specification; and the freedom of contrariety.

Free will is *defined* as the ability of the will, all conditions for action being present, to decide whether to act or not to act and whether to act in this manner or in that manner. The doctrine of freedom of the will is called *indeterminism or libertarianism*. We advocate a *relative or moderate indeterminism*.

2. *Determinism.* The doctrine opposed to free will is styled *determinism or necessitarianism*. Among the ancients we find the doctrine of 'fate' or 'destiny.' In modern times, the doctrine of free will is denied by materialists and pantheists.

The *true problem is this*: All the conditions and circumstances for volition being given, is it within the ability of the will, through the active interposition of the Ego, to make an arbitrary choice between conflicting motives, irrespective of their relative attraction, by simply

determining itself to choose any one of the motives and thereby conferring a subjective preference on it over the others?

3. *Psychological Proof.* Introspection shows that the will, in many of its acts, decides the issue between conflicting motives through an active interposition of the Ego, by choosing *as it pleases*. The freedom of choice is particularly clear in indifferent acts. Free will can be observed in a number of *mental processes*, such as voluntary attention, deliberation, decision in matters of conduct. The laboratory *experiments* of Michotte and Wells confirm our experience.

4. *Ethical Proof.* Our experiences of *joy* and *satisfaction* or of *remorse* and *repentance*, and our sense of *obligation* and *responsibility* are meaningless without free will. This view is confirmed by the universal conviction of mankind and by the lives of the determinists themselves.

5. *Metaphysical Proof.* The nature of the will as a *rational appetency* is proof that it possesses freedom of choice. A creatural object or experience is neither altogether desirable nor altogether undesirable. Hence, the will can strive for it or reject it.

6. *Objections.* Determinists oppose the freedom of the will on *theoretical* grounds, not because the *facts* are not plain.

7. *Unconsciousness of Freedom.* We are, they say, conscious only of what we do, not of what we can do.

Answer. In the *developmental process* of many volitional acts, we are conscious of the impulse of the motive, eliciting but not compelling consent, and also of the positive consent supplementing the deficiency of the motive.

8. *Illusion*. The feeling of freedom is an illusion based on the *ignorance of the causes* determining the will.

Answer. Experience shows that the more we deliberate and understand the motives, weighing all conditions, the more we are conscious of freedom.

9. *The Strongest Motive*. The strongest motive, determinists assert, must prevail.

Answer. Usually it does, but not always. The 'strongest' motive, from a deterministic point of view, must mean the one having *objective preference* as proposed by the intellect. Experience proves, however, that the will gives *subjective preference* to a motive in its choice, irrespective of the objective merits of the motives as proposed by the intellect.

10. *Character*. Others claim that *character*, whether natural or acquired, determines the will.

Answer. Their contention disagrees with *personal experience*.

11. *The Principle of Causality*. Determinists say that a free act would be an *effect without a cause*.

Answer. Every act of the will, even when free, has a moral cause, the motive, and an efficient cause, the will or, rather, the Ego using the will as power. The Principle of Causality demands that every effect have a cause, but it does not demand that it have a necessarily acting cause.

12. *Physiological Determinism*. Materialists identify volition with glandular or cerebral functions, with motor impulses, or with kinesthetic sensations.

Answer. Determinists cannot prove that the dependence of the will on these factors is an *intrinsic* dependence; we

claim it is *extrinsic*. The facts proving the freedom of the will are plain.

13. *The Conservation of Energy*. The opponents maintain that a free act would introduce new energy into the organism, thereby increasing the sum-total of energy in the universe.

Answer. The law is an *empirical* law and not proved for the universe at large. Besides, the will would, in all probability, merely *direct the use* of the energy present in the organism.

14. *Moral Statistics*. Statistics prove that moral acts follow laws, making it possible to predict their frequency. Hence, the opponents conclude, the will cannot be free.

Answer. The general factors found in all men explain the *similarity* and *regularity* of moral acts. But, unlike physical laws, this is only a law of averages. It is impossible to predict which *individuals* will perform the acts and thus fall under the statistical law.

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¹ 'See the author's *Reality and the Mind* (Bruce, 1936), Ch. VI

² *Psychology*, 9th ed. (Longmans, Green, 1930), p. 414.

³ See the author's *From Aether to Cosmos* (Bruce, 1941), p. 80 ff

⁴ *Psychology* (in *A Manual of Modern Scholastic Philosophy*, Kegan Paul, Trench, Trübner and Co., 1916), p. 27

Chapter 17

CONSCIOUSNESS

ONE OF THE FOREMOST PHENOMENA OF HUMAN MENTAL LIFE IS *consciousness*. The term 'consciousness' is used frequently in the ordinary affairs of human beings. It is a very general term; nevertheless, the concept underlying the use of the term is fundamentally the same. In psychology, we must attempt a more exact description of the characteristics of consciousness.

Consciousness is an all-pervasive mental experience, since it is found to be present as an accompaniment of all mental operations ranging from sense-perception to intellection and volition. As such, one would think that every psychologist should recognize consciousness as a most important factor in the study of the human mind and person. *Behaviorists*, however, ignore consciousness, if they do not deny its existence altogether. Man, according to their principles of psychology, must be studied in his external behavior exclusively. This position is extreme and is now, fortunately for psychology, practically abandoned.

Concept of Consciousness

Consciousness, being an ultimate datum of experience, admits of *no strict definition*, because it lies at the very root of all mental activity. It can, however, be pointed out and described. Consciousness is that state of the mind in which we find ourselves when we are awake, as contrasted with the state of our mind in dreamless sleep or in a coma or when under complete anesthesia. A simpler term for consciousness is *awareness*. We are 'conscious' of something when we are 'aware' of it, no matter how dimly or fleetingly. Again, we may say that we are conscious' of a thing or of a mental state when we notice its presence to mind. If we are 'unaware' of something and do 'not notice' its presence in any manner whatever, we are then said to be 'unconscious' of it. Consciousness is not a special cognitive power; it is simply the 'awareness' inherent in every act of sensory and intellectual cognition.

Consciousness has a *content*. In order to be conscious, we must be conscious *of something*. When we see or hear or taste or smell or feel something and 'know' or 'are aware' that we sense it here and now, then we are conscious. When we have a mental image of an object or experience and 'know or are aware of this image present within us, then we are conscious. When we think about something intellectually in the form of ideas, judgments, or argumentations and 'know or are aware of our thinking about it, then we are conscious. When we have feelings, emotions, or volitions and 'know or are aware that we have them, then we are conscious. The content of consciousness thus includes all the *mental acts* which are present in our normal waking state and of whose presence we are aware

— sense-perceptions, mental images, acts of the intellect, acts of the will, feelings, and emotions. It also includes the various *objects* toward which these acts are directed, as when we are aware not only of the act of seeing but also of the house that we see, not only of the anger we experience but also of the person with whom we are angry. Whatever attracts our attention in some way, whether it be an external object or an internal state of the mind, thereby enters our consciousness and belongs to the content of consciousness.

Field of Consciousness

Psychologists often speak of the *field of consciousness* and mean thereby the sum-total of all items present in the consciousness of an individual at any given moment. It expresses the range or area over which consciousness extends at a particular point of time, measured by the number of objects or mental states of which the mind is aware and by the degree of attention given to them.

Viewed in this manner, the total field of consciousness is divided into the *focus* of consciousness and the *margin, fringe, or periphery* of consciousness. The expressions are taken from the field of vision, because vision and consciousness are very similar in this respect.

Objects or experiences are said to be in the *focus* of consciousness when they are accorded the *maximal* amount of attention among all the objects or experiences present here and now in consciousness. It is a common fact, noticeable every hour of the day, that our attention shifts to

a considerable extent from one thing to another and appears in varying degrees of concentration. At any particular moment, some object or experience occupies our attention in a primary manner, so that it stands out before our conscious observance with exceptional distinctness and vividness; everything else is pushed into the dim background of attention for the time being. While watching, for instance, a long forward pass in a football game, our attention is directed primarily to the flight of the ball and to the pass receiver; we are only dimly aware of the actions of the majority of the other players at the moment. Similarly, when we are suffering from a sharp toothache, this intense pain forces itself upon our attention to such a degree that we are hardly capable of thinking of anything else. Such an object or experience occupies the 'focus' of the field of consciousness.

Objects or experiences which are not in the focus of consciousness but which are still *noticed to some degree*, along with the primary object of conscious attention, are said to belong to the *margin or fringe or periphery* of consciousness. Such objects or experiences occupy a place in the field of conscious attention similar to that of objects in the field of vision which throw their image on the peripheral regions of the retina. They are observed, but in a vague and blurred fashion:

they lack the distinctness and vividness of an object or experience in the focal position of awareness. Taking the examples mentioned in the preceding paragraph, while we are watching the flight of the football through the air, we are also aware of the roaring shout of the spectators, but

only in a secondary and coincidental manner; and while the sharp pang of the aching tooth is our main conscious concern, we still listen to the conversation carried on by those around us, even though only in a desultory and half-attentive manner.

As in vision, consciousness shades off from the maximal concentration of attention at the focus imperceptibly in diminishing degrees through the peripheral region, until it reaches a point where objects and experiences no longer make an impression and are lost to consciousness altogether. There is no fixed and clear line of demarkation in conscious attention. Sometimes an individual object or experience is so strongly placed in the focus of consciousness that we are practically unaware of anything else; at other times, especially when drowsy or very fatigued, the entire field of consciousness seems rather confused and chaotic. In any case, the states of consciousness occupying a position intermediate between maximal and zero attention is designated as the 'margin' or 'fringe' or 'periphery' of the field of consciousness.

Unconsciousness

Unconsciousness, as the term indicates, is the *absence of consciousness*.

The term 'unconscious' may be taken in an *objective* or *subjective* sense. Taken 'objectively,' something would be termed 'unconscious' in the sense that, by its very nature, it is devoid of the attribute of consciousness altogether and thus never becomes an object of awareness in our mental

life. Many processes occurring in the human organism are objectively unconscious. Chemical and purely physiological and neurological processes are of this type; they never enter consciousness, though we may become aware of their results.

Through the stimulation, for example, of the retina, of the optic nerve, and of the visual center of the cerebral cortex, we become conscious of the act and of the object of vision, but we are totally unconscious of the chemical, physiological, and neurological processes which precede and accompany vision. Similarly, we are totally unconscious of the many processes which take place in the metabolism of the body, in many reflex actions of the nervous system, in the storage and recall of memory images, etc. Without doubt, such processes influence our consciousness in diverse and profound ways; but the processes themselves never enter the field of consciousness directly. They are, by their very nature, objectively unconscious processes.

Taken 'subjectively,' something is 'unconscious' in the sense that it *actually*, as a mere matter of fact, does not enter our consciousness, though of itself it could. The human subject is simply not aware of the object or action under the existing conditions; but the nature of the object or action is such that, under other conditions, the mind could make it an object of its focal or peripheral attention. While I am writing, for instance, I may be unaware of the pressure of my forearm on the desk; it would be, however, a simple matter to direct my attention to this pressure and thereby bring it within the field of consciousness. Again, while in profound sleep, I am unconscious of the sensory

stimuli which affect my bodily organs; but when awake, these same stimuli give rise to conscious sense impressions. When, therefore, the mind is unconscious of objects or actions which could be consciously perceived, it is said to be in a state of 'subjective unconsciousness.'

Periods of unconsciousness, placed between periods of consciousness in our normal waking states, are facts beyond dispute and no psychologist denies them. Ordinary deep sleep is a period of unconsciousness. Many authors, however, are loath to admit that total and *absolute* unconsciousness of the mind ever occurs. The evidence, they say, is at best only negative, resting on the fact that in our normal waking state we cannot recall what has taken place in the mind during the period of so-called unconsciousness. The inability of recall is no convincing proof of absolute unconsciousness, because we know from experience that we are often unable to recall objects and experiences which were consciously perceived on a former occasion. More happens in the deep recesses of the mind than can be remembered while awake. There always remains, then, the possibility of some sort of conscious experience in dreamless sleep, coma, and other states of apparent unconsciousness, which never rises to the surface of conscious memory when we are awake. This argument, of course, is also negative. From the very nature of the case, positive proof for or against the fact of absolute unconsciousness is excluded.

Subconsciousness

A proof that unconsciousness is not so complete as is commonly supposed is found in what modern psychology calls *subconsciousness or subliminal consciousness*.

The term *subconscious* is used to designate certain mental items and processes which are apparently of the same nature as the normally conscious items and processes, yet of which the subject is not aware in the waking state. These items and processes are conceived as occurring 'beneath' or 'underneath' the ordinary waking consciousness; hence the terms 'subconscious' and 'subconsciousness.' It is as if, figuratively speaking, a 'threshold' (Lat., *limen*, threshold) divided and partitioned off the items and processes of the ordinary waking consciousness, of which we are aware when awake, from those other items and processes belonging also to the cognitive order, but of which we are unaware in the waking consciousness. For this reason, the subconsciousness is also termed the *subliminal* consciousness, while the ordinary waking consciousness is also termed the *supraliminal* consciousness.

In order to understand these terms properly, we must advert to a number of pertinent facts.

Consciousness, in general, means to have knowledge (to be aware) of what occurs within us. Since man's knowledge is of a double nature, he possesses a *double consciousness*: sensuous and intellectual.

Man's *sensuous* consciousness embraces everything of a sensory character, and this type of consciousness man has in common with the brutes. To the field of this sensuous consciousness belong the acts of sense-perception (sight,

hearing, taste, etc.), the images of the imagination and sense-memory, sensuous feelings, emotions, and appetitions. Man's *intellectual* consciousness is of a higher order. It comprises the rational acts of intellection and volition and the affective states based upon intellectual and volition; and it also comprises the sensory acts and states, in so far as these are reflexly cognized and made the objects of thought and will.

Both types of consciousness have a focus and a periphery in their field in the ordinary waking state. Whatever is perceived by this double consciousness in the ordinary waking state, whether focally or peripherally, belongs to the 'supraliminal' consciousness. Specifically, everything is included which has attracted our attention is some measure while awake and whatever can be recalled arbitrarily from memory.

There are, however, many items of experience which do not belong to the category just mentioned, but which, nevertheless, cannot be excluded from consciousness altogether. When in the ordinary waking state our attention is deeply engrossed by some object or experience, very many *faint impressions* are made on the mind; they go unnoticed at the time and do not enter our waking consciousness, but they are somehow registered and recorded. There can hardly be a doubt that practically every action of our bodily limbs and organs arouses nerve impulses of some kind which reach the brain along obscure and circuitous paths; they must leave impressions, no matter how weak, and these impressions, though

unperceived by the waking consciousness, cannot be ruled out entirely from the field of mental experience.

Again, due to the shifting and the natural limitation of attention, the periphery of our waking consciousness is filled with numberless fluctuating ideas, sensations, feelings, and so forth, which are but very dimly perceived for a moment and then pass into oblivion, never capable of being arbitrarily recalled in the future. It even happens that objects and experiences were distinctly perceived and reflexly cognized in our waking consciousness on a particular occasion; but they were objectively unimportant and too loosely connected with the vital facts of our existence to make a strong impression on our memory, and so they faded out and after a while joined the host of forgotten things. Yet they were present and left a record of their presence in our mind.

Such impressions are not lost entirely. Their vestiges remain and leave their collective mark on our mind and character, influencing us in diverse ways; at times they appear again in consciousness, unrecognized and unremembered.

This body of processes and experiences, '*split-off*' and *dissociated* from the content of the waking consciousness, belongs to the field of the *subliminal* consciousness (subconsciousness). It should be noted that much of what has been designated as 'subjectively unconscious is classed here as 'subconscious.' Specifically, subconsciousness comprises the processes and experiences which were not reflexly cognized and which were not perceived by the ordinary waking consciousness as having been present,

though they possess the general nature of mental items belonging to the field of consciousness; the faint, fleeting processes and experiences, noticed dimly in the marginal region of the waking consciousness for a moment and then forgotten, so that they are incapable of arbitrary recall; the processes and experiences which were reflexly and attentively cognized by the waking consciousness at some time or other, but faded from active memory in such a manner that they are beyond voluntary recall.

It is a peculiarity of our mental life that the mind in its subliminal (subconscious) states can and does perform *connected and consistent functions*, unknown to the ordinary waking consciousness. These 'split-off' and dissociated processes at times form a definite stream of consciousness, isolated from, and running parallel to, the stream of consciousness prevalent in our waking state, so that they may even seem to issue from a different mind or personality.

Here are some of the facts which, to all appearances, indicate the existence of a separate, subliminal stream of consciousness beneath the threshold of the ordinary waking consciousness.

While carrying on a conversation in an intelligent manner, *a second train of thought*, on an entirely different subject, may run through our mind and be brought to its logical conclusion. Or, while reading a paper or book, our attention is diverted to some other subject or occurrence; yet we find that we have continued to read. Our supraliminal consciousness cannot recall what we have read in this period of mental distraction, but the content of

our reading may suddenly come back to us later with clarity and precision.

Oftentimes we do our utmost to *recall* a certain name, person, fact, or mental operation; but all our efforts are to no avail. In despair, we turn our mind to something else, confident that the items cannot be recalled. Later, the forgotten items rise into our waking consciousness with startling abruptness. Upon investigation, we are unable to discover any association of ideas which can account for their appearance. The recall was made, not through any process known to our waking consciousness, but by some kind of subconscious process.

The *execution of problems*, unfinished in the waking state, is often carried out by the subconscious mind. Not infrequently a problem presents itself to us, and we experience considerable difficulty in marshaling our ideas to find the proper solution. The solution escapes us, and we put the problem aside. To our astonishment, the solution, ready-made and complete in detail, suddenly flashes into our consciousness at a time when we are thinking of something totally different. The secondary, subliminal consciousness has worked out the problem for the primary, supraliminal consciousness. In all probability, the inspirations of genius can be accounted for in this manner.

Far more striking and convincing are the experiments made in *automatic writing*. By 'automatic writing' psychologists understand script produced by a subject unknowingly and involuntarily. The phenomenon can be evoked quite readily in hypnotic trance, but in exceptional instances it also occurs in the ordinary waking state. The

procedure is somewhat as follows. The subject is made to read aloud a fascinating book or article, so as to engross his attention completely. A pen or pencil is placed in the hand of the subject, and the hand is screened off from the subject's view. The experimenter then asks a question to which the subject should write the answer at some length. While reading aloud, the subject's hand writes a fluent, intelligent, and consistent account. The subject's waking consciousness, totally occupied with reading, is unaware of the contents written by the hand. 'Automatic writing' is thus seen to result from the activity of the secondary or subliminal consciousness.

Hypnotism offers further evidence for the existence of subconscious processes unknown to the ordinary waking consciousness. What happens in deep hypnosis remains, as a rule, unavailable for recall when the hypnotized person returns to the normal state; in a subsequent hypnotic trance, however, the experiences of the former trance can be recalled. Furthermore, many items of mental experience, mysterious and unexplainable to the ordinary waking consciousness, can be traced in their origin and development by the subconsciousness during hypnosis. Hypnosis seems to open a hidden door to the secret workshop of the mind.

Coconsciousness

In recent years the term *coconsciousness* has come to the fore. Morton Prince¹ is mainly responsible for the rise and spread of the term and its meaning.

Prince divides the 'subconscious' into two distinct sections, namely, the 'coconscious' and the 'unconscious.'

The *coconscious*, according to his view, is any actual subconscious *idea or thought process* present in the human subject but unknown to him in his ordinary waking state. It is only when the term 'subconscious' is used to qualify 'ideas or 'thought processes' actively present beneath the threshold of the supraliminal or waking consciousness that the term 'subconscious' is equivalent to the term 'coconscious.'

The *unconscious* comprises two types of items. The one type consists of *inactive neural dispositions* (conserved dormant 'neurograms'), which are the vestiges of former sensations, etc., conserved in the nervous system, particularly the brain, after the sensations, etc., have ceased to be active and have left their traces as dormant 'neurograms.' The other type consists of *neural processes* (active functioning 'neurograms'), which come into existence when the dormant 'neurograms,' for some reason or other, are stimulated into becoming again an active process.² Both types of items, the inactive neural dispositions and the neural processes, are devoid of any quality of consciousness; hence the term 'unconscious.' The 'coconscious' and 'unconscious' have their place beneath the level of the waking consciousness and as such belong to the 'subconscious' as two species under a common genus.

According to Prince, then, the term 'unconscious' has a rather restricted meaning, quite at variance with the meaning commonly attached to the term. It applies exclusively to inactive and active neurograms, i.e., to

inactive neural dispositions and to neural processes. It does not, in itself, apply to metabolic and other dispositions and processes which are also devoid of consciousness. This restriction of the meaning, if intended, is unjustified. Furthermore, the inclusion of the 'unconscious' under the 'subconscious' as a species under its genus, seems a strange and unwarranted procedure. After all, the term 'subconscious,' as usually employed by psychologists, designates a certain form of *consciousness*, while the 'unconscious' is acknowledged to be devoid of any quality of consciousness. The use of accustomed terminology in such an unusual fashion can only lead to confusion.

As for the term 'coconscious,' it is appropriate enough. However, if we omit the 'unconscious' from the 'subconscious,' there appears to be little reason for making a distinction between 'coconscious' and 'subconscious.' Distinctions and terms should not be multiplied without necessity.

ALL THINGS CONSIDERED, IT SEEMS ADVISABLE TO MAKE ONLY THE following distinctions and divisions among the states and conditions affecting the human organism:

1. *Unconscious* (items not qualified by any attribute of consciousness, such as metabolic and purely neural items).
2. *Conscious*:
 - a) *Normal waking consciousness* (primary, supraliminal),

--b) *Subconsciousness* (secondary, subliminal).

Self-Consciousness

Self-consciousness is characteristic of man. It is the consciousness of his *self* or *Ego* as the subject and bearer of all the conditions and states affecting his being, particularly of consciousness itself.

Just as consciousness has a content, so it also has a subject or bearer, namely, the 'self' or 'Ego.' Whatever we may think of the ultimate nature of the 'self' or 'Ego,' introspection reveals the indisputable fact that it is the 'self' or 'Ego' to which all conscious phenomena are, in the last analysis, referred. To doubt this means to doubt the validity of the very foundations of all knowledge.

Consciousness is not a mere 'stream' of conscious states succeeding one another like flashes of light or like motion pictures on a screen. This analogy is convenient, but it is not the whole truth. Beneath these fleeting states of consciousness is the conscious self as the subject and bearer in which they exist and subsist; they are not independent items floating in some sort of mental vacuum.

'Self-consciousness' means that the mind (self, Ego) recognizes all mental states and activities as *its own*. Not only are these states and activities present, but *I myself*, by an act of reflex cognition, know that they are present and know that they belong to me as *modifications of myself*. Common speech is proof of this. We seldom say: 'Sight, hearing, pleasure, thought, volition, etc., are present.' We invariably say: '*I see, I hear, I experience pleasure, I think, I*

will, etc.' The subject and bearer is always mentioned together with the conscious state. We thus make a clear distinction between the conscious state and the self underlying it as the conscious agent. It is precisely this feature of our mental life which makes *introspection* possible and invests it with value as an instrument of knowledge in psychology. If there were no conscious self or Ego, we could not report on the presence or absence of a mental state.

I therefore not only know, but I know that I know; I not only have knowledge, but I have a knowledge of my knowledge; I not only am conscious, but I am conscious of my consciousness. By means of the reflex act of self-consciousness I become aware that I, the thinking and conscious subject, *apprehend myself concretely* in my mental acts and states. It is my *self-same Ego* which is active and passive, whether in the domain of sense or in the domain of intellect, and my Ego is *one, single individual*; there is no duality or multiplicity here, notwithstanding the radical difference between the acts and states themselves, between sensuous and intellectual consciousness. Even my consciousness is only a modification of my self or Ego, because I am conscious of *myself as conscious* in the same way that I am conscious of myself as seeing, hearing, thinking, and willing; I express both facts in an identical manner, namely, '*I hear a sound*' and '*I am conscious of myself.*'

The Ego is not consciousness; it is the *possessor* of *consciousness*. The Ego is not experience; it is the experient. And so, too, the Ego is not memory; it is the

bearer of memory. The act of remembering is a present act, but it always has a reference to past persons and events. I perceive with evidence that I, the Ego, who am conscious at this very moment, am the *self-identical* Ego who have had the 'past' experience recorded by my memory. I am writing at this moment; but I am also conscious that I was writing ten minutes ago, that I took a walk an hour ago, that I attended a meeting yesterday. Notwithstanding the fact that I was in a state of unconsciousness during my sleep last night, I am aware that 'I' am the self-identical 'Ego' who existed, worked, ate, wrote, perceived, and reasoned yesterday, a week before, a month ago, and through all the years down to my youth and childhood. The events belonged to me before, in the past; and my Ego preserved its self-identity, while they came and passed on. How could I remember them as 'mine,' as having happened in 'me,' if my Ego were not a *permanently abiding reality* in whom they occurred? My Ego is clearly perceived to be the *abiding subject* of these transitory states. Whatever may be the nature of the Ego, the data of my conscious states show plainly that my Ego is distinct from the conscious states themselves; the latter are only modifications of the permanent Ego, existing *in* and *by* and *through* my Ego as their agent-patient subject. So much is clear to me from an analysis of the data of memory and consciousness.

John Stuart Mill considered the mind to be nothing more than a *series* of conscious states which is aware of itself as a series. Such a view is in flat contradiction to the facts, as just pointed out. We make a clear distinction between the states and the self or Ego as the self-conscious bearer of the

states of consciousness. Besides, the series of conscious states of today, having begun after a period of unconsciousness during sleep, is totally different from the series of yesterday and of a year ago; how then could the Ego of today be conscious of the identity of itself with the Ego of yesterday and of a year ago, if the Ego were nothing more than a series conscious of itself as a series? It would definitely have to be conscious of itself as a different Ego entirely, because the series themselves are numerically and entitatively different.

The same objection applies to William James' concept of the Ego as a *stream* of consciousness in which each passing thought is itself the 'thinker' or 'Ego.' We may, of course, speak of the aggregate of successive conscious states as a 'stream.' This figure of speech is misleading. A 'stream' suggests unbroken continuity. The 'stream of consciousness,' however, possesses no unbroken continuity. On the contrary, the continuity is broken by every period of unconsciousness to which the human mind is subject, such as sleep, coma, anesthesia, etc. It should, then, be utterly impossible for memory to identify the Ego of one series or stream with that of a former series or stream. In fact, since the present passing thought is not identical with the immediately preceding thought, much less with the thought of yesterday or of a year or ten years ago, we should be conscious of as many 'thinkers' and 'Egos' as there are passing thoughts, not of an *abiding Ego* present as the bearer of the present and past thoughts through the years. Yet the identity of the Ego in the past and present is precisely what our consciousness reveals to us with

unmistakable clearness: the Ego which thinks today is the self-identical Ego which thought yesterday and all the days before. This fact is inexplicable, if the theory of James were correct. Finally, why should there be any reference of our conscious states to a single, permanently abiding Ego at all, if there were no such underlying Ego present? If only conscious states were present and a permanently abiding Ego as their subject were nonexistent, why should consciousness give testimony of the supposed existence of a nonexistent reality? There should, in that case, be merely a consciousness of *passing states*, but never of a *permanent Ego* as the bearer in which they exist and which they modify. We must, therefore, reject the theory of James and his followers.

Consciousness, then, reveals to us the existence of our self or Ego as the single, permanent, self-identical subject and bearer of all our states and experiences.

The Seat of Consciousness

Ever since F. J. Gall, G. Spurzheim, P. Flourens, P. Flechsig, and others, made their investigations into the problem of cerebral localization of sensory and motor activities, the problem of the *seat of consciousness* also received attention. It was evident that certain conditions affecting the nervous system also affected consciousness, at least the consciousness of the normal waking state. Some neurologists, therefore, concluded that the seat of consciousness must be located in the *brain*, the central organ of coordination for sensory and motor activities. Even

the ordinary man of the street feels that consciousness resides somehow "in the head."

The particular problem which confronted neurologists and psychologists was to decide whether the *entire brain* or a *definite portion* of the brain could be designated as the seat of consciousness. Opinions differed. In the course of time, however, certain facts began to throw some light on this complicated and perplexing question.

Some scientists believed that consciousness depended on the left cerebral hemisphere in right-handed persons and on the right cerebral hemisphere in left-handed persons. We now know that this view is erroneous. A number of cases are on record where the corresponding cerebral hemisphere had been extirpated, and no marked changes in consciousness or personality took place. Such cases have been reported by Dandy, Gardner, Rowe, Zollinger, and Kocher. The seat of consciousness, then, does not lie in any one of the two hemispheres as such.

Others identified mental life with the *frontal lobes* of the brain, either the right or the left or both. This view also proved to be false. Operations for the removal of one or the other frontal lobe have been performed, without serious impairment of the mental faculties. Ackerly reports the cases of the removal of both prefrontal lobes, and the patient retained normal intelligence.

Nor is the seat of consciousness in the *thalamus* or *hypothalamus*. Even extensive destruction of these important subcortical regions leaves consciousness essentially intact. Most remarkable in this respect, is the *Mittelhirnwesen* ('mid-brain creature') studied by Gamper

and reported by him in 1926. The child lacked a cerebrum, possessing only the mid-brain and the fragment of a thalamus. One would suppose that this unfortunate child must be devoid of all consciousness. However, it had alternating periods of sleeping and waking, and occasionally it smiled. The child, obviously, could not indicate whether or not it possessed consciousness in the accepted meaning of the term. But if sleeping and waking are, respectively, states of unconsciousness and of consciousness, then the conclusion is justified that the child did actually experience consciousness in some form. It would be erroneous to conclude from this case that the seat of consciousness is in the *mid-brain*, because the history of medicine records instances of considerable damage in this anatomical region without complete loss of mental activity.

Nor is the *medulla oblongata* the seat of consciousness. True, pressure in this region produces unconsciousness; but unconsciousness can be produced in many ways, independent of the medulla. To produce unconsciousness in a certain region is one thing, and to say that this particular region is the point center of consciousness is quite another thing. The very fact that the visual, olfactory, and auditory nerves do not terminate in the medulla but in the cerebrum, is reason enough to eliminate this anatomical structure from being the seat of consciousness, because visual, olfactory, and auditory perceptions most certainly are part and parcel of our conscious life.

There is, of course, a dependence of consciousness on the *nervous system*, because the nervous system is a system of channels which furnish the necessary materials for

sensory and intellectual activity. No definite portion of this system, however, can be singled out as the point center of consciousness. All we can say is that it is the *individual* who is conscious, with a dependence on the nervous system; but it is neither the brain nor the nervous system which, as such, is conscious.

The Function of Consciousness

Man is a unit being, an integral organism. All mental states, including consciousness, are states of the self or Ego. Man is not an isolated being in a world of isolated beings. The world is a co-ordinated whole, a true 'universe,' and man is a part of this co-ordinated whole.

As a part belonging to the world as a co-ordinated whole, man must be capable of making an *intelligent adjustment* to the world in which he lives. To achieve this adjustment, he possesses the equipment of his bodily limbs, his vegetative organs, his external and internal senses, his feelings and emotions, his intellect, and his will. He must be able to safeguard himself against harmful agencies and to perfect his own being, and it is through the proper use of these powers that he is able to do this. These powers are the necessary instrumentalities by means of which he can *perceive* and *interpret* the surrounding world. These perceptions and interpretations are recorded in the sensuous and intellectual memory, so that not only present impressions but also past experiences can be utilized to best advantage for the purpose of adjusting his conduct in accordance with the needs of his being.

Without *consciousness* man could not make this adjustment of his conduct. It is precisely because his perceptions and interpretations are 'conscious' that he is able to meet the conditions prevalent from moment to moment and turn them to his advantage. One need but think of what would happen to man, if he were in a continuous state of sleep or in a continuous coma, in order to understand the necessity of a normal waking consciousness. Even though we admit the importance of the influence of subconscious states on man's conduct, it is primarily through his waking consciousness that he has contact with the world at large and makes his adjustments to it.

It is, therefore, not difficult to state the *function* or *purpose* of consciousness in the economy of man's life. T. V. Moore has expressed its function and purpose, when he describes "normal consciousness as a state of the human mind, in which it can perceive and interpret its surroundings, and in which the past experience of the individual is fully available for the adjustment of the individual to the needs of the present moment."³ He goes on to explain that the phrase "fully available" must be taken in a relative sense, excluding pathological and abnormal conditions.

This description applies with equal force to the function and purpose of the *subconsciousness* or *co-consciousness*. Because of the natural limitations existing in the power of attention during ordinary waking consciousness, many impressions, too faint to attract attention, will be recorded and stored in the lower levels of the mind, forming a

secondary stream of consciousness and partly dissociated from the activity of the waking consciousness. These items are also subservient to the general welfare of the individual and assist in the shaping of his conduct.

Because of the tremendous importance of consciousness as a determining factor in human life, it is obvious that disorders of consciousness are particularly harmful to man in their effects.

Disorders of Consciousness

Disorders of consciousness arise either from organic causes, as epilepsy, or from *psychogenic* causes, as hysteria; in many instances both types of causes are present. When disorders are organic in character, the cause is always found to be an impairment or destruction of important nerve tissue due to lesions, internal hemorrhage, diseases, etc. When they are psychogenic in character, the cause is inevitably of a psychic nature, such as fears, anxieties, mental conflict, maladjustment to social conditions, and the like. Some people, for example, become blind through injury to the eyes, the optic nerve, or the visual center in the brain; others become functionally blind after passing through a severe emotional crisis.

Total loss of consciousness may result from poisons, and then we speak of 'coma'; or from head injuries, and this is 'concussion'; or from an improper distribution of blood in the brain, and then we have the condition known as 'swooning' or 'fainting.'

Partial loss of consciousness occurs in varying stages of depth and degrees of intensity. 'Stupor' is an intensive clouding of consciousness, characterized by a condition of marked unresponsiveness and usually accompanied by torpidity of perception, thought, and emotion. 'Confusion,' milder than stupor, is a mental state of clouded consciousness, in which the symptoms are an unstable attention, a poor perception of reality, a disorientation concerning time or place or person, and a more or less marked inability to act coherently. When accompanied by conditions of excitement and hallucination, confusion is termed 'delirium.' Some authors use the phrase 'twilight state' to designate 'confusion.'

Other disorders, involving partial loss of consciousness, are derealization, depersonalization, and amnestic fugues. In 'derealization' persons suffer from a disturbance of perception, so that the objects of the world have a sensory appearance quite different from that in their normal experience. Since interpretation, as a rule, remains unimpaired, derealization appears to be the result of some organic factor affecting the sensory nervous system. In 'depersonalization' patients are afflicted by a mental condition in which they experience a profound change in their own personality, so that their own actions, thoughts, and emotions appear to be those of an automaton or to belong to a totally different person. In some instances there is 'somatic doubling,' so that the person seems to possess two distinct bodies, to one of which he transfers whatever is disagreeable or painful in his experiences. In an 'amnestic fugue' or, as it is less properly called, 'ambulatory

automatism' the disorder of consciousness consists in a somewhat protracted condition characterized by wandering and other abnormal actions, followed by considerable loss of memory concerning this particular period. In these three states of partial loss of consciousness there is no 'splitting' of the personality of the subject.

In the following disorders of partial loss of consciousness, there occurs the phenomenon of so-called *split personality*. In this connection the word 'personality' is taken in the sense of 'character,' as the integrated group of acquired habits, emotional trends, behavior tendencies, temperament, etc., distinguishing one individual from another. It is a question, therefore, of the empirical personality, in so far as the self or Ego manifests itself in its mental states. By 'split personality' is meant an abnormal condition of mental dissociation in which the same human mind manifests alternately two or more very different characters or personalities.

This condition appears in a variety of forms. When it is a case of 'alternating personality,' there are two memory chains, one for each personality. As the personality changes, the respective memory chain comes to the foreground. In one type of alternating personality, one memory chain is continuous, while the other is interrupted; in another type, both chains are interrupted. Not only are there cases of double personality, but also cases of 'multiple personalities,' running in number from three to half a dozen and more. During these alternations only one personality is present at any particular time. If one memory chain is continuous and the other interrupted, the first personality remembers

everything done by the second, but the second does not remember what was done by the first; if both are interrupted, neither personality remembers what was done by the other. Ever since Morton Prince (1908, 1925) presented the case of Miss Beauchamp, psychologists also speak of 'co-conscious personalities,' in which two personalities are co-existent, the primary personality knowing at all times what the secondary personality is doing, but the secondary knowing nothing about the primary.

At times the changes in split personality are rather profound; at other times, more in the nature of changes of mood. When split personality has its origin in hysteria, a defense mechanism of the individual is always at work. Subconscious desires bring about a dissociation of memory items and form them into separate groups. In epileptic conditions, the dissociation is due to an organic cause, but the result is practically the same.

A number of psychologists and philosophers have built up a *metaphysical theory* on the facts of split personality. They claim there must be as many *minds* (selves, or Egos) in the individual as there are 'personalities.' This conclusion is Un warranted. The facts merely reveal a *dissociation* of memory material. While much of the memory material is available for voluntary recall to the normal consciousness, much of it is not. Under special conditions, the submerged, subconscious memory material may become dissociated into groups which, when utilized separately, give the appearance of a different personality. "After all," as Miss Beauchamp once remarked, "it is always myself."⁴

Psychoanalysis

Psychoanalysis is a method devised and developed by Sigmund Freud for the examination of the contents and mechanisms of an individual's mind, for the purpose of treating and curing mental disorders. He began his psychoanalytic therapy shortly before the turn of the century. C.G. Jung, A. Adler, A. Meyer, C. Baudouin, Franz Alexander, and others developed the principles and methods of psychoanalysis along divergent lines.

Freud bases his views on *three aspects* of mental life: the dynamic, the economical, and the topographical.

From the *dynamic* point of view, he considers all mental processes, except the reception of stimuli in sensation, to be the result of the interplay of *instincts*. There are two groups of instincts: the 'ego- instincts,' which aim at self-preservation; and the 'object-instincts,' which are directed toward external objects. Two fundamental latent instincts underlie these two groups: 'Eros' and the 'instinct for destruction.' The 'Eros' instinct drives toward ever closer union, and the manifestation of it is called by Freud *libido* or *sexuality*. The 'instinct for destruction,' as the name indicates, strives for the destruction of what is living. Instincts are always dynamic. Relative to one another, they sometimes cooperate, sometimes antagonize, sometimes compromise.

From the *economic* point of view, Freud contends that all ideas or images representing the instinctual forces have an 'affective charge,' measurable in definite quanta of energy. The discharge of this energy is regulated by the *pleasure-*

pain principle, so as to bring about a smooth functioning. Later, as the individual develops to adolescence and adulthood, the 'pleasure principle' is replaced to a great extent by the *reality-principle*; as a result of the operation of the 'reality-principle' pleasures of satisfaction are postponed and temporary feelings of pain are tolerated.

From the *topographical* or structural point of view, Freud distinguishes *three layers* or levels in the mental apparatus. 'The deepest and most primitive is the id. The 'id' is unconscious; it is also the storehouse of the instinctive impulses and of all memories which are inaccessible to normal consciousness. The next layer is the *ego*, the subconscious. The external world influences and modifies the 'ego,' and it is also developed through the activity of preformed instincts. The uppermost layer is the *super-ego*. The 'super-ego' exercises a dominating influence on the 'ego'; it contains the ideals, the moral notions, the conscious aims, the principles of art, science, and religion, the precepts of social convention, etc., which are the result of education and inhibit the instincts in their natural activities.

There is a *theoretical basis* to psychoanalysis. According to Freud, in order to understand the nature of neuroses, three things must be borne in mind: the condition of 'repression' and 'censorship'; the importance of the 'sexual instincts'; and the practical fact of 'transference' in the technique of psychoanalytic procedure.

Instincts are the mainsprings of action. They cannot be suppressed. The desires and tendencies emanating from them may be temporarily frustrated, through considerations of moral ideals, social conventions, and the

like. Frustration, however, induces tension, and, since gratification cannot be postponed indefinitely, mental and emotional conflicts arise which lead to substitutive gratifications replacing the natural gratifications of these instinctual desires and tendencies. The result is a neurosis.

The patient naturally tries to remove the disagreeable experiences of the mental conflict. He does this by endeavoring to *forget* them. The painful memories are pushed out of sight, so far as the waking consciousness is concerned, and thus these memories become buried in the dark recesses of the unconscious. They are, however, not dead, but always active; consequently, the conflict and the neurosis persists, working havoc in the patient's life.

To effect a cure, these destructive memories must again be brought to consciousness, analyzed, and finally resolved by the analyst. But here the mechanism of the mental apparatus presents an obstacle very difficult to overcome. At the threshold of consciousness is the 'ego,' which acts as a *censor* and seeks to hinder all tendencies which displease it from entering consciousness and influencing conduct. Such tendencies, submerged in the unconscious, are said to be 'repressed.' Hence the phenomenon of *repression*, found in all cases of neurosis. When the physician, in the course of his examination, comes close to these hidden memories and attempts to bring them to the surface of the patient's consciousness, he produces a mental *resistance* in the patient, because the patient does not want to remember them as the 'censor' seeks to block their entrance into consciousness. The 'censor' is unceasingly vigilant; but not so vigilant that the submerged memories cannot give

indications of their presence and character in devious ways. *Hypnotism* often discloses them. *Free association*, in the form of a detailed description of the patient's life history, frequently uncovers helpful clues. Mainly, however, indications of the conflict in past experiences come through dreams, because dreams are based on wish-fulfillment. The 'censor' permits these memories to pass in the form of dreams, but disguised and masked in *symbols* which need interpretation by an expert in order to be recognized for the memories which they represent.

The *sexual instincts* are the most potent and most important. For reasons of morality and social convention, however, their natural tendencies are the ones which are repressed the most.

It is in the field of repressed sexuality (*libido*) that substitutive gratification occurs; hence, neurotic symptoms are symptoms of *repressed sexuality* and are always libidinous in character. Since sexual life begins in earliest childhood, long before puberty, the psychoanalyst must look for the roots of neurosis far back in the earliest days of childhood.

Hypnosis, Freud soon discovered, is not necessary for the uncovering of former mental conflicts and their hidden memories. Free association in conversation and the expert interpretation of dreams suffice. Therein consists the technique of the Freudian psychoanalytic method.

In the course of this procedure the physician encounters what Freud calls *transference*. Patients, it seems, enter into an emotional relationship, both affective and hostile, with the psychoanalyst himself. There is really nothing strictly

personal about it. They merely 'transfer' their childhood relations to their parents, which is the basis for the original conflict, over to the physician, making him the substitute. Once the memories of the hidden conflict are revealed to the consciousness of the patient and are relived in the present, the irrationality of the grounds for the conflict are pointed out and explained by the analyst. When the patient perceives the explanation of the past conflict, the painful memories lose their effectiveness as psychogenic agencies of mental disorders, the mind is at rest, the transference ceases, and the cure is complete.

As a *therapeutic method* of curing psychogenic mental disorders, Freud's psychoanalysis can boast of remarkable success. As a *psychology*, it is based on theoretical assumptions of very questionable validity. Freud overemphasizes sexuality. He underestimates the importance of intellect and will in human conduct. His theory of the instincts and of the censorship of the 'ego' finds little support in experimental psychology. His underlying philosophy is materialistic and hedonistic, making religion, morality, and social life the natural causes of neurosis.⁵

On the other hand, psychoanalysis has demonstrated the influence of mind over body and body over mind, has stimulated a greater interest in the early educational care of the child, and has forcibly brought to the attention of a biologicistic psychology that mental treatment can cure a large group of bodily ailments.

The workings of the normal consciousness and of the subconscious are still very obscure. Little by little, however,

the veil is being lifted, enabling us to cast more penetrating glances into the depths of the human mind.

Summary of Chapter XVII

One of the foremost phenomena of mental life is consciousness.

1. *Concept of Consciousness.* A strict definition of consciousness cannot be made, because it is an ultimate datum of mental experience. It is the state of our mind in which we find ourselves when we are *awake*. It is the same as *awareness*.

Consciousness has a *content*. The content includes all mental acts of whose presence we are aware in our waking state and the objects toward which these acts are directed.

2. *Field of Consciousness.* It is the sum-total of all items present in the consciousness of an individual at any given moment. The field is divided into the focus, in which objects or experiences receive maximal attention, and the *margin, fringe, or periphery*, in which objects or experiences are still noticed to some degree.

3. *Unconsciousness.* It is the absence of consciousness. We distinguish between *objective* and *subjective* unconsciousness. Something is 'objectively' unconscious, when it is devoid of the attribute of consciousness altogether; it is 'subjectively' unconscious, when it actually does not enter consciousness, though of itself it could.

4. *Subconsciousness.* Those mental items and processes are 'subconscious,' which are apparently of the same nature as the normally conscious items and processes, but of which the subject is not aware in the waking state. This mental state is termed *subconsciousness or subliminal*

consciousness. The waking consciousness is also called supraliminal consciousness. Man has a sensuous and an intellectual consciousness.

Many items of experience, too faint to be noticed by the waking consciousness, are recorded in the subconsciousness; they are 'split off' and dissociated from the supraliminal consciousness.

Indications of the existence of subconsciousness are: double trains of thought; sudden recall of forgotten memories; the execution of unfinished problems; automatic writing; hypnotic phenomena.

5. *Co-consciousness*. By this is meant any actual subconscious *idea* or *thought process*, unknown to the human subject when awake.

6. *Self-consciousness*. It is man's consciousness of his *self* or *Ego* as the subject and bearer of all the conditions and states affecting his being, particularly of consciousness itself. Not only are mental states and activities present in consciousness, but I myself, by an act of reflex cognition, know that they are present and know that they belong to me as *modifications of myself*. Through memory I am aware that the Ego is a single, permanent reality, distinct from the mental states themselves; existing through the years, the Ego is perceived to be *self-identical* at all times.

7. *The Seat of Consciousness*. Neither the cerebral hemispheres, nor the frontal lobes, nor the thalamus, nor the hypothalamus, nor the medulla can be considered to be the seat of consciousness. It is the *individual* who is conscious, with a dependence on the nervous system.

8. *The Function of Consciousness.* The function and purpose of consciousness is to enable man to perceive and interpret his surroundings, to make his past experience available for adjustment to the needs of the present moment.

9. *Disorders of Consciousness.* Disorders arise from organic or psychogenic causes. They are of various kinds:

Total loss: coma, concussion, swooning.

Partial loss: stupor, confusion, derealization, depersonalization, amnestic fugue; these occur without 'splitting' of the personality. In the cases of 'split personality' we have an abnormal condition of dissociation in which the same human mind manifests alternately two or more very different characters or 'personalities.'

10. *Psychoanalysis.* It is a method devised for the examination of the contents and mechanisms of an individual's mind, for the purpose of treating and curing mental disorders.

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1 The Unconscious (Macmillan, 1924)

2 Ibid., pp. 4, footnote, and 253

3 Cognitive Psychology (Lippincott, '939), p. 3

4 Morton Prince, The Dissociation of a Personality (Longmans, Green, 1925), p. 525

5 See Rudolf Allers' The Successful Error (Sheed and Ward, 1940), for a thorough critique of Freud's psychoanalytic principles. See also T. V. Moore's The Nature and Treatment of Mental Disorders (Grune and Stratton, 1943), Ch. II

Chapter 18

EXTRANORMAL MENTAL STATES

FROM THE DAWN OF RECORDED HISTORY UP TO THE PRESENT DAY, the claim has been persistently made that some persons are gifted with mysterious powers, outside and beyond the range of the normal capabilities. Instances of 'premonition,' 'clairvoyance,' 'telepathy,' 'trance,' 'hypnotism,' and the like, are cited in support of this claim.

These phenomena are termed *extra-normal*, because they do not occur with everybody or at all times. They are *not abnormal*, in the sense that there is anything, so far as is known, strictly pathological about them. Some of them are definitely *supernormal*, such as clairvoyance and telepathy; or so at least it would seem. Other phenomena, such as the mysterious workings of the hypnotic state, do not appear to be 'supernormal,' but they certainly do not belong to the 'normal' experiences of everyday life; they are, therefore, at least 'extra-normal.' The word 'extra-normal' can thus be used as a convenient term under which to group these exceptional experiences.

These extra-normal phenomena will be discussed under two main headings: *hypnotism* and *extra-sensory perception*.

Hypnotism

We can describe *hypnotism* or *hypnosis* as a trance-like nervous condition resembling sleep, induced by the suggestions and (or) manipulations of the operator ('hypnotist'), the hypnotized subject remaining in mental communication ('rapport') with the operator and responsive to his suggestions.

The hypnotic state is usually characterized by alterations of the character or 'personality' of the subject, together with changes of the functions of memory and of perception.

Hypnotism, except for the name, is nothing new. The trance state, so noticeable in the hypnotic condition, was known in antiquity. Pliny, Galen, and Aretaeus discussed the subject. Paracelsus attributed it to a force or fluid emanating from the stars, comparing it to the magnet and calling it *magnate*.

It remained for *Anton Mesmer* (1733—1815), a Viennese physician, to bring the phenomena into the focus of scientific inquiry. He supposed the cause to be a universally diffused fluid, set in motion by the will. He gave it the name *animal magnetism*, because he considered it to be analogous to that of mineral magnetism but peculiar to organisms or animal bodies. Different kinds of inanimate bodies, such as metals, crystals, and magnets, according to his view, also possessed this force or fluid, so that they could be used to induce and terminate the phenomena. In 1778 Mesmer came to Paris and publicized his views. The sick flocked to him in large numbers, and he effected numerous cures with his novel method. The French Academy

investigated the matter through a commission and attributed the phenomena to imagination or imitation. 'Magnetism' or *mesmerism*, as it came to be called, soon had a number of adherents, among them the Marquis de Puységur, who discovered the phenomena of somnambulism. Mesmerism dropped out of vogue during the French Revolution.

Abbé Faria, about 1814, revived hypnotism. A true pioneer of science, he discarded the theory of a 'magnetic fluid,' showing that the phenomena were attributable to the power of *suggestion*. Nothing, he maintained, comes from the operator, everything from the subject; at bottom, the magnetic trance is nothing more than a form of sleep, the condition often being induced by fixedness of look and cerebral fatigue; the phenomena are produced through the action of the subject's imagination in response to the suggestions of the operator. These acute observations aroused considerable interest among scientists for a time.

James Braid (1795—1860), of Manchester, took up the matter (1841). He became convinced that the phenomena were a result of a *mental concentration on a single idea*. Fixed gazing, the concentration on a real or imaginary object, and so on, produced what he called mono-ideism, while in the normal waking state man's attention is divided among a number of things. The fixed gaze, he contended, brought on a paralysis of the frontal brain, thereby producing trance and somnambulism; in this manner the subject lost the power of neutralizing the dominant idea and fell under the power of suggestion. Later on, Braid realized that the theory of mono-ideism was too narrow in

scope, because he noticed that several phenomena (psychic deafness and blindness, rigidity, anesthesia, etc.) could be present simultaneously. He called this trance condition 'neur-hypnotism' (nerve-sleep), and from his designation the modern term *hypnotism* derives its origin.

From this point on, hypnotism became an object of intense scientific study. Two schools of thought in France did much to bring hypnotism to the foreground through a heated controversy on the fundamental nature of hypnotism. These were the *Salpêtrière School of Paris*, headed by Charcot, and the *Nancy School*, represented by Liébeault, Beaunis, Bernheim, and Liegois.

Charcot (1825—1893) and the *Salpêtrière (Paris) School* explained hypnotism in terms of *nerve physiology*. Charcot made his experiments with patients afflicted with hysteria. To induce hypnosis, he made use of a bright light or a sudden sound; he also made the patient stare fixedly at some object. Correspondingly, he considered the inducing cause to be physical, not mental, and hypnosis itself due to a nervous or cerebral modification of the subject. Hypnosis, therefore, Charcot and his followers claimed, is a pathological condition, a neurosis, a form of hysteria; consequently, there is a profound difference between normal sleep and hypnotic trance. Since hypnosis is a condition induced by purely physical means, Charcot contended that a person might be hypnotized, as it were, unknown to himself.

Bernheim and the *Nancy School* took a diametrically opposite view. Hypnosis, according to this view, has but a single cause, and it is a *psychical* cause, namely, *suggestion*;

suggestion is the only essential factor. Everybody is suggestible; to suggest to a person to be more suggestible, that is neither more nor less than hypnotism. Consequently, no fundamental difference exists between normal and hypnotic sleep. The state of normal suggestibility is simply increased by the action of suggestion itself, because every idea has the tendency to actuate itself. Hypnotic phenomena are very similar in character to many normal acts; even under normal conditions we perform acts which are *automatic, involuntary, and unconscious*.

The controversy between these two schools attracted the attention of the entire scientific world. It gave a tremendous impetus to the experimental research into the phenomena in question and into the methods of inducing and controlling them. Many interesting facts were brought to light, so that our present knowledge of hypnotism is quite extensive.

The Phenomena of Hypnotism

The phenomena which occur in the hypnotic state are many and varied. Some are psychological, others physiological.

PSYCHOLOGICAL PHENOMENA

Consciousness. The hypnotic condition may be light or deep. Light hypnosis is, at times, hardly distinguishable from the normal waking state. There are many degrees and stages in hypnosis, shading imperceptibly from the nearly normal waking state to deep hypnosis. In deep hypnosis,

the subject is in a trance and apparently, though not actually, asleep. Generally speaking, the subject is, to a lesser or greater degree, *always conscious* in hypnosis. Even in deep hypnosis the subject hears the voice of the hypnotist and carries out suggestions. Hypnosis, therefore, can be said to be a mental state which lies between ordinary sleep and normal waking. The hypnotized person is more conscious than in sleep, but less conscious than in the waking state.

Suggestibility. Everybody is suggestible in some measure. We see someone yawn, and we also yawn; we hear an orchestra play a tune, and our feet tap the rhythm; we observe a person staring at a certain spot, and we involuntarily do the same: such and similar actions are the result of 'suggestion.' The inclination or tendency to carry out a suggestion is termed suggestibility.' In hypnosis this suggestibility is increased and heightened, so that the hypnotized person carries out the suggestions of the operator with greater facility and readiness than in the normal waking state.

Rapport. A mental alertness exists in the subject toward the suggestions given by the operator. When the subject is in a state of deep hypnosis, he will respond to the operator's suggestion, no matter how slight, whether it be expressed by word or sign. As a rule, the suggestion is carried out without opposition. At the same time, the subject is, to all appearance, totally oblivious of his surroundings, paying no attention to the presence or suggestions of other persons, unless ordered to do so by the operator. Provided rapport has been established through

definite suggestion, the subject will remain in mental contact with the operator, responsive to his voice, even after an interruption of hours or days. If, for any reason, this rapport is broken during deep hypnosis, the subject passes over into a state of normal sleep, to awaken later of his own accord, just as he would in ordinary sleep.

Memory. Memory is affected by hypnosis, but the change, if there is a change, depends on a number of factors — the personality of the subject, the kind of suggestion given by the operator, and the depth of the hypnotic state.

Sometimes memory remains *unchanged*, particularly in light hypnosis. The subject then remembers in hypnosis everything that has occurred in the waking state and also remembers everything in the waking state that has occurred in hypnosis. Furthermore, the operator can suggest that the subject shall remember in the waking state what has occurred in hypnosis.

During deep hypnosis, however, there ordinarily occurs a *change of memory*. In deep hypnosis the subject is able to recall the events of his normal waking life and also the events of former hypnoses; on waking, however, the events occurring in the hypnotic condition are forgotten, especially if posthypnotic amnesia has been suggested. It is a controverted point whether a subject in the waking state can recall, either by reflection or chance association, something which has occurred in deep hypnosis, if the operator has suggested complete amnesia. The trance of deep hypnosis, characterized by complete posthypnotic amnesia, is called 'somnambulism.'

Upon suggestion, the subject can be made to forget selected events of the normal waking life and also events of a former hypnotic state. This amnesia can again be abolished through counter-suggestion. For example, it may be suggested to a person who knows German that he be unable to speak it on awakening; he will not be able to use the language on returning to the normal waking state. In all probability, however, this condition will not be permanent, unless reinforced periodically by renewed suggestions. One must bear in mind, too, that the willingness of the subject is presupposed and required; a subject can always resist things disagreeable to himself and refuse to have items blotted out from memory.

Increased memory is a common phenomena associated with hypnosis. Many items can be recalled in the hypnotic state which are unavailable for memory in normal life. While the earliest remembered incidents of an individual's life history ordinarily date from about the sixth or fifth year, the subject, when hypnotized, is often able to remember events pertaining to the fourth and third year. All events are remembered with greater fullness of detail than is possible under normal circumstances. It was this fact which led the way to psychoanalysis. Memorizing is much easier in hypnosis than in the waking state. After a single reading, difficult prose passages or verses can be retained and, upon suggestion, be repeated later when out of hypnosis.

Post-hypnotic Suggestion. By 'post-hypnotic suggestion' is meant a suggestion given during hypnosis, but to be carried out by the subject after hypnosis has been terminated. The operator, for example, may suggest to the

subject an abhorrence for liquor or tobacco after awakening and, if the subject uses either, an attack of vomiting; after hypnosis is terminated, the suggestion will be carried out. Again, during hypnosis, a point of time may be specified in the normal waking state for a certain phenomenon to manifest itself; at the appointed time it will occur. The suggestion, for instance, may be given to the hypnotized subject that, one hour after being awakened, his leg will feel lame and he will walk with a limp for ten minutes; the lameness will appear at the specified time, and the subject, due to post-hypnotic amnesia, will be unable to account for the fact. Not all persons are post-hypnotically suggestible, but practically all subjects in deep hypnosis are capable of carrying out this type of suggestion.

Another very interesting and mysterious phenomena of hypnotism is that of *post-hypnotic appreciation of time*. In order that a certain act be performed at a specified future moment, it seems evident that some sort of time calculation must be made by the subject. Many experiments have been made involving time appreciation and time calculation. The subject was told, for example, to perform a simple act after 300, 450, 700, 1500, etc., minutes; post-hypnotic amnesia was suggested, and the subject awakened immediately. No clock or watch was allowed to be seen by the subject, so that the subject had no starting point for the calculation of time. The operator himself did not know at what time of the day or night the act would be due. In most cases the suggestion would be carried out correctly, though there was a deviation of a few minutes in some instances. Sometimes the subject resisted the impulse, because the

act seemed senseless and ridiculous; but the impulse itself was present at the appointed time. J. Milne Bramwell¹ made a series of 55 experiments with one subject, telling her to make a cross on a piece of paper with a pencil and write down the time of the writing without consulting a watch or clock. The time element varied, of course, in the different experiments. On one occasion, the subject was ordered to make the cross and write the time after 21,434 minutes. Forty-five experiments of the series were carried out successfully; in one experiment the performance occurred five minutes too soon; in the remainder, one to two minutes too soon. On being re-hypnotized and questioned as to the method of calculation employed, she informed him that at the time of the suggestion she made no calculation and did not remember the suggestion in the waking state, but that at a specified moment she felt an impulse to take paper and pencil and experienced the idea of making a cross and writing certain figures, without looking at a clock or watch while doing so. Other experimenters have encountered the same situation. The subjects do not seem to know just how they estimate and calculate the time.

Change of Personality. By means of suggestion, the hypnotist can modify the personality of the subject to a great extent. He can make the subject relive the developmental stages of his past life, so that the subject will think, speak, write, and act like a person of 5, of 10, of 15, of 20 years, and so on. Similarly, at the command of the hypnotist, he will assume the character of a general, a lawyer, a salesman, a preacher, a woman, a dog, a lion, etc., and do his utmost to play the role assigned to him. These

hypnotic 'personalities' may become so distinct and pronounced, that the one has apparently no knowledge of the other.

Automatic Writing. As a result of post-hypnotic suggestion, the subject in the waking state can be made to read aloud from a previously unknown book and simultaneously write out a discourse of some kind at the same time. The subject knows and remembers what was read, but has no waking knowledge of what was written. When re-hypnotized, the subject recalls the mental processes involved in the writing.

Physiological and Sensory Phenomena

The Muscular System. The *voluntary* muscles are affected by suggestion. The operator, through suggestion, can produce a marked increase in muscular power and activity. The subject can lift weights much heavier than he is capable of lifting under ordinary conditions. The operator can also suggest functional paralysis of the muscles. The entire body may be made rigid as a board, and this rigidity can be maintained for hours without apparent fatigue.

Even the *involuntary* muscles and the *vasomotor* system are affected by suggestion. The rate of respiration and of the pulse can be increased or decreased. Nose-bleeding has been obtained. Defecation, urination, perspiration, the shedding of tears, and other secretory functions, have been successfully suggested. It is claimed that blistering of the skin can at times be suggested.

Normal *sensibility* can be *increased* to a remarkable degree in hypnosis. One subject could read print reflected in the operator's eye. Attendants in mental hospitals have been hypnotized and their hearing sharpened, so that the slightest sound coming from the patients would be perceived, even though the attendants were asleep. Very minute differences in weight or temperature can be clearly distinguished. After a meal, hunger and thirst can be suggested, so that the subject will eat a second meal with relish.

Just as sensibility can be increased in hypnosis, so it can also be effectually *decreased, inhibited, and changed*. Blindness, color blindness, double vision, deafness, change or loss of taste and smell, can be produced temporarily. Hunger and thirst can be alleviated and even removed. If the operator suggests anesthesia, the subject loses the sensation of touch; if he suggests analgesia, the subject no longer experiences pain. In such cases, the subject will not notice the thrust of a needle or of a knife through his flesh. Surgeons have performed operations on hypnotized subjects; Esdaile excised a very large tumor from a man and amputated a woman's leg below the knee.

The production of *sensory hallucinations* in hypnotized persons is a common phenomenon. They can be made to see, hear, taste, smell, and feel practically anything the operator desires. The imagination produces images so vivid that to the subject they appear as real objects actually perceived. These hallucinations may be either positive or negative. If, for instance, the subject sees an article, and if the operator then suggests that a second article is placed in

front of the former, hiding it from view, the subject will see the imaginary article and will not see the real article; this effect is a case of 'positive' hallucination. Or, if the subject sees an article and sees a second article being placed behind the former, and if the operator then suggests the first article away, then the first article will (apparently) vanish, so that the subject sees the article hidden behind it; this effect is a case of 'negative' hallucination. Hallucinations can also be post-hypnotically suggested, so that the subject, upon awakening, will see an imaginary cow or hear an imaginary orchestra, etc.

When suggested by the operator, a subject will temporarily experience *feelings* (pleasure, displeasure) and *emotions* (fear, piety, anger, joy, disgust, etc.). Some types of *mental disorders* have been successfully treated by suggestion, particularly phobias; where complete cures have not been effected, improvement has often been obtained.

Criminal Acts and Hypnotism

Are hypnotized persons mere automatons, completely under the control of the hypnotist, so that they are irresistibly compelled to carry out his commands? If the hypnotist suggests a criminal act, such as theft, murder, arson, adultery, etc., *must the subject obey, or can the subject resist?* Liébault, Bernheim, and Beaunis, of the Nancy School, were convinced that subjects, while in the hypnotized condition, could be induced to commit crimes. Delbeouf, Bramwell, and most experimenters deny it.

In the course of time, extensive experiments have been made along these lines, and a number of facts have been established which have an important bearing on this problem.

Hypnotized persons are not mere automatons. The hypnotic state does not place them under the absolute control of the hypnotist. They do not lose the essential use of reason and will. They can and do resist suggestions; they can and do refuse to carry out orders. They act in this manner not only when the suggestions are morally offensive, but also when they are innocuous and indifferent. Many instances are on record where subjects have refused to obey out of sheer *whim* and *caprice*. Oftentimes subjects will not co-operate, although they are aware, as they themselves admit, that it is only an experiment, a 'laboratory crime'; it offends their *moral sense* to do something which they know is nothing more than an 'imaginary crime.'

It is true, of course, that subjects have been induced to perform 'laboratory crimes,' such as stabbing someone with a rubber or cardboard knife, putting poison (sugar, suggested as arsenic) in another's coffee, and so forth. These instances, however, prove nothing, because the experimenters were reputable men, and the subjects placed their trust in them, confident that a real crime would never be suggested.

Are we to conclude that no *real crimes* have ever been committed by subjects under the hypnotic influence of unscrupulous operators? It would indeed be rash to deny either the possibility or the fact of the commission of

genuine 'hypnotic' crimes. Forel, after an examination of the pertinent material, comes to the conclusion that normal persons can always resist criminal suggestions, but that the childish, the psychopathically inferior, and the ethically weak and defective person, lacking moral balance and resistance, can be induced to commit real crimes through suggestion. Schrenk-Notzing and others agree with him. Forel's opinion is, in all probability, the correct answer to the question. Virtuous persons cannot be compelled to commit, or to consent to, suggested crimes. It is not quite clear whether the operator, because he possesses their confidence, could break down their resistance by persuasion or false information. If, however, the criminal suggestion agrees with the principles, dispositions, and habits of the subject, it will probably be carried out.

Theories of Hypnotism

Leaving out of consideration the obscure opinions of the ancients and beginning with the views of Anton Mesmer, a number of theories have been advanced as an explanation of the *nature of hypnotism*.

Magnetism. Mesmer and his followers considered the cause of hypnotic phenomena to be *physical*, namely, 'animal magnetism,' 'magnetic or vital fluid,' 'od or odylic force.' Scientists have been unable to discover any such force or fluid. The theory is crude and primitive, and it is totally discredited.

Suggestion. Abbé Faria looked for the cause in *suggestion*, maintaining that everything comes from the

hypnotized subject, not from the operator. So far he was correct. The operator merely directs the course of events; the phenomena originate in and by the subject at all times. Whatever happens has its cause in the subject's own nature. Suggestion, however, is not really the 'cause' of hypnotic phenomena; it is merely the 'signal' which sets the cause in action.

Mono-Ideism. Braid's theory of mono-ideism points out the fact that there exists a considerable narrowing of consciousness in the hypnotized subject, and subsequent experiments have verified his contention. He was wrong, however, in restricting the concentration of consciousness to one single idea. He realized his error and later rejected mono-ideism, because it is possible to have more than a single hypnotic effect present at any given time. He advanced the understanding of hypnotism by stressing its *psychic character*.

The Salpêtrière School. According to Charcot and his followers, hypnosis is an artificially induced neurosis, and it can be produced only in persons suffering from *hysteria*. Since about eighty to ninety per cent of adults can be hypnotized, the vast majority of persons should be hysterical, which is not true. Soldiers, sailors, and students can readily be hypnotized, because of their habitual attitude of accepting commands (suggestions), and they are not hysterical. Charcot was also mistaken when he claimed that persons could be hypnotized by *purely physical means* and unknown to themselves. Hypnosis demands the co-operation of the subject, because hypnosis is primarily a

psychical affair and the subject is the principal agent in the production of all phenomena.

The Nancy School. Bernheim and his associates saw no real difference between *natural sleep* and the *artificial sleep* of hypnosis. A considerable difference, however, exists between the two states. Consciousness is responsive to the suggestions of the operator in hypnosis, but is not alert in natural sleep. Hypnosis lacks the haphazard character of dream states. Hypnosis tends to act out the suggestions of the operator externally, something rarely found in natural sleep. Bernheim also maintained that the hypnotized person is a mere *automaton*, without self-determination. The actions of the hypnotized subjects are, to a certain extent, automatic; but the subject is not thereby deprived of the power of self-determination, if he desires to use it. Hypnosis, the Nancy School asserts, is essentially *increased suggestibility*, and the increase is produced by suggestion itself. Increased suggestibility, however, is merely a symptom of hypnosis, not its essence. Suggestion and increased suggestibility do not explain the profound *physiological and psychical changes* which occur in hypnosis. Increased suggestibility seems to be rather the result than the cause of these changes. The real nature of hypnosis must lie deep down in the nervous and mental constitution of the subject.

The Subliminal Mind. F. W. Myers, William James, and many others sought the explanation of the mystery of hypnosis in the 'subliminal mind.' Most of these authors look upon the subliminal mind as a mind *distinct* from, and *independent* of, the normal, supraliminal mind, having

vastly more complex and accurate processes of mental activity than are found in the mind of the waking state. The subliminal mind is a fully developed 'self,' superior to the supraliminal self.

This theory is *inadequate*, because it fails to account for all facts.

Granting, for the sake of argument, the existence of such a secondary or subliminal mind as the agent of hypnotic phenomena, the *appreciation and calculation* of time in certain post-hypnotic experiments receives no proper explanation. As a rule, the subject, even when re-hypnotized, has no memory of the calculation and has *no knowledge* of how the calculation was made. In other words, the subliminal mind itself is unaware of how the phenomenon was produced. Hence, a third or fourth mind must be postulated. In as much as psychologists have distinguished as many as a dozen and more 'personalities' in one individual in various phases of hypnotic experience, consistency demands that we postulate the same number of subliminal minds or selves; but such a postulate seems unreasonable.

The distinction between these 'minds' or 'selves' is based on the distinction between *alternating consciousnesses* and *alternating memories*. The one consciousness is supposed to be altogether different from the other or others, and the one memory altogether different from the other or others. This difference, however, is not as great as is usually assumed. These consciousnesses and memories are not mutually exclusive, but overlap. As a matter of fact, a definite *bond of unity* runs through all the hypnotic

phenomena of an individual. The knowledge and use, for example, of *language* is preserved and remembered in all states and stages of hypnotic experience, particularly if the subject knows and uses but a single language. As a rule, too, the subject retains his general knowledge of persons, objects, localities, etc. Such facts are evidence for the *essential identity of memory* and *consciousness* in every individual. It takes more than changes of moods and alternating groups of memory items to constitute distinct minds and selves in a person.

Dissociation. Most modern psychologists find the cause of hypnotic phenomena in 'mental dissociation.' Joseph Jastrow² is representative of this group. Here is his line of thought.

Man's normal waking consciousness is characterized by the close and full association of his various faculties (senses, imagination, memory, intellect, will, etc.) and their activities. Normal experience is the result of three particular activities or 'privileges,' namely, incorporation, orientation, and initiative.

When we have a sense impression of an object and are aware of it, we give it a place among our conscious perceptions; this process is termed *incorporation*. We are conscious at the same time of the relative position of this object among the other objects of the physical world. Thereby we adjust ourselves consciously to the outside world; the resulting adjustment is *orientation*. Ordinarily, our mental experience is such that we control and direct our ideas, perceptions, imaginings, etc.; in other words, we have *initiative*. The joint, associated, normal functioning of

incorporation, orientation, and initiative constitutes our normal waking state. When any of these activities are interfered with, impaired, or absent, we speak of a *dissociation*. The effect of dissociation is a subnormal or abnormal mental state. Instances of subnormal states are sleep, profound distraction, dreams, etc.; instances of abnormal states are hysteria, somnambulism, intoxication, insanity, etc.

Impairment of the 'incorporative' activity makes us partially or totally unaware of our surroundings — *psychic anesthesia*. We observe this state in hypnosis. The subject actually sees, hears, and feels things; but due to suggestion, he excludes the visual, auditory, and tactual images from his conscious experience and treats them as if they did not exist. Double personality arises, when the mind abnormally concentrates its attention on one group of experiences, thereby failing to incorporate this group of experiences into the normal stream of consciousness.

Impairment of 'orientation' brings on a partial or total inability to distinguish between imagined and objective reality. A person so afflicted lacks the corrective influence of external impressions on the workings of the imagination and accepts the images of the imagination as objectively real, as it happens in dreams. *Hallucinations* result from impaired orientation.

Thus, in hypnosis, the suggestions of the operator, due to a restricted and narrowed consciousness, are not offset by corrective judgments based on external perception and consequently are taken for objective reality. When this impairment is profound, so that one group of memory

images is split off from the rest, there may arise the hallucination of distinct empirical 'selves' in the same individual, and then we speak of 'double personality.'

Impaired initiative, since it involves partial or total lack of personal control and direction, leads to *imperative impulse and enforced action*. A person with impaired initiative readily responds to an impulse imposed on the will by an outside agent. We observe this condition in hypnosis, where the operator's suggestions control and direct the actions of the subject. A marked impairment of initiative, together with an impairment of incorporation and orientation, is generally present in 'double personality.'

The impairment of one or the other or all of these human 'privileges' is present in all cases of mentally subnormal and abnormal conditions, ranging all the way from absentmindedness to permanent insanity.

The theory of dissociation has the advantage that it preserves the essential *unity and identity of the mind and self* and avoids the improbabilities of the subliminal mind theory mentioned above. It does not, however, give a complete explanation of the mystery of hypnosis. What happens in the nervous system, particularly in the cortical centers of the brain, when there is an impairment or disturbance of incorporation, orientation, and initiative? And how can the willingness of the subject and the suggestion of the operator produce such a profound impairment or disturbance? Therein lies precisely the mystery of hypnosis, and a mystery, it seems, it will always remain.

Among the various theories advanced in the course of the history of hypnotism, that of *mental dissociation* is the most promising. It agrees best with the findings of psychology in other fields of research.

The state of mind with the closest resemblance to hypnosis is the state of mind operative in *sleepwalking*. In sleepwalking (ordinary somnambulism), the mental images arouse the motor centers of the brain into carrying out bodily actions according to a fixed plan or idea (auto-suggestion). In hypnotic somnambulism, the images producing bodily action come from the suggestion of the operator (hetero-suggestion). The underlying mental mechanism is undoubtedly the same in both cases.

Extra-Sensory Perception

The problem of *extra-sensory perception* is a much-discussed question. 'Extra-sensory perception' is defined as a perception obtained through channels other than those of the known senses. Psychologists speak of the extra-sensory perception of *objective* events, i.e., knowledge of objects or occurrences not obtained from another mind, and of *subjective events*, i.e., knowledge of objects or occurrences obtained from another mind. The extra-sensory perception of objective events is termed clairvoyance, while the extra-sensory perception of subjective events is termed *telepathy*.

The distinction between clairvoyance and telepathy can be clarified by a simple illustration. A playing card, picked at random from a shuffled deck and no one having seen its face, is placed in an opaque envelope or box; the

clairvoyant person has the ability to name the card correctly, because he perceives the card as it is, although it is impossible to perceive it with the ordinary senses. A person thinks of a certain verse, without pronouncing a single syllable; the telepathic person, perhaps miles away, perceives what is going on in the other person's mind and mentions or writes down the verse correctly. In the first instance there is an extra-sensory perception of an external or 'objective' event (clairvoyance), and in the second instance an extra-sensory perception of a mental or 'subjective' event (telepathy).

Extra-sensory perception is such an extraordinary phenomenon that scientists, who as a matter of principle refuse to accept anything as a fact which cannot be verified by the senses in some form or other, derided its possibility. In the course of time, however, so many cases were recorded by reliable witnesses that the accumulated evidence could no longer be ignored. A number of eminent scientists thereupon founded the Society of Psychical Research in England in 1882. Prominent names are found on the roster of its membership; among them are Henry Sedgwick, the first president, A. J. Balfour, W. F. Barrett, Balfour Stewart, Edmund Gurney, Frederic W. H. Myers, Oliver Lodge, William Crookes, Lord Rayleigh, and Alfred Russell Wallace. Similar societies were established in America (1884) and other countries. These societies did heroic service in checking available material. The result of the investigation was a residue of fact which seemed to prove definitely the existence of clairvoyance and telepathy. After some time, the investigation was placed on an

experimental basis. Here, too, the result was positive. Some scientists became convinced, but very many were still skeptical.

THE DUKE EXPERIMENTS

In 1930 a group of psychologists of *Duke University*, inspired by William McDougall, head of the psychology department there, began a systematic experimental investigation of extra-sensory perception. These men were Helge Lundholm, Karl E. Zener, and Joseph B. Rhine. Their aim was to discover whether parapsychological ('unconventional,' extranormal) phenomena actually occur and to find an explanation for their occurrence. The laboratory experiments were to be conducted with strictly scientific precautions, so as to exclude both fraud and unconscious sensory perception.

The method selected was 'card calling.' Zehner devised a set of cards with symbols — a circle, a cross or plus sign, a rectangle, a star, and three wavy lines. A pack consisted of twenty-five such cards, each symbol appearing five times in the deck. These are the famous 'Zener' or 'ESP' ('extra-sensory perception') cards. Since each symbol appears five times in the deck of twenty-five cards, the average chance of the symbols being called correctly must be one in five or one fifth of the total. A score considerably beyond this average, especially when the experiments run into hundreds and thousands, must be adjudged 'significant'; persistent high scores would furnish scientific proof for the existence of extra-sensory perception.

The experiments begun in the Duke Parapsychology Laboratory are now being conducted in at least a score of other universities. The methods vary. The technique, however, is similar. Neither the subject nor the experimenter knows the order of the cards. The subject must call the top card; his call is recorded, the card is placed aside, and the next card is called and recorded. After all have been called, the cards are checked with the record, to see how many 'hits' have been made. Or, a sample card of each of the five suits is placed before the subject, and he must match them by placing the cards of the deck in front of the five key cards in such a manner that the suits agree; none of the cards of the deck are allowed to be turned face up until the entire deck has been called. Only then are the hits and misses checked. Or, the five key cards, one of each suit, are placed face down, no one knowing their order; the entire deck is placed face down before the subject and he must match the unknown key cards with the corresponding cards of the deck. Or, a screen having been set up between the subject and the experimenter, the subject is required to call the cards of the deck hidden from him by the screen or he must match them with the key cards placed in front of himself; in no case does either the subject or the experimenter know the sequence of the cards until the experiment is finished. Or, the entire deck, face down, is set before the subject and, without disturbing or touching the deck in any way, the subject must call each card down through the deck; after all the cards have been called, the hits and misses are checked. Such are some of the standard types of experiments made to determine the presence of

extrasensory perception. Mechanical shuffling devices are sometimes used, so that no personal idiosyncrasy in shuffling can give the subject any sensory cues.

Naturally, only those persons are used for experiments who show signs of extra-sensory perceptivity. Once they are chosen, however, they are made to go through hundreds and even thousands of trials. The results of these trials, whether favorable or unfavorable, are recorded in detail, checked and double-checked, and filed away for reference. Utmost precautions are taken to prevent error, loss, or tampering. In this way scientific accuracy is obtained. The very simplicity of the method reduces the number of extraneous factors, which might vitiate the result, to a negligible quantity and makes mathematical evaluation a relatively easy matter.

Clairvoyance and Telepathy

Ever since the para-psychological laboratory of Duke University began its research in 1930, the number of tests made there and in other places amounts to far more than 2,000,000. What are the conclusions to be drawn from these experiments in extra-sensory perception?

The card-calling experiments just described are tests for *clairvoyance*, provided no one knows the actual sequence of the cards beforehand. If somebody knows the sequence beforehand, the possibility cannot be eliminated that the subject was able to 'read the mind' of the person possessing this knowledge and discovered the sequence in this fashion; that would be telepathy, not clairvoyance. But if no one

knows the sequence, it is evident that the subject must 'read the cards themselves,' in order to know their sequence; and this would be clairvoyance.

At present there can hardly be a reasonable doubt that *clairvoyance is a scientifically demonstrated fact*. According to all the mathematical laws and calculations concerning probability, the results are significantly above the level of chance. In some instances the odds against the results having been obtained by chance run into the billions and even much higher.

Averages of 10 or more hits out of a possible 25 are not uncommon; a score of this kind is far beyond the expected chance results, particularly when one considers the fact that these averages cover perhaps hundreds of tests for the same subject. Scores for individual tests sometimes run as high as 15, 20, and more. In more than one case the subject performed the astounding feat of calling all 25 cards correctly; on one occasion a child 12 years of age called all cards correctly.

While most card-calling tests were made in a manner which would either prove or disprove the existence of clairvoyance, a certain amount of tests were made by Rhine and his associates to discover instances of *pure telepathy*. In the very nature of the matter, such tests are far more difficult to control scientifically than those of clairvoyance. In telepathy the subject must be able to read the mind or thought of the experimenter; hence, nothing can be used that exists in printed, written, or spoken form, otherwise clairvoyance would not be positively and definitely excluded from the test.

While the number of tests made concerning pure telepathy are relatively meager, those made gave *positive results*. The experimenter would arrange in his thoughts a sequence of symbols to his own liking, and the subject would be asked to name the sequence. In order to insure scientific accuracy, the experimenter and the subject would be placed in different rooms or buildings. The procedure was regulated by a stopwatch arrangement. At the appointed time, the subject had to call the sequence, and his calls were recorded. After the time for the test had elapsed, the experimenter wrote down the sequence he had in mind during the test. Thereupon the subject's calls were checked against this list for hits and misses. In one series of tests, with Miss Ownbey (a staff member of Duke) as 'sender' and Miss Bailey as 'receiver,' Miss Bailey made an average of 9.7 out of 25 in 450 trials, both being in separate rooms; she also made an average of 12.0 in 150 trials, both being in separate rooms, a distance of something like 30 feet away. On one occasion tests were made by Miss Ownbey as sender and Miss Turner as receiver over a distance of 250 miles. The daily tests called for a run of 25 calls, to be made at a specified time, with five-minute intervals between each call. Miss Turner made an average of over 17 correct calls out of a possible 25 during the three-day period of the tests. More tests were made. While she did not achieve the phenomenal success of the first tests, her over-all average was 10.1 for the entire series. Tests made by other psychological laboratories have substantiated the findings of the Duke experiments.

The Nature of Extra-Sensory Perception

Accepting clairvoyance and telepathy as factual occurrences demonstrated by scientific methods, what is their nature? The first question which must be answered is: Are they fundamentally sensory or extra-sensory?

For some reason or other, many critics simply cannot conceive of extra-sensory perception as possible and insist that *sensory cues*, imperceptible to ordinary persons or under normal circumstances convey the necessary information to the clairvoyant and telepathic subjects. They are supposed to be gifted with 'hyperesthesia,' or in plain words, with extreme sensitivity to minute visual, auditory, or tactual stimuli.

This theory, however, does not seem to cover the facts. So far as *visual cues* are concerned, they are, to all appearances, definitely excluded. No doubt, each card has peculiarities which, if known, might serve as a visual cue for the symbol printed upon it. The circumstances of the tests, however, make such cues useless. All decks are changed frequently; new decks are introduced continuously. The decks, in most tests, are screened, so that the subject cannot see them. Many subjects have their backs turned toward the cards; some walk back and forth in the room during the tests; others close their eyes; others lie on a couch at some distance from the cards, etc. Considering the properties of light, since light is essential for vision, it should be physically impossible for subjects to obtain visual cues, when they are separated from the cards by rooms, walls, and buildings, or when the cards are placed in sealed

opaque containers. Blind-from-birth subjects have made significant scores, even when the cards were placed in opaque envelopes behind screens. In the 'down-through' tests, where the subject must call all cards down through the entire screened deck before the check is made, the cards beneath the top card are invisible to the eye, so that visual cues are excluded. Under the conditions surrounding the tests in modern psychological laboratories, the precautions taken against the use of visual cues are so stringent, that the sense of sight cannot explain the phenomena of clairvoyance and telepathy in an adequate manner.

It has been suggested that unconscious whispering on the part of the experimenter might give the subject *auditory cues*, so that clairvoyance and telepathy are nothing more than cases of supersensitive hearing. This theory supposes that the experimenter possesses the information in advance of the test. In many modern card-calling experiments, however, no one, not even the experimenter, knows the actual sequence of the cards until each card of the entire deck has been called by the subject. Auditory cues are simply impossible under such test conditions. Hence, clairvoyance and telepathy cannot be explained by the sense of hearing.

Tactual cues are also excluded in many of the methods employed in the tests. The subject, as a rule, is not allowed to handle or even touch the cards. Oftentimes, new decks are used in successive tests, so that the subject cannot associate any peculiarities of individual cards with the respective symbols. In the 'down-through' test, the subject

cannot touch, even if permitted to do so, any card but the one on top of the deck. In distance tests tactual cues are entirely absent, because the subject is nowhere near the cards.

Olfactory or gustatory cues can hardly come into consideration at all, and no one advances a theory based on them.

Some critics speak of a 'sixth sense,' but no such sense has ever been discovered. It is possible, even probable, that clairvoyance and telepathy have a sensory basis of some sort. The real question, however, is: Can these phenomena be explained as the results of sensory stimuli affecting the *known, recognized senses*, such as sight, hearing, feeling, tasting, smelling, etc? The evidence is against such an explanation. All indications point to the 'extra-sensory' character of clairvoyance and telepathy.

That clairvoyance and telepathy are *extra-sensory* in the meaning defined, is borne out by a comparison of this type of perception with that experienced through the channels of the ordinary senses. *Organic structures* act as organs of sensation in ordinary perception. Perception thus involves a definite *localization* of the respective stimuli and their effects in the nervous system of the body. Nothing resembling organs and definite localization has been observed in extra-sensory perception. The subjects are unable to specify any particular organ of the body as the reception center of their extra-sensory impressions. They simply know or do not know what the symbols on the cards happen to be.

Another important difference is the *angle* or *position of the objects* for the two types of perception. It seems to make no difference in clairvoyance and telepathy whether the cards be held edgewise or broadside to the person of the subject, whether they be flat or folded, whether they be near or far away, whether they be placed openly in the presence of the subject or screened by walls, whether the symbols be large or minute, etc. Such factors, however, influence ordinary sense perception to a large degree.

Furthermore, none of the recognized senses are capable of perceiving directly what *thoughts* or *images* are present in another persons mind; visual or auditory signs are required. No such signs are required in telepathy. Distance, too, seems to be no effective barrier between mind and mind in telepathic communication.

Finally, science enumerates the various kinds of *energy* which are the stimuli for the ordinary senses: light energy for vision, sound energy for hearing, chemical energy for smell and taste, mechanical energy for pressure, etc. But science, so far at least, has been unable to point out what kind of energy, if any, is the causal agency involved in extra-sensory perception. No known energy seems to fit the facts of clairvoyance and telepathy. Radiant energy appears to be the necessary stimulus. X-rays, radio waves, gamma rays, etc., have been advanced as a possible cause for the phenomena in question. However, all these types of energy lose efficiency through distance and are affected by intervening objects, conditions which seems to have no appreciable influence on extra-sensory perception. Besides, no wave theory seems adequate as an explanation of how a

'thought' can be transferred from one mind to another, as occurs in telepathic messages. Then, too, if waves or rays are the efficient cause, how does it happen that the waves or rays emanating from the mind or brain of the sender, located perhaps a hundred miles away, are received by the subject, while those emanating from other persons much nearer are not received? To say that these minds are 'attuned' to each other, is a facile phrase, but it is merely an analogy and explains nothing. We may as well face the fact that the science of physics can contribute little to our understanding of the nature of extra-sensory perception.

IS THEN EXTRA-SENSORY PERCEPTION A PURELY *INTELLECTUAL operation*? It does not seem so.

There is, without question, a close relationship between the higher mental operations and extra-sensory perception.

Judgment, volition, attention, and mental concentration are required for good results in both types of activity. And yet it would seem that clairvoyance and telepathy belong essentially to the sensory order of cognition.

Practically all experiments in clairvoyance and telepathy have objects and images as the materials which form the basis of the tests. Both types of perception seem to meet with the greatest success, when the experimenter attempts to 'send' geometrical figures, words, melodies, etc. Apparently then, the imagination plays the dominant role in clairvoyant and telepathic perception.

Again, whatever lowers the efficiency of the higher centers of the *sensory nervous system*, interferes with

extra-sensory perception. Illness and fatigue bring about a decrease in the scoring averages. A dissociating drug, like alcohol or sodium amytal, does the same. On the other hand, a stimulant, like caffeine, increases perceptiveness, when applied to a subject affected by drowsiness or fatigue. These facts are indications that a good state of nervous integration is required for successful work in extra-sensory perception.

Experiments in *psychometry* corroborate the view that clairvoyance and telepathy are of the sensory order. In experiments of this kind, an object is placed in the hand of the subject. Sometimes the subject is blindfolded; sometimes the object is in an opaque container; sometimes the subject is allowed to see and handle the object. In any case, the psychometrizing subject gives the past history of this particular object. The interesting feature about the whole matter is the fact that this history comes to the subject in pictorial scenes of the *imagination*. These scenes, perhaps indistinct at first, become clear, and then fade out, other pertinent scenes following in succession. Psychometry is a variant of clairvoyance, but a clairvoyance that reaches into the past. R. Tischner has conducted a number of such experiments and claims that they are genuine. Others have made similar experiments with the same results. If genuine, they bear out the hypothesis that clairvoyance is sensory in nature. And since modern experimenters are convinced that both clairvoyance and telepathy derive their origin from the same fundamental faculty, the conclusion is logical that all extra-sensory perception is essentially sensory in nature and not purely intellectual. According to all

indications, it is the *imagination* which is directly involved in extra-sensory perception. The images present in another mind seem to rise up spontaneously in the imagination of the subject.

In that case, though, what sort of energy acts as the stimulus for extra-sensory perception? We do not know. Like the states of hypnosis, extra-sensory perception is a mystery of the human mind. The facts are there, but no theory so far has been able to give us anything like a fair understanding of the phenomena of these extra-normal mental states.

Summary of Chapter XVIII

Hypnotism and extra-sensory perception are extra-normal mental states.

1. *Hypnotism*. Hypnotism or hypnosis is a trance-like nervous condition resembling sleep, induced by the suggestions and (or) manipulations of the operator ('hypnotist'), the hypnotized subject remaining in mental communication ('rapport') with the operator and responsive to his suggestions.

The phenomena of hypnotism have been explored by Mesmer, Faria, Braid, the Salpêtrière School of Paris, the Nancy School, and by many other scientists.

2. The *Phenomena*. Some are psychological, others physiological.

Psychological Phenomena. Consciousness is narrowed, but always present. Suggestibility is increased. The subject is always in *rapport* with the operator. *Memory* undergoes a change, especially in deep hypnosis. Most subjects are able to carry out *post-hypnotic suggestions* involving the mysterious power of time appreciation. Hypnotism is often accompanied by a *change of 'personality.'* *Automatic writing* is a common phenomenon.

Physiological and Sensory Phenomena. The muscular system can be affected by suggestion. Normal sensibility can be increased, decreased, inhibited, and changed. *Hallucinations* can be produced.

Criminal Acts. Hypnotized persons are not automatons; they do not lose the essential use of reason and will. They

can and do resist suggestions. If, however, the criminal suggestion agrees with the principles, dispositions, and habits of the subject, a crime may, in all probability, be successfully suggested.

3. *Theories of Hypnotism.* A number of theories have been advanced in explanation of the nature of hypnotism.

Magnetism. Mesmer's theory of 'animal magnetism' as a physical force is crude; no such force has ever been discovered.

Suggestion. Faria maintained that the cause of hypnosis is suggestion. It is not so much the 'cause' which produces the phenomena as the 'signal' which sets the cause in action.

Mono-Ideism. This theory of Braid cannot account for the fact that a number of hypnotic effects can be present at the same time.

The Salpêtrière School. The theory is erroneous because the majority of adults are hypnotizable, but are not hysterical.

The Nancy School. Hypnosis is essentially *increased suggestibility* produced by suggestion. This theory does not explain the profound physiological and psychical changes which occur in hypnosis.

The Subliminal Mind. The advocates of this theory postulate a duality of minds in man. The subliminal mind is supposed to be the source of hypnotic phenomena. Since cases are known in which a dozen or more 'personalities' have occurred in hypnotic subjects, one must logically conclude that

there are the same number of 'minds' present; such a view, however, seems preposterous.

Dissociation. Most modern psychologists find the cause of hypnotic phenomena in mental dissociation. Impairment or absence of incorporation, orientation, or initiative produce dissociation; its effect is a subnormal or abnormal mental state. This theory seems to give the best explanation.

No theory explains the profound changes which occur in the nervous system, particularly in the cortical centers, during hypnosis.

4. *Extra-Sensory Perception.* We understand by this term a perception obtained through channels other than those of the known and recognized senses. *Clairvoyance* is the extrasensory perception of 'objective' events; telepathy, of 'subjective events.

5. *The Duke Experiments.* Since 1930, the Department of Psychology of Duke University has made a systematic and scientific attack on the problem of extra-sensory perception. The method selected was *card-calling*.

6. *Clairvoyance and Telepathy.* In clairvoyance the subject has an extra-sensory perception of *objects*; in telepathy, of *thoughts* or *images* present in another person's mind. The results obtained for both clairvoyance and telepathy were definitely positive.

7. *Nature of Extra-Sensory Perception.* Sensory cues, of whatever kind, seem ruled out as an explanation, due to the precautions taken in the tests. Extra-sensory perception

differs from normal sensory perception in a number of important points: it has no recognizable organ of reception; the angle or position of the objects has no appreciable influence; no conventional signs are required to perceive the thoughts or images of another mind; no energy known to science seems to be the causal agency.

Extra-sensory perception, to all appearances, belongs to the *sensory order of cognition*. Tests in clairvoyance and telepathy succeed best when objects or images are the materials used in the experiments. Whatever lowers or heightens the efficiency of the higher centers of the nervous system also lowers or heightens the scoring average in extra-sensory perception. Experiments in psychometry corroborate this view, because the subject sees the past history of the object in pictorial scenes of the imagination. The imagination, it seems, is the internal sense directly involved in extra-sensory perception.

As in the case of hypnosis, extra-sensory perception is an obscure process, a mystery of the human mind.

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Chapter 19

THE VITAL PRINCIPLE

THE SCIENTIFIC PSYCHOLOGIST IS SATISFIED WHEN HE HAS obtained and has given a scientific description and explanation of the psychical process. The philosophic psychologist feels the necessity of delving into the implications of human processes and arriving thereby at an understanding of the *nature* of man.

Agere sequitur esse, 'action follows the being (nature),' is a sound axiom. As a being *is*, so it *does*. The nature of a being determines what kind of action a being can and will perform. In accordance with this principle, the action of a being is a *manifestation of its nature*. Hence, from the type of action performed by a being, we can legitimately conclude to the underlying nature which is the root of its action. If the actions of various beings are specifically the same, the natures of these beings must be specifically the same; if they are specifically diverse, the natures must be specifically diverse. No other conclusion is logical.

Man, as we have seen, combines within himself the vegetative processes of the plant, the sensory cognition and appetition of the brute animal, and the intellectual and volitional activities peculiar to himself. These types of action

assuredly reveal man's nature. In order, however, to arrive at a real understanding of man's nature, it will be necessary to understand organic life in general.

Nature of Organic Beings

In attempting to explain the ultimate nature of organisms, a number of fundamental theories have found approval in scientific and philosophic circles in *the* course of time. The modern theories date from the time of René Descartes who is mainly responsible for the mechanistic explanation of organic bodies.

In general, *biological* mechanism is the application of atomism to biology. *Extreme mechanism* teaches that '*matter and force*' suffice to explain all bodies and activities. According to this theory, bodies are masses of 'matter' consisting of indivisible, inert, and immutable atoms. 'Force' is nothing more than incessant local motion pushing the masses of matter around. All bodies are mere aggregates of atomic particles passively affected by motion; as such, they are incapable of efficient causality, because they possess no powers of physical activity in virtue of their own intrinsic constitution. There can be, therefore, no real distinction between animate and inanimate, organic and inorganic, bodies.

In the field of biology, atomism is called *micromerism* or *merism* (Gr., μέρος, a part; μικρός small). The organic body is conceived as an aggregate resulting from the additive summation of cells, chromosomes, and genes; these particles, in turn, are mere aggregates of molecules, atoms,

electrons, protons, neutrons, etc. Extreme mechanistic *merism*, then, seeks to explain the organism by 'breaking down' the organic body into its smallest parts and by reducing all its activities to simple mechanical motion. In consequence, the organic body is not an 'integrated unitary being' but an 'aggregate' or 'colony' of individually autonomous particles; its unity is more apparent than real. All that is required to obtain a complete organic body, is to put the single parts together; the sum of all the parts adds up to an 'organism.'

Few biologists and philosophers in our day defend this extreme mechanical *merism*. Though they adhere to the additive concept of *merism* as a basic theory, they admit the existence of mechanical, physical, and chemical 'forces in material particles, together with efficient causality resulting from these forces. They advocate, therefore, a mitigated biological mechanism.

In opposition to *merism* (or *micromerism*), we find the theory of *holism* (Gr., *όλος* total, whole). This 'totality-theory' considers the organic body to be primarily an 'organized unit,' an 'integrated whole,' and this unit or whole is more than the mere addition and summation of its constituent parts. Over and above the activities of the individual parts, the organism performs activities which characterize it as a 'unit' or 'totality' and which cannot be reduced to the activities of the individual atomic and subatomic particles which make up the general structure of the organic body. In other words, the living body is not a 'machine' but an 'organism.' A machine can be taken apart and put together again, because a machine is nothing more

than the sum of all its parts. An organism can also be broken down into its respective parts, but then it dies; the reconstruction of the parts into the whole, if that were possible, will never produce a living organism, because the organism is more than the sum of all its parts. Hence, the theory of holism is also called *organicism*.

Many biologists and philosophers demand *something distinctly vital* in the organism to account for the structural and functional unity of the organism as a whole. The mere forces of inanimate nature and the mere organization of material particles, taken alone by themselves, do not give an adequate explanation of the nature of the organism. This theory is called *vitalism*. Some vitalists find this 'vital' element in a special kind of qualitative force or energy which is immaterial; others consider it to be material, but different from the ordinary mechanical, physical, and chemical forces.

Vitalism is often holistic, combining the structural and functional unity of holism with some kind of vital factor. Some vitalists, however, are at the same time merists; they accept the fundamental tenet of merism that the organism is ultimately the sum of its constituent parts, but add a vital element or factor or principle to the atomic or subatomic particles. Similarly, a holist need not be a vitalist; the non-vitalistic holist accepts the structural and functional unity of the totality-theory, but he admits nothing 'vital' as distinct from the ordinary inanimate forces.

Finally, according to the general teaching of *scholastic philosophy*, which is both vitalistic and holistic in the general meaning of these terms, that which gives life to an

organism and distinguishes animate from inanimate beings is a *vital substantial principle*. Matter and the vital principle are incomplete part-substances which, in their intimate and compenetrating union, constitute the *unitary living substance*.

We observe that these main general theories of life crisscross and overlap due to the fact that the starting-point for nearly all of them is biological mechanism. The *main theses of biological mechanism* are, *first*, that the organism is but the sum of its parts, i.e., it is essentially meristic, and, *second*, only mechanical forces are present in the organism, and living and nonliving matter are essentially identical. Holists and vitalists oppose either the first or the second thesis or both; some vitalists oppose only the second thesis or only that part of the second thesis which denies the difference between animate and inanimate bodies. Hence, the confusion and overlapping of theories.

Meristic Biological Theories

In general, we may divide the modern biological theories into *two main groups*, those advocating a form of merism and those advocating a form of *holism*. Each of these will be either *vitalistic* or *anti-vitalistic*.

Merism has its roots in the doctrine of atomism, materialism, and mechanism. These doctrines were in vogue among a number of Latin and Greek philosophers in ancient times and exerted their influence on modern biological theories.

Anti-vitalistic (Mechanistic) Merism

The first modern mechanist of importance was *Descartes* (1596—1650). His theory was a mixture of divergent views. The essence of all bodies, including organic bodies, is pure extension; this concept is mechanistic. Plant and animal bodies are not living; they are body-machines pure and simple.

External physical stimuli travel through these bodies by means of certain *spiritus animales* (animal humors or vapors), and the body movements result therefrom. Man's body is also a machine; but the spiritual soul is attached to it in the pineal gland at the base of the brain, and the body moves through stimuli or impulses received from the soul. The body itself has no life, nor is it an organized, integral whole vitalized by the soul; the soul alone really lives, is conscious, and has knowledge. Descartes, therefore, is a dualist, but also an antivitalistic, anti-holistic mechanist. P. Gassendi (1592—1655), J. A. Borelli (1608— 1679), H. Boerhave (1668—1738), and F. Hoffman (1660—1742) held similar views.

The *French empiricists* of the eighteenth century were entirely atomistic, materialistic, and mechanistic in their interpretation of life and living beings. Representatives of this group are J. de la Mettrie (1709—1755), P. H. d'Holbach (1723—1789), and P. J. Gabanis (1757—1808).

Toward the end of the eighteenth and in the beginning of the nineteenth century, vitalism came to the foreground. It seemed evident to many biologists that a radical difference existed between inorganic and organic bodies. On the other

hand, *chemistry* was placed on a sound scientific basis about the same time, and the mechanistic theory of life received a new impetus. Many biologists opposed the concept of 'vital force' and 'vital energy' and maintained that the general *physico-chemical forces* suffice as an explanation of the phenomena of life, even though a complete account of all organic processes cannot as yet be given. Among the group of scientists who upheld this general mechanistic view are J. C. Reil (1759—1813), J. Berzelius (1779—1848), F. Magendie (1785—1855), and C. Bernard (1794—1867).

The next period is that of *materialistic evolutionism*, brought on by Darwin's theory of general evolution. Extreme mechanism of a thoroughgoing materialistic type were propounded by T. H. Huxley (1825—1895), F. Büchner (1824—1899), J. Moleschott (1822—1893), K. Vogt (1817—1895), E. Haeckel (1834—1919), and many others.

Present-day biologists are more conservative in their views on the nature of organic life. Many of them, however, when given to theoretical discussions, advocate a *physico-chemical* interpretation of vital processes. They may admit that physical and chemical forces are inherent in matter and that some sort of 'efficient causality' exists in nature, but the general explanation advanced is that of a summative mechanistic merism.

Many biologists of our time recognize the fact that the *unity of the organism* is something unique and cannot be adequately accounted for by ordinary physico-chemical forces. They postulate the existence of certain *chemical units* which direct the organization of matter into an

organic whole and control its activities. The machine-concept, however, still prevails. Various names have been given to such hypothetical units as producers of 'life.' Among them we find the 'biogens' of Verworn, the 'idioblasts' of Hertwig, the 'biophorids' of Weismann, the 'pangenes' of de Vries, the 'organogenetic substances' of Wilson and Rable, and 'bioblasts' of Altmann, and the 'mitochondria' of Benda. At present, the tendency among such biologists is to identify these chemical life-producing units with the genes as the active agents of heredity.

C. Lloyd Morgan's theory of emergent evolution finds favor with a large number of modern philosophers. In the course of evolutionary progress, the theory states, some types of forces or beings arise or 'emerge' which are not the mere resultants of pre-existing forces; they are something new and unpredictable. Among these unpredictable 'emergents' are life and mind. 'Life' is thus conceived as a novel quality emerging from a special arrangement of nonliving matter, when the latter has arrived at a certain level of organization. The active forces, however, are still the ordinary physico-chemical forces operating in a fortuitous and mechanistic fashion, so that there is no essential difference between organic and inorganic bodies. Morgan's theory, therefore is a *moderate mechanism*, because it accepts no principle of vital activity distinct from material forces.

Vitalistic Merism

Vitalists all admit that organisms contain a *certain vital plus-something* which distinguishes organisms radically from inorganic bodies. Consequently, they attack the mechanistic position, maintained in the anti-vitalistic theories given above, which sees the difference between living and nonliving bodies to be a difference only of degree and not of kind. Meristic vitalists postulate some *special kind* of 'vital force,' 'vital energy,' or animate matter, to account for this difference; but they still cling to the concept that organisms are *meristic* in their constitution, i.e., they are the result of a mere additive summation of very small parts.

Old Vitalism assumed the existence of *vital energies* in the organism which do not belong to the order of mechanical, physical, and chemical forces of inorganic nature. 'Vital energy or 'biotic force' is responsible for the phenomena of irritability, sensibility, co-ordination and co-adaptability of living function and structure. It regulates and controls the physico-chemical forces active in the organic body; in many instances it opposes the action of these forces, whenever the latter tend to work against the welfare of the organism. The first to stress this vitalistic viewpoint in consistent fashion was A. Haller (1707—1777), although W. Harvey (1578—1657) had already postulated 'vital spirits' as operating in the medium of the blood.

Best known is the *School of Montpellier* as representative of Old Vitalism. According to M. Bichat (1771—1802), this vital or biotic force is immaterial and therefore not subject to physical laws. It acts in opposition to material force. The material forces active in the physical

world tend to disrupt and destroy the organism; the vital forces active in the organism oppose the destructive tendency of these material forces and tend to keep the organism alive. The theory is crystallized in the definition of life given by Bichat as 'the sum total of the forces that resist death.' This type of vitalism is ultra — spiritualistic.

Others have different views about the nature of this vital energy or force. J. B. van Helmont (1577—1644) calls it *archaeus*; C. F. Wolff (1733—1794), *vis essentialis*, 'essential force'; J. F. Blumenbach (1752—1840), *Bildungstrieb*, 'formative power.

Neovitalism, which arose in the latter half of the nineteenth century, differs from Old Vitalism mainly in this, that it considers vital energies to be subject to the general law of the conservation of energy.

J. Reinke, for example, maintains the difference between the organism and the machine and attempts to account for this difference by the presence of certain 'dominant forces or 'life dominants' which are immanent in living matter. Nevertheless, the meristic concept prevails. D. E. Cope and O. Lodge held similar views.

Some biologists claim that the vital forces existing in every type of organism are conscious, psychic factors; these conscious factors are present in every living cell. This theory is called psycho-vitalism; it is also meristic in character. Among the defenders of this theory or of a similar theory we find A. Pauly, R. H. Francé, G. Bunge, R. Neumeister, P. Jean, A. Wagner, E. Rignano, S. Butler, J. Ward, S. Eldridge, and others.

All these views, whether anti-vitalistic or vitalistic, are fundamentally meristic; that is to say, they consider the organism to be the result of nothing more than a *morphological aggregate* of cells, atoms, and subatomic particles and a *physiological summation* of partial processes. At most, the defenders of the meristic concept of organic life admit that efficient causality is at work, denying altogether the existence of anything like intrinsic purposiveness (finality, teleology) in the structure and function of organisms.

Holistic Biological Theories

Holists oppose the atomistic, meristic concept of organisms. Observation and experiment, they say, force us to admit that the organism is primarily and fundamentally a *whole, a unit, a totality*. The various parts of an organism are interdependent, and the organism as a whole dominates and directs the parts both structurally and functionally.

Most modern biologists are content to accept the wholeness of the organism as a scientific empirical fact and leave the matter rest at that. The philosopher has no quarrel with these scientists for restricting their discussions to empirical data. Many biologists, however, attempt an explanation of the unity manifested by the organism and thereby essay a solution of the nature of the unitary organism; they then leave the field of empirical science and become philosophers.

Philosophic holism, like philosophic merism, appears in two types, anti-vitalistic and vitalistic.

Anti-vitalistic Holism

Foremost among the advocates of anti-vitalistic holism stand the present-day *Gestaltists*, as represented by W. Kóhler. Kóhler and his followers look upon the organism as a Gestalt, a unitary being, which is dominated as a whole or totality by the pattern or configuration producing a harmonious interrelation of parts and functions, so that the whole is more than the mere sum of all of the structures and functions. In this contention the Gestaltists are undoubtedly correct. Nevertheless, according to these authors, there is no essential difference between a physical Gestalt, such as a system of electrical condensers with its resulting electrical field, and an organic Gestalt, such as is found in a plant, an animal, or a man. The same forces being operative in physical and organic unitary systems, inorganic and organic matter is essentially the same. Hence, this theory is mechanistic and anti-vitalistic; intrinsic finality is excluded from the organism. Somewhat similar views are held by M. Heidenhain, T. Haering, B. Fischer, H. Pxribam, and others. They are mechanistic holists.

Some holists, while rejecting the meristic concept of organic beings, find the explanation for the unity, individuality, and totality of the organism in the *subjective attitude* of our reason. Strictly speaking, our reason is constrained by its own subjective laws to view the organism as a purposive whole, but in reality the organism is devoid of all immanent finality; in its ultimate objective nature, the organism is conceived in mechanistic fashion. Advocates of

this view, though with individual differences, are M. Hartmann, H. J. Jordan, A. Meyer, and others.

It is an odd fact that these philosophic scientists recognize, on empirical grounds, the necessity of a holistic interpretation of the organism and yet refuse to accept some sort of principle or intrinsic factor to account for the 'whole-making tendency' observed in every organic being. They fail to see that a mechanistic explanation must inevitably end in merism.

VITALISTIC HOLISM

Vitalistic holism, as a general theory, stands in opposition to the mechanistic and meristic concept of organic life. It maintains the *specific difference between inorganic and organic beings* and seeks to explain the unity and wholeness of the organism by means of a *unifying vital factor or principle* distinct from the physico-chemical forces operating in the organic body. However, authors differ among themselves as to the nature of this vital factor or principle, and this difference gives rise to divergent theories.

J. S. Haldane must be classed among the vitalistic holists, but he seems to place the difference between the natural wholes, as found in inorganic and organic bodies, more in the attitude of the reasoning subject than in the bodies themselves.

Far more important is the theory of *Hans Driesch*. He was forced to relinquish the mechanistic viewpoint through his experimental studies on embryonic development. He

observed, when a newly-segmented egg of a sea urchin was halved, that each half developed into a complete individual half the size of a normal sea urchin. Reversely, when eggs were fused together, a single individual resulted from the fusion. Normally, of course, each half of the egg would develop into one half of the body; and each single egg would develop into a complete individual. The half-egg, however, and the fused egg possess the 'prospective potentiality' of forming the complete individual. Prospective potentiality is totally at variance with the machine-theory of the organism, because no machine, when halved, and no two machines, when united, ever show the least tendency to develop into a single machine. There exists a *purposive tendency* in the organism which far exceeds the inherent powers of inorganic matter and physico-chemical forces. No meristic summation of parts and processes can explain this fact. A distinct *vital principle* is required as a 'whole-making causal factor.'

Driesch calls this principle the *entelechy*, a term taken over by him from Aristotle; he uses the term, however, in an entirely new (and unwarranted) meaning. This entelechy, according to Driesch, has a reference to space, but does not exist in space; it is non-spatial, non-mechanical, and non-physical. Matter, in his view, is in no sense whatever the foundation of life. Life comes into the organism through the entelechy; the entelechy is non-material and supra-material in character. This Drieschian entelechy, then, does not combine with matter to constitute a unitary substance and nature, but is a non-spatial and supra-material something which controls the physico-chemical forces of inanimate

matter in the organism; organic matter is itself not 'living.' We have here a view which closely resembles Plato's horse and rider and Descartes' body-machine and soul.

In Driesch's theory, the entelechy is the formative agent which is responsible for the structural organization of matter. It is an operational principle; with Aristotle, it is primarily an entitative principle, the 'substantial form' or 'soul.' Besides the entelechy, Driesch accepted a directive principle, the *psychoid*, an organic factor which directs all vital processes according to specific needs of the particular organism and utilizes the physico-chemical energies of nature for the purposes inherent in the organism. Because of this *excessive dualism* in Driesch's theory, his entelechian vitalism fails to account for the evident unity and the individuality observed in organisms.

R. Woltereck calls the principle of unity the 'reactionnorm.' Similar to the entelechy of Driesch, it is an immaterial principle, and it possesses, even in the case of plants, fundamental psychic powers of knowing and willing.

According to J. von Uexküll, each cell is autonomous, a distinct unit for itself, a 'nerve-person.' Since the purposiveness of the organism is 'immaterial' and each cell is autonomous, the organism consists of matter and a number of vital immaterial principles.

A number of modern biologists call the principle of *unity hormé* (urge, drive), postulating its existence because of the purposive developmental evolution found in organisms. P. T. Nunn, W. McDougall, and C. von Monakov, among others, propounded the hormic theory of organic life.

The *élan vital* or 'life force' of H. Bergson is of a similar nature. It passes in creative evolution from one generation of living beings to another. This life force creates all species of living beings in the process of its evolution. All matter is thus endowed with an impetus of life.

These vitalistic theories represent a *functional* concept of organic life and as such fall short of a complete and adequate interpretation of organisms as unitary natures.

A number of biologists in the course of the history of biological science have demanded a vital principle which is an *objective immanent principle* as the factor responsible for the immanent purposiveness (finality, teleology) present in the structure and function of organic bodies. They are holistic vitalists who approach the hylomorphic theory of Aristotle and the scholastics in many points.

Among the older biologists belonging to this class are J. Stahl (1660—1734), C. Bonnet (1720—1793), and J. P. Muller (1801—1859). In our day, the immanence theory' is proposed by von Bertalanffy, A. von Gurwitch, P. Weiss, J. Schaxel, A. Putter, and K. Sapper.

Aristotelian-scholastic hylomorphism (Gr. *ύλη* matter, and *μορφή*, form), as a general theory of organic bodies, is vitalistic and holistic. It envisions the organism as follows. Every organism is a *unitary material substance*. This substance is composed ultimately of two incomplete substances or substantial part-principles, namely, *primordial matter* and the *vital principle*. The vital principle is also termed the substantial form or soul. Both part-principles are complementary to each other; together they constitute the *complete substance* of the plant or animal or

man. Primordial or prime matter is the *passive, determinable* factor, capable of being made into any type of specific body; it is the universal stuff of which all bodies, inorganic and organic, are made. The vital principle (substantial form, soul) is the *active, determining* factor in the organic body; it is the life-giving, organizing principle which 'informs' matter and builds it into the living body of a *specific type* of organism, for example, into an oak or a rose, into a dog or a snail, or into a man. Hence, all vital phenomena, present in any species of organism, proceed primarily from the vital principle. The real, fundamental *subject*, however, of all vital phenomena is neither the matter alone nor the vital principle alone, but the *substantial composite* of matter and vital principle. Both are united together in the most intimate union, thereby forming a single substance or *nature* which is the ultimate constitution of the organism and from which all structural developments and vital operations proceed. This 'nature' of the organism possesses an immanent tendency or purposiveness, typical of each species and particular for each individual, and it utilizes the physico-chemical forces present in the elements of the organic body to realize the inherent goal toward which it tends in virtue of its constitution. In as much as this theory is animistic (Lat., *anima*, soul), it is properly termed *vitalistic animism*.

Facts and Conclusions

In evaluating the facts of organic life, as revealed in biological research, we must not be swayed by any

preconceived scientific or philosophic theory. The facts must speak for themselves, and our conclusions must be based on these facts.

Perhaps the best way to arrive at a solution of the nature of organic life will be to examine the main theses of biological mechanism in the light of the discovered facts. There are, it will be remembered, two main theses; *first*, the organism is meristic, i.e., it is but the sum of its constituent parts; *second*, only mechanical (or physico-chemical) forces are present in the organism, and living and nonliving matter are essentially identical. The second thesis, it should be noted, consists of two parts.

IS THE ORGANISM MERISTIC?

Merism advocates the *machine theory* of the organic body. The summation of all the parts (subatomic particles, atoms, molecules, tissues, organs, etc.) accounts for all the structural and functional phenomena of what we call 'life.' There is nothing more to an organism than an aggregation of these parts and processes. This concept of the organism is *erroneous*.

The organism is *holistic* in its nature. A mere summation and aggregation would be similar to a heap of sand or a pile of bricks. Even a machine cannot be explained on the meristic basis of a summation of different pieces of metal. Consider the facts.

One of the most remarkable phenomena of the organism is its all-pervasive *unity of being*, manifested by the marvelous *co-adaptation of structure* and activity. Each

single cell possesses an intricately complicated structure. Some features of this structure are common to all cells, namely, the cytoplasm and the nucleus. So, too, every cell has functions which are the same as those of every other cell, namely, assimilation and dissimilation, growth and division. And yet, cells also possess individual and specific peculiarities, so that cells differ greatly among themselves. In multicellular organisms the cells group themselves into various kinds of tissues and organs; and these tissues and organs perform activities distinctively their own, over and above the general functions of their cells as the biological units of life. Again, cells, tissues, and organs group themselves into the higher unity of the *organism as an individual being functioning as a whole*.

The single cells, tissues, and organs are endowed with a certain *autonomy and individuality*. Each cell, as we know, has its own cycle of proper functions, the result of the activities of its various structural parts. In plants, the roots, trunk, bark, leaves, and blossoms have separate functions, so that each part is a unit in its own right. In animals, the bones, muscles, skin, glands, afferent and efferent nerves, sensory organs, and the brain manifest autonomy and individuality of structure and function; the stomach, for example, digests, the muscle contracts, the salivary gland secretes, the eye sees, the tongue tastes, etc. Yet all these types of apparatuses, notwithstanding their distinctive structures and functions, are not isolated and independent, but *interconnected and interdependent* as parts of the organism as a whole; and this interrelationship of whole and part constitutes the 'organization' of the organism.

Everything in the organism conspires toward the co-adaptation of all parts in the construction of the organism as a supreme unit. The autonomy and individuality of the cells, tissues, and organs is only *relative*, both in structure and in function.

The supreme law which governs the structure and functions of cells, tissues, and organs is the *need*, the *exigency*, of the type of organism of which they are the subsidiary parts. What kind of food material shall be digested and assimilated, depends entirely on the nature of the organism; the same kind of grass will be transformed into the flesh of a cow, a horse, a sheep, or an elephant, according to the needs of the animal that eats it. How far the reciprocal relationship of all parts of an organism reaches, can be seen from the fact that an expert zoologist can deduce, with a fair degree of certainty, the complete organism from a single typical organ or part. As an illustration, Milne-Edwards deduces the characteristics of a carnivorous mammal from its teeth. The teeth are such that the animal can eat flesh meat. The entire digestive apparatus must be of such a character and arrangement that flesh meat can be digested and assimilated; it will, therefore, deviate considerably from the structure of the digestive apparatus found in herbivorous mammals. In order to obtain flesh meat, the carnivorous animal must be able to capture its prey; hence, its muscular apparatus must be powerful and capable of a rapid expenditure of energy, so that the animal can be swift and sure in its movements. To fulfill this requirement, it must possess a skeletal arrangement with appropriate leverage in the

limbs. Swift movement demands a quick combustion of energy-providing substances in the body; quick combustion is possible only with a large supply of oxygen; a large supply of oxygen, in turn, presupposes deep inhalation of air and large areas of lung surface. In order that the oxygen can reach the muscles in ample quantity for quick combustion, the circulatory apparatus must permit the blood to travel rapidly through the entire system; the arteries, veins, and heart must be constructed accordingly. Then, too, a carnivorous mammal must be able to locate its prey at a distance; this requires acute senses of sight, hearing, and smell. Once the animal overtakes its prey, it must kill it; hence, it will have either strong legs with sharp claws, or strong jaws with sharp teeth, or both. The entire body, therefore, is built according to the requirements of the animal's being, all parts being *mutually dependent and harmoniously interrelated*.

The organism thus manifests an unmistakable morphological and physiological unity, *individuality, and totality*. The organism is primary; the structures and functions are secondary. The organism exists *for itself*; the structures and functions exist *for the organism*. The organism acts as a whole; the structures and functions are *subservient* parts of the whole. It follows, therefore, that merism is a false theory.

ARE ONLY MECHANICAL OR PHYSICO-CHEMICAL FORCES PRESENT?

We will leave out of consideration the theory that purely mechanical forces alone are present in the organism; no

one seriously defends this theory any more.

Some exponents of vitalism, both meristic and holistic, postulate the existence of *biotic or vital forces*, distinct from the physico-chemical forces of inanimate bodies, as present and operative in organisms. This vital force is assumed to be non-material in nature and operation, and it is through this 'vital force' that organisms are truly 'living.' The assumption of these ultra-spiritualistic vitalists is *unwarranted* and *erroneous*.

It is one of the triumphs of the biological research methods to have proved that the chemical reactions occurring in the cells, organs, and tissues of organisms are of the same *material kind* as those occurring outside the organisms in inorganic bodies. The heat generated in organic bodies is the result of an oxidation process which is the same as that occurring in any test tube or furnace. The electricity present in nerve action is plain electricity and can be measured by a galvanometer. All forces operating in the organism are material forces. In no instances has science been able to discover any kind of biotic energy or force distinct from the ordinary material physico-chemical forces and energies.

It is true, of course, that organic compounds are made in and by the organism, which the inorganic elements, of their own accord, never make. But this fact does not prove that 'vital forces' are at work; it merely proves that a totally different principle operates in the organism, utilizing the ordinary forces for its own purposes and in its own way. Laboratory technicians have succeeded in forcing the elements to unite in the formation of compounds which are

identical with organic compounds. We need but mention synthetic rubber, synthetic alcohol, synthetic perfume, synthetic urea, vitamins, hormones, etc.; the number of such synthetic organic compounds runs into the thousands, and the number is increasing day by day. These technicians use the ordinary inorganic forces to bring about such compounds. It is, then, a logical conclusion to assume that the same material forces, and not 'vital forces,' are at work in organisms.

We must agree, therefore, with the biological mechanists that only physico-chemical forces are operative in organisms. We do not agree, however, that biological mechanism is the true interpretation of the nature of the organism. Mechanism depends on the truth of its argument that physico-chemical forces *alone* account for *all* the phenomena of organic life. If so, then, of course, there is no essential distinction between living and nonliving bodies.

ARE LIVING AND NONLIVING MATTER ESSENTIALLY IDENTICAL?

Again, we must consider the facts. According to the tenets of biological mechanism, the ordinary physico-chemical forces, operating as *material efficient causes*, suffice to produce all 'vital' activities; there is no purposiveness (finality, teleology) present in the structures and functions of any organism. We contend that the biological facts contradict this basic assumption.

While it is true that the forces operative in organisms are the same as the material forces operative in inorganic beings, their *manner of operation* is radically different in

living and nonliving matter. Among inorganic substances, action is always *transient* (or *transitive*) in character. Transient action is the action in virtue of which one being influences and changes another being. The energies of light, heat, electricity, magnetism, physical impact, gravity, etc., are such that the goal of their influence is *outside* their efficient causality; they tend to change *other* bodies. A heated body tends to raise the temperature of a colder body; an electrified body tends to charge a neutral body; a body in motion tends to impart motion to the body with which it comes in contact; sodium and chlorine tend to change each other and form a salt; and so forth. Such action is always 'transient.'

On the other hand, the inherent tendency of all *vital* activity within an organism is *the organism's own development and perfection*. All vital activity originates in the organism, remains in the organism, is carried out by the organism, and has as its natural goal the well-being of the organism itself. Hence, vital organic action is rightly termed *immanent*. (Lat., *manere* in, to remain, reside in.) No matter how much the vegetative, sensory, and rational processes may differ, they are characterized by 'immanence.' Immanence or spontaneity of vital action proceeds from the *inner constitution* of the organism which reacts as a *whole* to outside agencies. Life is essentially self-perfection through self-development.

Why this radical difference between the actions of living and nonliving bodies? Immanence of action demands an adequate explanation. The only explanation the mechanists can logically offer is the constitution of the atoms and

molecules which form the organic body. These atoms and molecules, however, are forever the same, and so, too, are their physicochemical forces. Consequently, the manner of operation of these forces should also remain forever the same, whether they are operative in organic or inorganic bodies. Hence, the manner of operation of material forces should always be 'transient' and never 'immanent.' But vital action is 'immanent.' Biological mechanism, therefore, cannot explain the immanence of vital action. There must be, then, something 'vital' in the organism which makes the physico-chemical forces perform immanent actions.

Besides, *organic compounds* are the result of the *natural tendencies* operating within the organism. The inorganic elements have no natural tendency to produce such compounds. Outside the organism, the elements combine according to the general laws of affinity. Under these conditions, the elements tend to form rigid combinations with a stable equilibrium; the proteins and other organic compounds, however, are extremely complex and in an unstable *colloidal* state. That the principle operating in the formation of organic compounds is different from that operating in the formation of inorganic compounds, can be seen after the *death* of plants, animals, and men. The organisms decay, and the organic compounds dissolve, reverting again to the status of ordinary inorganic compounds and elements. If organisms and organic compounds were the effects of elements and their physicochemical forces alone, and not of some higher principle utilizing them, no sufficient reason can be assigned why such organic compounds should not continue

indefinitely in existence, even after 'death,' somewhat after the manner of a crystal. The fact of synthetic compounds is no argument in favor of the mechanistic theory. Synthetic compounds are *forced products*, made by technicians under laboratory conditions; we might stress the parallel by saying that the organisms, too, must have a technician in their laboratory, namely, a vital principle which forces the elements to enter into organic combinations against their normal tendencies.

One of the fundamental tenets of mechanism is the *denial of final causes* and purposiveness in organisms; *only efficient causes* are at work. This contention is easily disproved. Man is an organism. Our own consciousness is witness to the fact that *we act for a purpose* and do many things in order to *realize a future goal*. Practically all our social, commercial, educational, and industrial acts are done 'for a definite purpose.' We set a goal, realizable in the future, and then go about selecting and applying the means to make the goal an actuality. The goal is 'that for the sake of which' something is done, and to strive toward the realization of a goal is 'finality' or 'purposiveness.' Animals also display purposiveness, as when a cat pounces on a mouse, when a dog pursues a rabbit, when a bird builds its nest, when a bee builds its honeycomb, and so on.

Every organism is characterized by an *inherent natural purposiveness*. 'Ends' and 'purposes' permeate the structures and activities present in the organism. This inherent natural purposiveness follows a double course: the realization of the well-being of the individual and the preservation of the species.

That the realization of the well-being of the individual dominates the entire life history of an organism, should be evident to any unprejudiced observer. It manifests itself from the first to the last moment of the organism's existence. Consider the *organism's embryonic development*. The ovum and the sperm cell prepare themselves for fertilization by ejecting one half of the normal number of chromosomes, so that the normal number will again be restored through the fusion of the ovum and the sperm cell. If this halving were not done, each succeeding generation would have double the number of chromosomes found in the cells of the organisms of the foregoing generation; after a series of reproductions, the number of chromosomes would be so large, that the organism could no longer survive. Hence, the purposiveness of the maturation division. Once the parent cells have fused, the fertilized ovum begins to develop itself, *by its own innate power*, into a full-grown organism. This development, however, is not the result of a fortuitous concurrence of chance factors; it is the result of a definite and precise plan, carried out in a definite and precise *manner*. The fertilized ovum develops into a *specific type* of being. The original embryonic cell of an oak develops only into an oak; that of a cat, only into a cat; that of a man, only into a man. The various tissues and organs are formed, long before they can be of any possible use to the organism — legs, wings, nerves, stomach, eyes, heart, etc.; they are built for the *future*. And if it should happen, as it occasionally does, that the first two embryonic cells are split apart, the two cells do not develop into two half-organisms,

but each cell develops into a complete individual of that particular type; the entire structural plan of the organism is simply doubled and carried separately to completion. This prospective potentiality of the germ cell is one of the most remarkable features of embryonic life. It is as if one were to cut a machine in half, and each half-machine would then proceed to shape itself into an exact duplicate of the original machine. The purposiveness of the entire process of embryonic development is as apparent as that of an architect in planning and erecting a house, but with this difference: the house of the organism is built *by itself* from a single 'magic brick,' as Alexis Carrel so aptly puts it, which gradually fashions itself into kitchen, plumbing, windows, walls, rooms, telephone, and a million other items.

That the well-being of the individual also controls the *mature life* of the organism as an 'end' and 'goal' to be achieved, can be seen in the fact that it tends to *preserve its identity of being* under all circumstances. It adapts itself to its surroundings, fights off injurious agencies, repairs the damage done to its tissues, assimilates proper food and rejects unsuitable material, seeks pleasure and avoids pain. To perform these functions, the organism has the necessary equipment in its own body, furnished by itself.

The *preservation of the species* is another fundamental natural end or goal inherent in the organism. Whatever may be the type of plant or animal, the organism eventually arrives at a stage in its existence when it tends to reproduce itself by bringing forth an individual similar to itself. The method of reproduction varies, but reproduction itself is universal and is eminently purposive. Whether the

method of generation be asexual or sexual, there is perhaps no greater marvel in the world, viewed from a purely organic standpoint, than the wonderful arrangement of structure and function for the purpose in view. In bisexual generation the individuals of the species are grouped into two sexes, male and female. The generative organs of each sex, taken singly as male and female organs, have no meaning and significance for the individual possessing them. It is only in relation to each other, though in different individuals, that they have meaning and significance. Their inherent natural purpose, however, is unmistakable. The organs are made to complement each other, and so are the individuals possessing them. Each type of generative organ is insufficient of itself for reproduction; in conjunction with each other they achieve their obvious purpose — the generation of a new individual and the preservation of the species. Mating, gestation, care of the young, and so forth, are all subservient to this supreme purpose of organic life. A more patent and universal illustration of inherent natural purposiveness could hardly be found.

Action flows from a principle of action. Since the action of organisms is beyond the natural capabilities of ordinary atoms and their physico-chemical forces, vital action must flow from a *vital principle*. Vitalism, therefore, is the correct theory of organic life, and it must be a *holistic vitalism*.

There are various theories of holistic vitalism. Which one should be adopted? We claim that the theory of vitalistic animism is the one which gives the best explanation of all the facts.

Vitalistic Animism

The *cardinal points* of vitalistic animism (Lat., *anima*, soul) are these: Every organism consists of two ultimate constitutive substantial principles, matter and the vital principle, which are united together into a complete substance and nature. These points must now be established.

One of the ultimate constitutive principles of every organism, including man, is matter. 'Matter' is the basic stuff of which all bodies are composed.

Whatever we may think about the ultimate nature of 'matter,'¹ it should be obvious that every *organism consists of matter* and that matter is an ultimate constituent of the organic body. All organisms — plants, animals, and men — are 'spatial,' both as to the structures and their functions; the forces active in organisms are 'material' forces and as such are rooted in matter. Every biologist, whether mechanistic, meristic, holistic, or vitalistic, concedes this. Hence, matter is an ultimate constitutive principle in the nature of the organism.

Vitalistic animism, however, contends that we must also accept a second, equally important, constitutive principle in organisms, distinct from matter, namely, the vital principle. Without a distinct *vital principle*, co-equal with matter, the phenomena of life cannot receive an adequate explanation.

No effect can be greater than its cause, otherwise something would exist without a sufficient reason for its existence. Now, the activities and phenomena of organic life *exceed the inherent causality of inorganic substances*. One

cannot, by the wildest flight of fancy, conceive of sensory and intellectual knowledge, consciousness, and appetitive behavior, as phenomena directly resulting from the actions and reactions of atom complexes considered as such. Even the colloidal state of protoplasmic material and the formation of organic compounds cannot be adequately accounted for on the basis of ordinary chemical affinity between elements; much less the processes of nutrition and reproduction. The inherent natural purposiveness of organisms, in virtue of which they plan and build for future use, is a qualitative factor far beyond the capabilities of mere atoms and their aggregates. Above all, the dynamic unity of the organism as a whole, with complete subordination and co-adaptation of all structures and activities for the well-being of the individual and the preservation of the species, is something so unique, that it cannot receive its ultimate explanation in the grouping of billions of inanimate atoms fortuitously thrown together by the ordinary chemical, physical, and mechanical forces into an accidental chance product. Such an explanation would do violence to all the laws of reason.

Nor can the explanation be found in the *environment*. The circumstances of the environment are frequently very diverse, but the organisms preserve the identity of the individual and of the species intact. And where the environment is the same, we observe a great diversity of organic species living side by side. Hence, the conditions of organization are not the result of environment.

Since inanimate matter is incompetent to produce the marvelous effects observed in organic life, we must reduce

these effects to a causality distinct from the causality of matter and its forces. Organisms, it is true, consist of matter; and that is why matter must be considered as a constitutive principle of organic life. The matter present in organic bodies, however, is *organized* and *living*, and matter as such is incapable of producing this effect; hence, besides matter, we must postulate a distinct *vital principle*, from which the phenomena peculiar to living matter proceed, as a second constitutive principle of organic life.

Both constituent principles are *mutually irreducible*. There can be no question of this so far as concerns matter. The matter or basic stuff present in the atoms and elements exists in them prior to their entrance into the organism; matter, therefore, cannot be reduced to the vital principle. On its part, the vital principle cannot be reduced to the matter present in the atoms and elements. If it were reducible to matter, the vital phenomena themselves would be nothing more than manifestations of atoms and elements and their natural inanimate forces; mere atoms and elements, however, cannot adequately account for vital phenomena. Hence, the vital principle must be a reality distinct from matter and as such not reducible to it. It follows, then, that both matter and the vital principle are *ultimate; in their own line* as constituents of the organism.

Matter and the vital principle must be *substantial* principles. They are the constituent principles of the organism, and each organism is a substance. A substance is a being existing in and for itself and does not exist in another as in a subject. Such being the type of existence which the organism possesses, its ultimate constituent

principles must also be substantial, because every being is what it is through its ultimate constituent principles. If matter and the vital principle were not 'substantial' principles, the organism resulting from them could not be a 'substance.'

While matter and the vital principle are substantial and mutually irreducible, they cannot be said to be complete substances; on the contrary, they are *incomplete substances*. A substantial principle is said to be an 'incomplete' substance, when it must be united with a second substantial principle in order to constitute a complete individual being. Neither principle suffices of its own accord to constitute the complete individual being; but each principle is an intrinsic co-principle complementing the other, so that in their union they constitute the complete individual being. Every plant and animal and man is a complete individual being and as such a 'complete substance,' because it exists in itself and for itself and needs no other being or principle to complete it as a substance. If both matter and the vital principle were 'complete substances,' the organism would be a double-substance, a being consisting of two 'complete substances.' Under such circumstances, the two 'complete substances' would merely be allocated in juxtaposition along parallel lines without ever coalescing to form a single individual being or substance. Now, every organism, whether a plant, animal, or man, is a *unitary substance functioning as a whole*; it is not a double being consisting of a material substance and of a vital substance conjoined in some sort of harmonious relationship, but a *single substance* which is at one and the

same time *both material and vital*. No other view will account for the fact that the organism is a dynamic unit of vital action. Hence, matter and the vital principle, though substantial, cannot be 'complete substances,' but must be 'incomplete substances' or 'substantial co-principles' which, through a most intimate union, coalesce to constitute the organism as a single, individual, 'complete substance.' In consequence of this union, matter ceases to be inanimate and becomes truly vitalized; the result is *living matter* capable of the functions of life.

The organism is thus seen to be a *composite substance*, and the component ultimate realities are matter and the vital principle. Matter is the determinable, vivifiable reality, while the vital principle is the determining, vivifying reality. Matter is compenetrated by the vital principle and is transformed into living matter. When the vital principle vanishes from the organism, death supervenes, and the atoms and elements again return to the lifeless condition of inanimate substances through decay and decomposition. In its *ultimate constitution*, therefore, every organism is a single but *composite substance consisting of matter and a vital principle*.

This exposition of the cardinal points of vitalistic animism enables us to understand the characteristic phenomena of organic life. That an organism is a 'material' being, is due to the fact that *matter* is an essential constituent, because matter exists in the atoms and elements as the ultimate basic stuff of which they are made and which they carry into the structure of the organism when they become an integral part of it. Because matter enters into the organic

composite, the forces operative in the organism are the ordinary chemical, physical, and mechanical forces present everywhere in the world. The processes of vegetative, sensory, and intellectual 'life,' however, considered precisely as such, are superior to the forces and activities normally present in matter and must be attributed to a principle fundamentally and essentially distinct from matter, namely, to the *vital principle*. It is because of the presence of a vital principle in organisms that matter and its material forces are capable of forming organic compounds in a colloidal state and of being the bearers of vital activities far beyond their natural capacities. And it is because of the essential differences in vital principles that plants, animals, and men represent different *levels of life* and that there are so many *distinct species* among the plants and animals. As regards 'matter,' they are all alike; but as regards their 'vital principles,' they are specifically different types of organisms, because the vital principles differ specifically among themselves. Without matter, there would be no 'organisms,' but spiritual beings. Without the vital principle, there would be no 'living matter,' but inanimate chemical substances. Without the specific differences between vital principles, there would be no 'specific types' of organisms, but only a single species.

We therefore define the *organism* as a substance consisting of *matter animated by a vital principle*.

The Plant Soul

In common parlance, the vital principle is referred to as the *soul*. In accordance with this usage, it is customary to speak of a 'plant soul,' an 'animal soul,' and a 'human soul.'

One of the essential attributes of the plant soul is its *unicity*. By the unicity of the plant soul we mean that each plant has but a *single* soul as the animating principle of the entire organism. Unicity follows as a logical consequence from the nature of the plant as a unitary substance. All structures and activities of the plant serve to promote the well-being of the organism as a whole. The plant acts as a dynamic unit throughout its life. Hence, the soul, the principle of all vital phenomena in the plant, must be one, not two or many.

Since the soul of the plant is singular, it is actually undivided. It is not, however, indivisible like a spiritual entity. On the contrary, the plant soul is *indirectly divisible* and therefore *potentially multiple*. There is ample evidence for this statement in facts. A cell can be cut into pieces, and each piece, provided it contain a portion of the nucleus, will rebuild itself into a complete cell and continue to live. The slips of many plants, for example, of the geranium, the willow, etc., will grow roots and develop into normal plants. The explanation seems simple enough. The plant soul, though one and undivided, is potentially divisible and multiple. Once the division of the plant body is made, the soul is also divided with it and accompanies the divided parts; each animated part then continues to function as a whole plant. There is no need for assuming that a new soul is generated in the separated parts. When a shoot from an apple tree is grafted onto a pear tree, the shoot of the apple

tree becomes one with the pear tree, but it lives as a parasite, merely using the sap furnished by the roots and stem of the pear tree; two souls are present in the same tree, one an apple-tree soul and the other a pear-tree soul, each functioning in its respective part of the tree as a whole.

The plant soul is *material*, in the sense that it is *totally immersed in matter and intrinsically dependent on matter*. We cannot, of course, perceive the plant soul itself. In passing a judgment on the inner nature of the plant soul, we must conclude from its activities to its essence. Now, there is nothing in the activities of the plant to indicate immateriality.

Everything about the plant is on a material plane, both as regards structure and activity. If the plant soul were immaterial, a mere division of the matter (body) of the plant should not result in two living plants; one part might remain living, but the other part should be dead. It is true that one cannot make a division of the more highly organized plants, so that both parts remain living after the division. Nevertheless, plants are plants, essentially alike in nature, no matter to what particular species they belong. Hence, the fact that such a division, with both parts remaining alive after the division, cannot be made on all plants, is no valid objection against the argument. We must conclude, therefore, that the plant soul is essentially material.

The Animal Soul

When we speak here of the 'animal soul,' we restrict our remarks to the soul of the brute animal, not to man.

Like the plant soul, the animal soul is a *single soul* animating each individual animal. Each insect, bird, fish, mammal, etc., is an individual being acting as a unit of structure and activity. There cannot be two souls in the animal, one controlling the vegetative structures and activities as a vegetative soul and the other controlling the sensory structures and activities as a sentient soul.

While it is true that some organs and functions of the animal are characteristically vegetative and others characteristically sensory, there is no absolute line of demarkation separating the one type from the other, so that two distinct souls, one vegetative and the other sentient, would be demanded. All tissues and organs, whether they belong to the vegetative or sensory system, derive their origin from one and the same parent cell. From the very beginning of embryonic development, the plan of a *vegetative-sensory* organism prevails. Both types of organs and tissues, vegetative and sensory, are fashioned from the same cells and in the same process. Throughout the life history of the animal the formation, growth, and repair of the sensory system is carried out by the vegetative processes of the animal; *vice versa*, the requirements of the vegetative system, such as the procurement of proper food, etc., are taken care of by the sensory activities and instinctive actions of the animal. In this manner, all structures and activities collaborate conjointly and harmoniously toward the realization of the vegetative and sensory life of the animal as a unitary organism. This

complete unity of being demands a single vital principle or soul.

It should be obvious that the *animal is specifically superior* to the plant. Cognition and appetite exceed in perfection anything found in the activities of the plant. Hence, the animal soul is superior to the plant soul. Since, then, there can be but a single soul in the animal, the conclusion is inevitable that the animal soul is a vital principle which, together with matter as a co-principle, is the active principle for both vegetative and sensory functions, so that the capacities of the lower vegetative soul are contained in the superior animal soul. All structures and activities, vegetative as well as sensory, have as their ultimate goal and purpose the well-being of the animal as a single, unitary organism. If it is difficult at times, especially among the lower forms of life, to distinguish accurately between animals and plants, that is due to the limitations of our knowledge; organisms capable of sensory perception are animals, not plants, no matter how primitive in organization they may happen to be, and as such must have a sentient soul.

Like the plant soul, the animal soul is one and undivided, but *indirectly divisible* and *potentially multiple*. Some animals, for instance, the hydra and others, can be divided into sections, each section then developing into a complete individual of the same species. By dividing the body of the animal, the soul is also divided, though indirectly, and multiplied. In technical phrasing, the soul is said to be indivisible *per se* (as such, directly, in so far as its own being is specifically concerned), but divisible *per accidens*

(incidentally, indirectly, in so far as the body of which it is the animating principle is concerned); what is primarily and directly divided is the whole body, and the soul is incidentally and indirectly divided with it.

Furthermore, like the plant soul, the animal soul is *totally immersed in matter and intrinsically dependent on matter*; consequently, it must be said to be material in its essence. All sensory organs and functions are spatial and material in character; even the higher senses of imagination and memory deal only with images that are based on quantitative extension in some form. Not a single activity of the animal is in any manner free from matter and material conditions. We have no reason, therefore, to attribute immateriality to the animal soul. This will become clearer when we analyze the rational activities of man.

It is imperative to view the question of the plant and animal soul from the angle of their relationship to the organism as a whole. It cannot be stressed too much that it is the *complete organism*, the individual plant and individual animal, which is generated, lives, and dies, and not the matter and soul as such. Matter and soul (vital principle) exist solely for the organism of which they are the constitutive principles. When a new plant or animal is generated, the soul is evoked out of the potentiality of matter through the agency of the generating cause (the parent organism or organisms). When a plant or animal dies, its soul simply perishes and is reduced to the potentiality of matter. The plant and animal souls, therefore, do not survive the death of the organism; they are *not immortal*.

Philosophic Concept of Life

Though 'life' is a readily distinguishable natural phenomenon, it has always been found to be difficult to define. Many definitions have been offered by savants, but most of them are unsatisfactory in one respect or another. These definitions are usually restricted to organic life and as such fail to define *life in general*.

The true definition of 'life' must express that distinctive attribute which is essential to every type of vital activity, whether it be vegetative, sensory, rational, or divine. We must not overlook the fact that 'life' is also predicated of *God and His activities*, and that primarily and in an infinite manner. The definition of life, therefore, must exclude everything which would be inapplicable to the life of God and must include the distinctive attribute which characterizes essentially all 'life,' creatural and divine. Obviously, then, since God is not an organic being, the definition, in order to be adequate, cannot be based solely on the vital activities of organic beings, such as plants, animals, and men. And yet, organic beings possess true 'life,' so the definition must apply to them as well as to God. Similarly, since the life of organisms involves qualitative and quantitative 'change,' while the life of God involves no change at all, the definition of 'life' must neither include nor exclude change, but must express that mark of vital activity which is compatible with both the presence and absence of change.

Our analysis of organic life has shown that there is one distinctive attribute common to the activities of vegetant,

sentient, and rational organisms, and that is *immanence*. 'Immanent action' distinguishes the vital activity of organic beings from the 'transitive action' of inorganic, nonliving beings. Now, the life of God is also characterized by 'immanence of action.' All the activities of God have their origin, permanence, and goal in the being of God, because they are identical with His divine substance. Hence, 'immanence of action' is the essential attribute common to the life of organic creatures and of God; and it is the *only essential attribute* common to every type of life.

Consequently, *life is immanent action*. And a living being is one endowed with immanence of action. Such is the definition of life and of living beings given by Aristotle and St. Thomas Aquinas centuries ago.

What has been said about organic life and the vital principle, should assist us in understanding man and his soul.

Summary of Chapter XIX

The philosophic psychologist endeavors to arrive at an understanding of man's nature through a study of vital activities.

1. *Nature of Organic Beings.* The theory of merism contends that the organic body is an aggregate resulting from the additive summation of its smallest parts. The theory of *holism* views the organic body as an integrated whole which in its totality is more than the sum of its parts. The theory of *vitalism* sees something distinctly vital in the organism and demands a vital element or factor or principle to account for the 'life' of the organism. Merism may be vitalistic or antivitalistic; holism may be vitalistic or anti-vitalistic.

2. *Meristic Biological Theories.* Merism occurs in two types, anti-vitalistic and vitalistic. *Anti-vitalistic merism* advocates the view that the organic body is a machine actuated solely by physico-chemical or mechanical forces. Vitalistic merism postulates some special kind of 'vital force,' 'vital energy,' or animate matter to account for the difference between organic and inorganic bodies.

3. *Holistic Biological Theories.* Holism opposes the atomistic, meristic concept of the organism. It is either anti-vitalistic or vitalistic. *Anti-vitalistic holism* admits that organisms are integrated wholes functioning as units, but does not see any essential difference between inorganic and organic bodies. *Vitalistic holism* maintains the specific difference between inorganic and organic bodies and seeks

to explain the unity and wholeness of the organism by means of a unifying vital factor or principle distinct from the physico-chemical forces operating in the organic body.

4. *Facts and Conclusions.* Biological mechanism is based on two main theses: first, the organism is meristic; second, only mechanical or physico-chemical forces are present in the organism, and living and nonliving matter are essentially identical.

The first thesis is false. The facts show that there exists in the organism an all-pervasive unity of being; the structures and functions are interconnected and interdependent; the law governing structure and function is the need, the exigency, of the organism. The organism is a morphological and physiological unit and individual acting as a whole. *Holism*, not merism, is characteristic of the organism.

The *first* part of the second thesis is correct. Science has discovered no 'vital force' or 'biotic energy' distinct from the ordinary physico-chemical forces.

The *second* part of the second thesis is false. There exists an *essential difference* between inorganic and organic bodies. The action of inorganic bodies is always 'transient,' that of organic bodies is immanent.' Organic compounds are the result of the natural tendencies operating within the organism, while inorganic elements show no tendencies to form such compounds. Vital activity is characterized by an inherent natural purposiveness, as can be seen in the realization of the well-being of the individual and in the preservation of the species. Such conditions demand a vital principle.

Holistic vitalism, therefore, is the correct theory of organic life.

5. *Vitalistic Animism*. The theory of vitalistic animism gives the best account of the nature of the organism. Its cardinal points are these: Every organism consists of two ultimate constitutive principles, matter and the vital principle, which are united together into a complete substance and nature.

Matter is one of the ultimate constitutive principles of the organic body, because the organism consists of material atoms and utilizes material forces.

Besides matter, and distinct from it, the *vital principle* is an ultimate constitutive principle of the organic body, because the activities and phenomena of organic life exceed the inherent causality of inorganic substances. They must proceed from a principle different from matter and its forces.

Matter and the vital principle are *mutually irreducible*.

Both are *substantial* principles, because the result of their Union is a substance. Both, however, are *incomplete substances*; neither suffices to constitute the complete individual being. If both were 'complete' substances, the organic body would be a double-substance and it could not be a unitary substance functioning as a whole.

In its ultimate constitution, therefore, every organism is a *composite substance consisting of matter and a vital principle or soul*.

6. *The Plant Soul*. It is singular and actually undivided, but it is indirectly divisible and potentially multiple. It is

material, in the sense that it is totally immersed in matter and intrinsically dependent on matter.

7. *The Animal Soul*. It, too, is singular and actually undivided, but indirectly divisible and potentially multiple. Since cognition and appetite are functions superior to the vegetative functions of the plant, the animal is specifically superior to the plant. The animal soul is also material, because sensory organs and functions are spatial and material. Being material, neither the plant nor the animal soul can be said to be immortal; they perish with the death of the organism.

8. *The Philosophic Concept of Life*. The true definition of 'life' must express that distinctive attribute which is essential to every type of vital activity, creatural and divine. This attribute is 'immanence of action.' Hence, *life is immanent action*.

READINGS

Bittle, Celestine N., *From Aether to Cosmos*, Ch. 12, 13. —Aristotle, *On the Soul*. — St. Thomas Aquinas, *Contra Gentiles*, IV, c. II. —McDougall, William, *Modern Materialism and Emergent Evolution*. — Driesch, Hans, "The Breakdown of Materialism," in *The Great Design*, ed. by F. Mason. — Brennan, R. E., *General Psychology*, pp. 50 —71. — Nordenskiöld, E., *The History of Biology*. — Van der Veldt, J., "The Evolution and Classification of Philosophical Life Theories," in *Franciscan Studies*, June and September, 1943.

1 'See the author's *From Aether to Cosmos* (Bruce, 1941), pp. 288—290, for an explanation of 'primary' and 'secondary' matter, and Chap. 12 and 13 for an elucidation of hylomorphism and the hylomorphic theory. In the present context we are not concerned so much with the existence of 'matter' as with the nature of a 'vital principle' distinct from matter.

Chapter 20

THE SOUL OF MAN

FOR MANY BIOLOGISTS AND PSYCHOLOGISTS THE TERM 'SOUL' HAS a bad taste. They either deny the existence of a soul in man or ignore its presence. At best, they contend; the soul is an intangible reality which cannot be perceived by introspection or subjected to scientific investigation by means of laboratory experiments. Hence, in their opinion the soul, if it exists at all, is a negligible factor in psychological experience and can very well be left out of consideration.

The philosopher disagrees with this superficial attitude. It makes a tremendous difference in our concept and understanding of 'the whole man,' if he has or has not a soul. If he has no soul, our understanding of man is beset with a thousand difficulties and is made practically impossible. If he has a soul, the mystery concerning man's vegetative, sensory, and intellectual life, and also the mystery concerning his origin and destiny, can be cleared up, at least within the limits of human knowledge.

Man an Integral Organism

Descartes was mistaken, when he proposed the doctrine that an organic body, including that of man, was a 'machine' composed of atoms and acting solely with the movements of atoms. As we have already pointed out, the mechanistic view fails to explain the main phenomena of organic structure and function observed in every type of living being. The vegetant and sentient organisms are of an order differing essentially from inorganic substances. Organisms demand a vital principle or soul.

Man, too, is an organism, and he is an *integral organism*.

Like the plant, he has vegetative organs and functions; like the brute animal, he has sensory organs and functions; and, exclusively typical of himself, he has the rational activities of intellection and volition. Contrary to the theory of Descartes, however, man is not a double-substance, consisting of a material substance (the body) and a spiritual substance (the rational soul), but a single, unitary substance, an integral organism. As in the case of the brute animal, his vegetative and sensory structures and activities are not split apart, so that they must be referred to distinct vital principles; they co-operate in perfect harmony, and one set is dependent on the other in being and in operation, so that it is evident that both sets of structures and activities must be referred to *one and the same vital principle*. Man, therefore, so far as his vegetant and sentient life is concerned, has a *vital principle or soul* which is vegetant-sentient.

Then what about man's *rational activities*, intellection and volition? Are they reducible to sensory activities? They are not. They are of a higher order and as such must derive

their origin from a higher principle. An ordinary vegetant or sentient soul cannot give issuance to the products of intellection and volition; otherwise it would be necessary to admit that a cause could produce something superior to its own capabilities. The rational activities of man demand a principle superior to the vegetant and sentient soul, a *rational vital principle*.

Apparently, rationality introduces an ultra-dualistic division in man, similar to that of Descartes. Such a division, however, would be contrary to the nature of man as an integral organism. Man is not a double- being, vegetant-sentient and rational, but a single *vegetant-sentient-rational being*. Our entire discussion of man's being throughout this book emphasized this important fact. There is no absolute cleavage between rational life and vegetant-sentient life in man; they are interrelated in many ways. Bodily health and illness affect intellection and volition. Emotions, as we know from personal experience, exert a profound influence on thinking and willing. Sensory perceptions and images are the necessary starting point for the formation of ideas by means of intellectual abstraction, according to the well-known axiom that 'nothing is in the intellect which was not first in the senses.' On their part, intellect and will to a very great extent guide and control the senses in their operations, especially imagination and memory. Ideas are clothed in the habiliments of sensory images and words. The intellect can think of material things and sense qualities, but not without a previous presentation by the senses; if a certain sense is missing from birth, as in a person born blind, the intellect is incapable of forming ideas

of the things or qualities which are normally perceived by this sense. The will desires goods which pertain to the vegetative and sensory order as well as those which pertain to the rational order. The will controls the members of the body through the voluntary or striped muscles. This mutual influence of activities would be impossible, if there were an absolute cleavage between the vegetant-sentient principle and the rational principle in man. The vegetant-sentient part of man's being could not influence the rational part, nor could the rational part influence the vegetant-sentient part; each part would be restricted to its own specific sphere of action. As it is, there exists a most intimate relationship of mutual influence between the two parts, with the result that man is indeed an integral organism, a single, complete, unitary being.

Consciousness also bears witness to this fact. The pronoun *I* expresses the personal, rational part of man; that much is clear. Much more, however, is referred to the *I* or *Ego* than purely intellectual and volitional acts and states. Statements like the following are very frequently made: 'I have grown in height and increased in weight; I have a good digestion; I feel cold; I have a stomach-ache; I see a house across the street; I hear the radio playing a symphony; I am imagining the scenes of my home town; I remember the friend I met last week; I have an idea of a perfect circle; I desire to be virtuous; I love God.' Such statements are not made in a figurative sense; they are intended as expressions of literal facts. Factually, therefore, vegetative, sensory, and rational acts and conditions are referred to the self-same Ego without restriction or

discrimination, as vital activities of *one identical organism*. The same organism digests, senses, and thinks. The reference of all functions to the Ego would be inexplicable, if man were not an integral organism; and man would not be an integral organism, if the vegetant-sentient activities proceed from a vegetant-sentient principle and the rational activities from a rational principle, both of which are fundamentally distinct realities.

The conclusion to be drawn is evident. There are not two vital principles or souls present in man, one vegetant-sentient and the other rational. Nor has man a body (matter) animated by a vegetant-sentient soul, like the brute animal, to which a rational principle is somehow attached. Man is a *rational animal*, and the rational principle with its intellect and will is an integral part of his nature. Being an integral organism, functioning throughout as a dynamic unit, man can have but a single soul. This soul is not only endowed with the powers of vegetancy and sentiency, but also with the powers of rationality. Hence, the soul of man is a *single rational soul* which includes the lower functional capabilities of the vegetant soul as found in the plant and of the sentient soul as found in the brute.

In scholastic terminology, the vital principle or soul is said to be the *substantial form* of the living body. The 'substantial form' is defined as 'the determining principle which, by uniting with the matter which it actuates, constitutes a complete substance of a definite species.' Man, of course, is a specific type of being, different from inanimate chemicals and from plants and brute animals. Matter, the material coefficient of the organism, is not the

principle which brings about the specific differences existing in these types of being, because matter, due to the metabolic processes going on in the organism, is subject to continuous change, while the organism preserves its *specific identity* throughout all material change. The vital principle, or soul, or substantial form, therefore, is the determinant responsible for the placing of an organism in a definite species. Hence, the *rational soul* is the 'substantial form' of the human organism, because it is precisely through his rationality that man belongs to the 'human species' as distinct from that of plants and brutes.

A number of terms have now been used to designate the specific determinant of organisms — 'vital principle,' 'soul,' 'entelechy,' and 'substantial form.' Fundamentally, they all mean the same thing, because they represent the same essential determining reality. The rational soul is the *ultimate ground or source* of all vegetative, sensory, and rational life in the human organism, making man to be precisely 'man.'

If we wish to *define* the *human soul*, we can define it as the *vital principle of the human organism, or as the substantial form of the human body*. Aristotle defines the soul as "the first act [first grade of actuality, form — Author] of a natural body possessed potentially of life."¹ These are technical definitions, couched in philosophical language. In a descriptive manner, we can define the human soul as the *ultimate principle in man in virtue of which he lives, senses, thinks, and wills*.

The Spirituality of Man's Soul

Spirituality is the same as *immateriality*. Something is said to be 'material' for one of two reasons: it is either composed of matter as an ultimate constituent of its essence; or, though not composed of matter itself, it is intrinsically dependent on matter, so that it cannot exist and act except in conjunction with matter. Reversing the concept, a thing is 'immaterial' or 'spiritual,' if it is *neither composed of matter nor intrinsically dependent on matter*.

Every subatomic particle, every chemical element and compound, and every organism is material, because matter is an essential constituent of their being; they are composed ultimately of matter. Man, therefore, considered in his entirety as an integral organism, is a 'material being.' Plant and animal souls are not composed of matter itself, because they are co-principles *with* matter and are conjoined *with* matter to constitute the ultimate nature and substance of the organic body; but these souls, as we have seen, are totally immersed in matter and intrinsically dependent on matter, so that they cannot exist and act except in conjunction with matter. Hence, plant and animal souls are essentially 'material' realities.

Man's soul, however, is *essentially immaterial and spiritual*. Man's soul is *not composed of matter*, because, like the plant and animal soul, it is a co-principle *with* matter as an ultimate constituent of the human organism. It can, therefore, only be a question of whether or not the soul is 'intrinsically dependent' on matter in its essence and operation. If the human soul is material, that is to say, if it is

intrinsically dependent on matter, then it must conform absolutely to the capabilities and conditions of material forces and energies. Its operations could never transcend these capabilities and conditions, *not even in a single instance*, because these forces and energies would be the immediate causes of the operations as effects, and no effect can transcend the level of its cause. Hence, if it can be shown that the operations of the human soul actually *transcend matter* and its capabilities and energies, then the essence of the human soul must be intrinsically independent of matter and as such immaterial and spiritual. This conclusion follows necessarily from the principle: As the essence, so the operation, and as the operation, so the essence. We claim that *some* operations of the human soul plainly transcend matter and the capabilities and conditions of material forces and energies.

Thinking and Energy. If the soul of man is material in nature, then thinking is a material operation. Thinking must then be some sort of sensory function, on a par with seeing, hearing, imagining, and so forth. Being material, there should be a consumption and transformation of material energy in every act of thinking, because such an act would involve metabolic changes in the nerve tissues which serve as the material substrate for sensory function. The evidence, however, is entirely against such a view. Thinking, so far as scientists have been able to discover, does *not increase metabolism nor consume energy*. In this regard, Alexis Carrel states: "Intellectual work, strange to say, does not increase metabolism. It seems to require no energy, or to consume a quantity of it too small to be detected by our

present techniques. It is, indeed, an astonishing fact that human thought, which has transformed the surface of the earth, destroyed and built nations, discovered new universes in the immensity of the sidereal spaces, is elaborated without demanding a measurable amount of energy. The mightiest effort of our intelligence has incomparably less effect on metabolism than the contraction of the biceps when this muscle lifts a weight of a few grams. The ambition of Caesar, the meditation of Newton, the inspiration of Beethoven, the passionate contemplation of Pasteur, did not modify the chemical exchanges of these great men as much as a few bacteria or a slight stimulation of the thyroid gland would easily have done.”² Provided these scientific findings are correct, they prove that thinking, precisely as such, is not a material process but an immaterial operation. Whatever minute metabolic changes might occur, could be attributed to the formation of images which normally accompany all acts of thinking.

Intellection and Sensation. It is a common experience that the senses, after strong stimulation, are incapable of registering the impressions of weaker stimuli for a certain period of time. A loud report makes the ear insensible to faint sounds; a glance into the sun blinds the eye for a while to ordinary rays; a strong odor affects the sense of smell to such a degree that a weak fragrance remains unperceived until a certain time has elapsed. All senses act in this manner. The reason is simple. Nerve action is subject to the law of assimilation and dissimulation, because energy is consumed in nerve action, and energy is produced by

means of a chemical breakdown of the material of nerve tissue. The stronger the stimulus, the stronger the nerve action; the result is, that an amount of energy greater than usual is expended. Before the sense organ can respond to weaker stimuli, this expended energy must be restored by a counter-process of assimilation, and it takes a certain amount of time for the metabolism of the nerve tissue to bring the organ up to its former level of efficiency.

The character of intellection is radically different. When the intellect is occupied with ideas and truths of great clarity, sublimity, and magnitude, its understanding of ideas and truths of inferior scope and importance is not impeded. On the contrary, the insight into major truths facilitates the simultaneous insight into minor truths; no lapse of time is required for the intellect to pass from the one type to the other. Yet, if intellection were a material process, intrinsically dependent on material nerve tissues and organic structures, metabolic changes would of necessity occur, and a certain amount of assimilation would have to take place, before the intellect would be capable of perceiving ideas and truths of lesser clarity, sublimity, and magnitude. The character of intellection thus plainly indicates that intellection is of an order different from sensation and is *exempt from the conditions of materiality*. Intellection is, therefore, an immaterial operation. Aristotle³ already called attention to this fact and used it as evidence of the essential difference between intellect and sense.

Of course, man being an integral organism, the intellect and its operations are not completely isolated from

concomitant sensory processes. 'Mental fatigue' results from muscular tension which is usually present when lively interest is aroused.

Universal Ideas. Man acquires his intellectual knowledge of the world and its objects through the mental process of 'abstraction' from sensory images, and these images are derived from impressions made on the sense organs and the brain. Sense objects are material objects, and sense organs are material organs; both are, therefore, affected by the conditions of materiality. Every material object in the world is a concrete individual object, determinately circumscribed and particularized as to quantity, quality, space, and time. What I perceive with a sense, for instance with sight, is always a 'this' and 'that,' an individual object which is affected by a determinate quantity (a certain size, weight, age, etc.), which possesses definite qualities (a certain color, warmth, energy, etc.), and which exists in a determinate place (in the sky, on the ground, in New York, etc.) and at a determinate time (now, today, yesterday, etc.). For example, if I perceive a dog, it is always an individual dog; and this individual dog is particularized as to size, weight, age (quantity), as to breed, sex, color (quality), as to his whereabouts (place), and as to when he exists and is perceived (time). Sense impressions and images, therefore, are concerned solely with *individual objects in particularized material conditions*.

Intellectual knowledge consists of universal ideas. Universals are representations of *class natures*, and as such apply to the whole class as a class and to each individual belonging to the class. They are divested of all

particularizing determinations of quantity, quality, space, and time. My idea of 'animal,' for example, is that of a 'sentient organism.' It is a *generic* idea, not the image of an individual animal; it applies to all animals as a class, because all are included in the idea 'sentient organism,' and also to each individual animal belonging to this class, because each one is a 'sentient organism.' It thus includes all individuals and types of dogs, cows, eagles, sharks, men, etc., without any consideration of the particularizing determinations found in them as individuals. Universal ideas, therefore, are *not material sensory images*. No material image of an 'animal' can include within itself at one and the same time the representations of a dog, cow, eagle, shark, ant, snail, and man, as the idea of an 'animal' does. Only individual animals exist in nature, and our sense impressions and images can represent only individuals, not a genus. Universal ideas, since they represent class natures divested of material conditions, must be immaterial. As a consequence, the intellect which elaborates universal ideas through abstraction from sensory images must also be immaterial. If the intellect were intrinsically dependent on a material organ, it could not surmount the conditions of materiality inherent in sensations and images, and universal ideas would be impossible. The fact that we have universal ideas proves that the intellect is an immaterial power, intrinsically independent of matter.

Ideas With Supra-Sensuous Content. Images are sensory representations of material objects and qualities; as such they are material in nature. If ideas are not spiritual, they also are nothing more than sensory representations; and in

that case, they cannot represent supra-sensuous realities, because the effect cannot be of a nature superior to its cause. We have, however, numerous ideas which represent supra-sensuous realities. Such are the ideas of 'justice,' 'law,' 'freedom,' 'truth,' 'possibility,' 'immortality,' 'spirituality,' 'soul,' 'God,' and a host of others. The contents of these and similar ideas are not representations of physical objects and qualities which can affect a sense organ with their stimuli. They cannot, therefore, be perceived in a sensory manner. But if ideas were essentially sensory and material in nature, then it would be impossible for us to have ideas of these supra-sensuous and spiritual realities. Our intellect could not think of such realities, because it would be a material power absolutely restricted to the representations of material things. We do, however, think of them, form ideas of them, speak and write of them. Whether the contents of such ideas are actualities or not, is beside the question. The important thing, though, is the fact that our intellect in its ideas is capable of *transcending matter and material realities*; and only a power which itself transcends matter and material realities is capable of such an act. Hence, the intellect must be intrinsically independent of matter, i.e., spiritual.

The Intellect and the Future. Sense organs are here-and-now instruments of sensory knowledge, dependent on the stimuli which proceed from objects at a specified time from a specified place. The composite image of the synthetic or central sense, elaborated from sensations, is similarly characterized. The imagination is less restricted, since it can combine various elements of present and past

sense impressions and images into new images. The imagination, however, is dependent on the synthetic or central sense for its materials. In some form or other, therefore, all senses are restricted in their operations to materials furnished by objects existing in the present or which have existed in the past. The future is barred to the senses; the sensory powers cannot elaborate images of future events, because future events cannot send stimuli to the sense organs existing in the present, otherwise a non-existent cause would produce an effect.

If the intellect, like the senses, were essentially dependent on the material organism in its operations, it would also be a here-and-now instrument of knowledge and could neither have ideas of the future nor predict future events. The fact is plain, however, that we have ideas of the future and actually predict future events. Scientists, in their experiments, know before-hand what results will follow from the combination of conditions which they place. Astronomers predict eclipses of the sun and moon for hundreds and thousands of years in advance of their occurrence. The senses, being material powers dependent on present material stimuli, cannot have a knowledge of the future. The intellect, therefore, cannot be a material power, but must be intrinsically independent of matter and of material conditions in its operation; it is a supra-sensuous, immaterial, spiritual power.

C. T. Ladd does not hesitate to write: "With no mere figure of speech we are compelled to say, every mind thus *transcends* completely, not only the powers of the cerebral mechanism by springing into another order of phenomena,

but also the very existence, as it were, of that mechanism by passing into regions of space, time, causality, and ideality, of various kinds, where the terms that apply to the existence and activity of the cerebral centers have absolutely no meaning whatever. For example, the human mind anticipates the future and predicts, on a basis of experience in the past, the occurrences which *will* be but are not now. Into this future, which is itself the product of its own imagining and thinking, it projects its own continued and yet characteristically altered existence, as well as the continued similar existence of things. But the existence of the brain, and of its particular forms of nerve commotion, is never other than a purely here-and-now existence. This physical existence is, therefore, transcended in an absolute way by every such activity of the mind."⁴

Volition. An appetitive power can only desire something proportionate to its own nature. An appetitive power, immersed in materiality and essentially dependent on a brain or organ, cannot be influenced by, or strive for, anything except a concrete physical good. The brute animal, for instance, seeks only that which is good for its physical well-being. Man, however, is often influenced in his volition by goods which are decidedly *supra-physical* and *supra-sensuous*. Food, drink, pleasure, physical well-being, etc., are sensuous goods which affect the sensuous appetency, because they are concrete realities which affect the senses. Immaterial goods, however, like justice, righteousness, altruism, patriotism, charity, duty, love of God, etc., at times contravene our sensual desires and demand the sacrifice of sensuous goods and even of life

itself; yet they not only influence the will, but are goods for which the will actively strives. The soldier in war willingly goes without food and drink, sacrifices many natural pleasures, and even deliberately gives up his life, thus acting in opposition to every instinct and desire of his sensuous nature, for the sake of an *ideal* — the defense of his country's sacred honor and right. The martyr, too, undergoes horrible pain and suffering and gladly lays down his life, for the sake of his religious convictions and for the love of God. In doing these things, man's will *transcends all sensuous desires and sensuous goods*. Such attitudes are possible only on the supposition that the will is a supra-sensuous, immaterial appetency.

Furthermore, the will is *free in its choice*. Material realities are subject to physical determinism. When all the conditions required for an occurrence are present, the material cause must act, and the effect must follow. Material agencies are simply constituted that way; they have no choice in the matter. It is on the basis of this law that scientists are able to forecast the actions of material beings. Man's will, on the other hand, is intrinsically undetermined. Even when all the conditions required for action are posited, the will can *determine itself* to act or not to act, to act this way or that way. Such a power, contrary to all the properties of material agencies, cannot itself be material, but must be immaterial and spiritual.

So far as these arguments for the immateriality and spirituality of the human soul are concerned, it makes no difference whether we accept the soul as the direct and sole subject of thinking and willing, or whether we refer

thinking to the intellect as a power and willing to the will as a power, with the soul as the ultimate subject of these two powers. In the first case, the acts of thinking and will *modify the soul directly*; and, since these acts are immaterial and spiritual, the acting subject, which is the soul, must also be immaterial and spiritual. The argument is based on the evident principle that the effect cannot be superior to the producing cause. In the second case, according to the same principle, the powers of the intellect and will must be immaterial and spiritual. These powers, however, are agencies of the soul, residing in the soul as in their *ultimate subject*; and, since the powers are immaterial and spiritual, the agent soul must also be immaterial and spiritual, because these powers receive their being and existence from the soul and cannot be superior in nature to it.

We do not, of course, perceive the soul and we do not perceive its spirituality. We can only conclude from the nature of the acts to the nature of the acting subject. According to all the laws of reason, this conclusion is legitimate. From the spirituality of the acts of intellection and volition, we are, therefore, necessitated to draw the logical conclusion that the *human soul is spiritual in its nature and substance*.

The Simplicity of the Soul

By *simplicity* we understand that positive property in virtue of which the essence of a being is not composed of distinct and distinguishable parts or principles. An extended body

has unity of being, but it is composed of *integrant*, or *quantitative*, parts into which it can be divided. A yardstick can be sawed into inch-lengths; the limbs of the human body can be severed from the trunk. These parts are integrant, or quantitative. The original body is undivided, but divisible; since it is composed of internal parts, actual division separates one part from the other. Living bodies are also composed of *essential*, or *constitutive*, parts or principles, namely, matter and soul. In the living body, these parts or principles are united and undivided; however, being essentially distinct realities, a division separates them. Such a division occurs when the living body dies; matter and soul are then divided and separated. Every material being, therefore, whether organic or inorganic, is composed of quantitative or constitutive parts or of both and as such is capable of being divided into these component parts. On the other hand, a simple essence is composed neither of integrant, quantitative parts nor of essential, constitutive principles; due to the perfection of its being, extension and composition are absent. Hence, a simple essence is not only one and undivided, but one and indivisible. A being which is so perfect that it is not composed of integrant, quantitative parts, is said to possess *quantitative simplicity*; one that is not composed of essential, constitutive parts or principles, is said to possess *essential simplicity*. Our definition of 'simplicity' is thus seen to be negative in form but positive in content; 'simplicity' is a perfection, not a deficiency.

THE HUMAN SOUL IS SIMPLE IN ITS ESSENCE, EXCLUDING BOTH THE composition of integrant, quantitative parts and the composition of essential, constitutive principles.

That the human soul has *essential simplicity*, follows from its spirituality. The composition in question involves the union of matter and soul as the two constitutive principles necessary to form the living body of man. Man, as an integral organism, consists of matter and the soul. The soul, however, considered for and by itself, does not consist of matter; it is immaterial and spiritual, and it is, together *with* matter, an ultimate constituent of the human body. Hence, it is not itself composed of matter and another vital principle, but is the vital principle alone. Consequently, the human soul possesses essential simplicity.

The human soul also possesses quantitative simplicity. Only a material being, a body, has integrant, quantitative parts, because it is matter which gives to a body extension and, with it, parts beside parts. An immaterial being, since it is devoid of matter, has no quantitative parts. The human soul, however, is immaterial and spiritual. Hence, it is not composed of integrant, quantitative parts and, therefore, possesses quantitative simplicity.

A CONSIDERATION OF THE ACTS OF THE INTELLECT AND OF SELF-reflection proves the same point.

Take the act of *judgment*. In the act of judgment the intellect compares two ideas and expresses their agreement or disagreement among themselves. In the statement 'The rose is red,' there are two distinct ideas,

namely, 'rose' and 'red.' We compare the two ideas in our mind by analyzing the attributes contained in 'rose' and 'red'; we are consciously aware that quality 'red' is actually present in the object 'rose.' After perceiving the factual agreement between the two ideas, we make the mental assertion that 'The rose is red.' An indivisible intellect is required to perform this operation. If the intellect (or the soul, which amounts to the same thing, because the soul is the root-principle of the intellect) consisted of parts, then the idea 'rose' would be apprehended by one part and the idea 'red' by another part; or, both ideas 'rose' and 'red' would be apprehended by each part. In the first alternative, one part would know about the 'rose' and the other about 'red,' but there would be no single subject to make the comparison and form the judgment combining the two ideas into a statement of agreement. In the second alternative, each part would make the same comparison and form the same judgment; the result would be double ideas, a double judgment, and a double assertion of agreement, but no unitary judgment. Since the intellect makes the mental synthesis of a unitary judgment, it cannot consist of parts, but is simple in essence.

H. Lotze recognized the force of this argument and its consequences. "Any comparison of two ideas, which ends by our finding their contents like or unlike, presupposes the absolutely indivisible unity of that which compares them; it must be one and the same thing which first forms the idea of a, and then that of b, and which at the same time is conscious of the nature and extent of the difference between them. Then again the various acts of comparing

ideas and referring them to one another are themselves in turn reciprocally related; and this relation brings a new activity of comparison to consciousness. And so our whole inner world of thoughts is built up, not as a mere collection of manifold ideas existing with or after one another, but as a work in which these individual members are held together and arranged by the relating activity of this single pervading principle. This is what we mean by the *Unity of Consciousness*. It is this we regard as sufficient ground for assuming an indivisible soul.”⁵

The act of *self-reflection* is unique. Man’s intellect is the soul of man in so far as it knows intellectually. Man’s soul not only has intellectual acts, but it knows that it has intellectual acts and recognizes itself in its acts. The Ego or *I* is the subject of its intellectual acts and is conscious of itself in these acts; it thinks of itself, and thereby it makes itself the *object* of its own thinking. When judgment is made that ‘I am I, or ‘I am myself,’ the Ego is both *subject and object* of its intellectual act, agent and patient, the being knowing and the being known, the thing thinking and the thing thought. In self- reflection, a complete reversal or return of a thing upon itself takes place, so that the agent makes itself the patient or recipient of its own cognitive activity. A being consisting of parts cannot perform such a feat. It is possible for one part to influence another part, and it is possible for one part to bend over another part; but it is impossible for the parts to make themselves the object of their own action, or for the single parts to turn completely upon themselves. The hand, for example, cannot grasp itself, nor can it grasp its own grasping; the eye

cannot see itself, nor can it see its own seeing; the ear cannot hear itself, nor can it hear its own hearing. Only an indivisible entity can perform the remarkable feat of making itself the object of its own percipient act, as the intellect (soul) does in self-reflection. Hence the soul is a simple entity.

Extrinsic Dependence

Although it has been established that the human soul is spiritual and simple in its essence, neither consisting of matter nor intrinsically dependent on it, the soul is not entirely independent of matter in all its operations.

The intellect demands the *active co-operation of the sense organs* in the formation of ideas. Man is an integral organism, and the intellect derives the materials for its ideas from the senses, because ideas are formed through the process of abstraction from sensory images. Ideas, as we have seen, are not innate. Ideas are not mere refinements of images, as the sensationalists assert; nor do they arise solely out of the depths of the soul itself, as the ultra-spiritualists claim. Ideas are indeed the spiritual products of the spiritual intellect, but the intellect must dip into the reservoir of sense images and draw their 'intelligible content' out of them; only in this manner can man, so long as the soul is the vital principle of the body, fashion ideas. Hence, disturbances and distortions on the sensory level, as psychiatry proves, bring on disturbances and distortions on the intellectual level. Sensory images are more than 'conditions' of thought. They are, as D. Card.

Mercier, points out, *instrumental causes*; or, as St. Thomas puts it, images are to the intellect as color is to sight.”⁶ In other words, the intellect is dependent on the senses for the ‘object’ of its ideas. The intellect (and, therefore, the soul) is thus subjectively and intrinsically independent of the organism in its existence, but *objectively* and *extrinsically* dependent on the organism for the exercise of its abstracting ability.

The activities of vegetancy and sentiency are of a different nature. Since they are ‘vital’ activities, they have their primary source in the soul as the vital principle of the human organism. They are, however, ‘organic’ functions, and their real subject is not the soul alone, but the *organic compound* of matter and soul. The soul, therefore, taken by and for itself, is not capable of performing vegetative and sensory activities; it can perform them only in conjunction with matter as a co-principle of operation. So far, then, as *these activities* are concerned, the soul is intrinsically dependent on matter.

The Locus of the Soul

By the *locus* of the soul we mean the ‘place’ or ‘seat’ where the soul resides in the human organism. Descartes, it will be recalled, considered the pineal gland to be the ‘locus’ of the soul. Others have placed it in the blood, the heart, or in some unspecified portion of the brain. Such views are uncritical and philosophically untenable.

THE SOUL IS IN THE ENTIRE ORGANISM AND IN EVERY LIVING PART of it.

The ubiquitous presence of the soul in the body follows from the very nature of the soul as the *vital principle* of the organism. Life has its primary source, not in matter, but in the vital principle or soul. Unless matter is animated by the soul, it is lifeless matter, incapable of any vital activity whatsoever; only in conjunction with the animating soul does matter become a partner in vital activities. Since there can be no life without the soul, *wherever life is, there the soul must be present*. Life, however, manifests itself as vegetancy, sentiency, and rationality in man. Consequently in every part of the organism, where any of these activities occur, the soul must be present as the primary active principle of life.

The cell is the biological unit of life. It performs the essential functions of vegetative life, namely, nutrition and reproduction. Furthermore, the entire cell-body is an organic structure, which, throughout its entirety, is actively engaged in the process of metabolism and generation. Hence the soul, as the vital principle, must be present *in every cell throughout its entire structure*. And since the entire human organism consists of cells, the soul must be present throughout the entire body.

This fact reveals an interesting feature of the soul. The soul has no parts. Hence, it cannot exist in one part of the body according to one part of its being and in another part of the body according to another part of its being. As a spiritual, simple, indivisible reality, *it must be entire wherever it is*. Consequently, it is entire in the smallest

living portion of the organism and also entire in the total living organism. We cannot, of course, imagine this sort of presence, because we are acquainted only with the extended presence of material bodies; but we must bear in mind that thought, not imagination, must be our guide in philosophical problems. A spiritual essence is not circumscribed by the limitations of tri-dimensional extension, because it has no quantity or mass, and it would be utterly inappropriate to conceive of the soul's presence in the organism after the manner of a quantified body. The presence of the spiritual soul in the human organism is technically termed a *definitive or non-quantitative presence*, in virtue of which the soul exercises its life-giving power ubiquitously in the whole body and in every living part of it.

The soul is present everywhere in the organism according to its entire essence, but it does *not exercise all its powers everywhere*. If a certain bodily structure or organ is designed exclusively for a particular vital function, then it is there that the soul exercises this function, and nowhere else. The soul, therefore, exercises its cognitive sensory powers only in the sense organs, afferent nerves, and brain, and exercises its motor powers only in the brain, efferent nerves, and muscles; in other words, the soul as the vital principle of sentiency exercises its sentient powers only in and through the nervous system. Intellectual and volitional operations, being spiritual and simple in nature, are exercised exclusively by the soul itself as the rational principle and therefore occur nowhere but *in the soul*. In as much, however, as these operations are objectively and

extrinsically dependent on the functions of the brain for the supply of necessary images from which to abstract ideas, one may say that thinking and willing take place in the head' or 'in the brain,' so long as one does not understand these phrases too literally. Intellection and volition are not localized in any brain centers like sight, hearing, taste, and the other senses. Hence, it is only in a very broad meaning that one may use the phrase 'The brain is the organ of thought.' Philosophically speaking, thought is not directly connected with any bodily organ at all, not even with the brain.

An intriguing problem arises out of the relation of the spiritual soul to matter in the human body. Since the soul is one and indivisible, and since the organism is undoubtedly a unitary substance, does it follow that the body of man possesses an unbroken *continuity*? Discontinuity in the body seems to involve division in the simple, indivisible soul. There can, however, be no doubt that the body of man, in its entirety, is not a *continuous substance* in the strict sense of the term. The blood is an organic substance, and it is replete with hemoglobin corpuscles and leucocytes; their existence and activity must be ascribed primarily to the action of the vital principle, the soul. The blood, however, is a fluid coursing uninterruptedly through the arteries and veins, and as such it is at best only *contiguous* with the walls of the arteries, veins, heart, and the rest of the bodily substance; yet it must, together with all other parts of the body, be 'informed' and vivified by the soul. The soul, therefore, can be present in discontinuous parts without sacrificing its indivisibility. An analogy for this type of

presence is found in the presence of God's spiritual substance throughout the discontinuous parts of the world. The 'how' of such a presence is a mystery, but the fact itself is beyond dispute.

Man and Brute

The difference between man and brute is fundamentally *the difference between their souls*. Is this difference relative or absolute, accidental or essential? In many quarters there has been a persistent endeavor to eliminate any essential difference between the two, either by humanizing the brute or by brutalizing man.

Our discussion so far has brought out the point that the soul of man is endowed with powers and activities which are rational and as such superior to the powers and activities of sentiency. If there is no essential difference between man and brute, then the soul of the brute must also be rational. Now, no soul can be perceived directly; we can know it only by drawing an inference from its activities to its nature. In our own case, we have the advantage of an introspective analysis of our own mental operations. This advantage is absent in the case of the brute. We cannot analyze the brute's mental operations by any direct method. We must draw our conclusions as to the brute's rationality or irrationality from its external behavior.

On the basis of its behavior, we claim that *the brute manifests no rationality*.

The Absence of Progress. If brutes, like men, had the rational power of an intellect, then we have the right to

expect that they would have made use of it as men have. They would then possess essentially the same nature and live in the same general environment and the same causes and conditions should, by analogy, have produced the same results. Now man, because he has an intellect, perceives the *abstract relationship between end and means* and understands that the same end can be reached by a variety of means. Realizing this, man is not satisfied with producing a desired result in a single, uniformly constant manner, but invents various *devices* and *techniques* to use and save energy and to increase efficiency by improved methods. Therein lies the secret of human progress.

Nothing of the sort is ever observed in the brute's behavior. Even when the brute is in daily contact with the inventive genius of man, it manifests *no tendency to learn* to do things man does, although it exhibits native curiosity in many ways. The brute has never invented a single device, although the materials are ever present and within easy reach. When archeologists find a piece of clumsily carved stone and geologists discover a primitively chipped flint, they unhesitatingly ascribe it to man, not to the brute, convinced that the simplest of tools and manufactured articles are beyond the mental capacity of the brute, because the brute cannot comprehend the relation of means to end involved in the construction of any sort of implement. Brutes can and do learn in some measure by actual experience, and occasionally incidents occur which seemingly reflect intellectual insight; but, as M. Maher sagely remarks: "The few trivial instances cited here and there of some animal seizing a club or other rude

implement that fell in its way, only establish the more clearly the enormous chasm which separates the brute from the rational being.”⁷

Very many of the actions performed by brutes are marvelously complex and purposive, revealing an eminent adaptation of means to specific ends. Such actions, however, are *not learned and devised*, but are the result of an inborn instinct. They show the invariable, stereotyped routine of an almost machine-like perfection, *without variation and improvement* of procedure acquired in the course of time; and the brute makes no attempt at variation and improvement, except in such a minor degree that the change can easily be explained on the basis of immediate perception of sensory relations. So far back as the knowledge of man goes, each species of animal, with the sole exception of man, reacts to his environment in practically an identical manner. Bees and ants, for example, retain the same mode of living wherever they are. Each type of insect, fish, bird, reptile, and mammal constructs its home, seeks its food, cares for its young, and in general lives, as it has always done in the past. Not even the apes and monkeys, notwithstanding their morphological similarity to man and reputed intelligence, have been able to devise and make a simple cutting tool or a wooden shelter.

If the mind of the brutes were truly intellectual, like that of man, then why is their behavior so confined to the level of the senses and of the instincts? Why would the brutes not change their methods, modify their manner of living, invent mechanical contrivances, and show progress in every

direction? Man does, and the brutes, if truly intellectual, should also do it. They would have the capability, and they should also exhibit its use. Many of their actions, if really the outcome of intellectual insight, reveal a mind superior to man's. Then why the lack of progress? No valid reason can be given for this lack of progress, if they are capable of progress. The only valid reason that can be found as an explanation for this universal fact is this: *Instinct takes the place of reason*. Brutes have no reasoning powers, and hence no genuine progress is possible. Yet the individual and the race must be protected and perpetuated; and so they are endowed with strong and ingenious instincts, innate and ineradicable, to supply the deficiency of intellectual insight in the purposiveness of their actions.

The Absence of Language. Language is a system of conventional signs expressive of ideas. Sounds, gestures, written and printed symbols are used by man as the media of language, in order to express the meaning of ideas present in one mind and to communicate them to another. Some signs or symbols are 'natural.' Laughter is a natural sign of exhilaration, weeping and sobbing a natural sign of pain or grief, romping a natural sign of general well-being, depressed lethargy a natural sign of ill health, singing a natural sign of joy, snarling lips and a fighting pose a natural sign of anger. Similar attitudes are observed among the brutes, because every emotion tends to express itself in bodily form.

Language, however, is a system of *conventional* signs. Sounds, gestures, written and printed symbols are arbitrarily chosen by mutual agreement ('convention') to

express ideas. Languages are made; they are an artificial product. The natural signs of emotions are the result of a spontaneous outburst and are more or less the same at all times and with all persons; for this reason it is usually easy to interpret their general import. Languages, since they are the invention of a rational mind, differ from race to race and from nation to nation, with regard to grammar, pronunciation, writing, and printing. One need but glance at a polyglot dictionary or listen to the speech of diverse national or racial groups, in order to observe the conventional and artificial character of languages. The ideas are the same, but their expressions in languages are totally different. Languages, therefore, must be *learned* before they can be understood, both as to single words and as to grammatical construction. Even the learning of words will not suffice; one must know the ideas which the words are supposed to represent. Languages are really codes of nonsense syllables made to make sense by filling their otherwise empty forms with the intellectual content of ideas. It takes intellect to devise languages, and it takes intellect to understand and speak them.

Language is a *universal accomplishment* of man. Even the uneducated savage has a language, because he has a rational mind. As new ideas arise, new words are formed to express them. A living language is thus a fluid thing, constantly in a process of formation and modification. It changes with the progress and culture of the people who use it.

Brutes possess no *language*. They give vent to their feelings and emotions through the medium of natural cries

and bodily attitudes; but they have, so far as we can judge from their behavior, no systems of conventional signs which serve as a means of communicating their experiences from one mind to another. If they were actually endowed with an intellect, no valid reason can be assigned why they should not have devised some sort of code, even if it were only a code of clots and dashes. It might not be easy for us to decipher the code, but it would be relatively easy for us to recognize the fact that a code is being used and that it has an intellectual meaning. Most species of animal are not devoid of the necessary physical apparatus required for using a system of conventional signs. The dog's bark, the cow's moo, the horse's whinny, the crow's caw, the woodpecker's tattoo, and similar natural accomplishments, lend themselves admirably for use as languages. The vocalization abilities of the parrot are outstanding, for the parrot can memorize and speak words and entire sentences with astonishing fidelity. Practically every animal could scratch symbols or picture-drawings on the ground, to represent ideas and communicate messages.

If brutes possessed a rational mind, why this astounding *absence of language in every form* in the entire animal kingdom? The advisability and the occasion for language are certainly present; the physical ability is not lacking for the required invention of the necessary conventional symbols. Yet not even the parrot attempts to use its ability of imitating speech for the purpose of expressing its own ideas. All we observe are natural signs expressive of natural feelings and emotions. It is inconceivable that intelligent animals would not use their intellectual powers to invent

some form of language among themselves which would be recognizable as such. And it is also inconceivable that domestic pets would not, if they could, express their ideas and sentiments to their human masters. The reason why brutes have no language can only be: *They have no idea to express*. Where ideas are lacking, there can be no language.

Some advocates of animal intellectuality put forth the claim that brutes speak a language of their own, so that they understand one another. They adduce as evidence the melodies of birds, warning cries, mating calls, the whining of the young clamoring for food, and so on. The facts are admitted, but the interpretation of the facts is of very doubtful validity. The conditions expressed by these sounds and bodily attitudes are of a purely sensory nature, and the expressions themselves are *natural signs*, not conventional and arbitrarily invented symbols. These expressions are on a level with the natural signs found among humans, especially infants. The human infant also cries out in pain and fright, gurgles and coos in pleasure and comfort, and otherwise gives expression to his emotional states; but there is nothing intellectual about such natural manifestations, because the infant does not use his latent intellectual powers at this stage of existence. An older child, when injured, will weep and cry out "That hurts !" Weeping is a natural sign; the cry "That hurts!" is language. Man expresses his mental condition with both types of signs; the brute, only in the form of natural signs which demand no intellect to apprehend their significance. The human infant, as it advances in age, learns to speak, because it has an

intellect. The brute, however, never goes beyond the level of natural calls and attitudes. The reason must be that it simply *has no intellect* which would enable it to use language as a medium of expression.

The Absence of Intellectual Insight. To test the relative intelligence of man and brute, much experimental research has been made in recent decades. Many types of animals were used for the purpose, among them monkeys, orangutans, chimpanzees, cats, rats, dogs, raccoons, etc. Representative of the group of experimenters are E. L. Thorndike, J. A. Bierens de Haan, P. E. Fields, L. Verlaine, H. G. Wyatt, N. R. F. Maier, G. Révész, G. W. Hartmann, A. A. Campbell, R. M. Yerkes, H. W. Nissen, T. L. McCulloch, H. A. Fjeld, W. Köhler, W. N. Kellogg, L. A. Kellogg, J. B. Wolfe, S. D. Shirley Spragg, and others.

A study of the results of these experiments shows that animals possess a synthetic sense and are capable of sensory analysis and synthesis. They have the power of *sensory abstraction*, selecting a predominant sensory item to the exclusion of others. But they are *incapable of intellectual abstraction* based upon the formulation of a general principle applicable to a number of similar things. Children readily grasp the logical relationship of part and whole, genus and species, general law and particular instance, etc., and they solve problems accordingly with true intellectual insight. Animals, however, solve problems on a sensory basis, but not when intellectual insight into logical relation is required. Where *deduction* is demanded, even in its simplest form, animals invariably fail. Animals cannot grasp an abstract 'principle' and work out a

problem in accordance with the principle. If, for example, eight boxes are placed in a row, and food is placed in the first one for the first experiment, then in the second one for the second experiment, in the third for the third experiment, and so on through the series, the principle to be deduced and learned is that one must always choose the box next in line to the box which contained the food in the preceding experiment. The principle is simple, but animals never make the deduction; they always choose by the trial-and-error method. *They cannot reason.*

From their behavior, therefore, we must conclude that animals do not possess a rational soul.

MAN IS AN INTEGRAL ORGANISM, CONSISTING OF MATTER AND soul. His soul is spiritual and simple. It is entire in the entire body and entire in every living portion of the body. The brute soul is not rational. Hence, there is an essential difference between man and brute.

Summary of Chapter XX

To have a proper understanding of 'the whole man,' it is necessary to understand the nature of man's soul.

1. *Man an Integral Organism.* Man is a single, unitary substance, an integral organism. His vegetative and sensory structures and activities co-operate in perfect harmony, and one set is dependent on the other in being and operation; hence, both sets of structures and activities must be referred to one and the same vital principle or *soul*.

Man's rational activities, being of an order higher than vegetancy and sentiency, demand a *rational soul*. There exists a most intimate relationship of mutual influence between the vegetant-sentient part and the rational part of man's nature: he is a vegetant-sentient-rational' being, a single, complete, integral organism. Hence, he has but a single soul.

Man's *consciousness* is also witness to the fact that vegetative, sensory, and rational acts and conditions are referred to the self same Ego, as vital activities of one identical organism. Man, therefore, is 'a rational animal.' His soul is a *single rational soul*, capable of performing vegetative, sensory, and rational activities.

The human soul can be defined as 'the vital principle of the human organism'; or, as 'the substantial form of the human body'; or as 'the first act of a rational body possessed potentially of life'; or, as 'the ultimate principle in man in virtue of which he lives, senses, thinks and wills.'

2. *The Spirituality of Man's Soul.* Spirituality or immateriality is that property in virtue of which a thing is neither composed of matter nor intrinsically dependent on matter. Man's soul is *spiritual* and *immaterial*.

It is not composed of matter, because it is a co-principle *with* matter as an ultimate constituent of the human organism. It is also *intrinsically independent* of matter, because its operations transcend matter.

Thinking and Energy. If the soul is material, then thinking is a material operation and must consume energy, involving metabolic changes. To all appearances, however, thinking does not consume energy.

Intellection and Sensation. In sensation, the stronger the stimulation and nerve action, the more time it takes for the senses to register the impressions of subsequent weaker stimuli. With the intellect, the insight into truths of great clarity, sublimity, and magnitude facilitates the simultaneous insight into minor truths. The reason must be that intellection is not dependent on material nerve tissues and organic structures subject to metabolic changes and loss of material energy. Intellection, therefore, is *exempt from the conditions of materiality*.

Universal ideas. A material object is an 'individual' object, determinately circumscribed and particularized as to quantity, quality, space, and time. Sense impressions and images are characterized in the same manner. Man's intellect

has universal ideas which represent *class-natures* divested of all particularizing determinations of quantity, quality, space, and time. Universal ideas, therefore, are not material, sensory images, but are *immaterial representations* of things.

Ideas with Supra-Sensuous Content. Man has ideas which represent supra-sensuous realities, such as 'justice,' 'law,' 'truth,' 'God,' etc. If the intellect were a material power, it would be absolutely restricted to the representation of material things, and such ideas would be impossible.

The Intellect and the Future. Future events, being as yet non-existent, cannot possibly influence a present material power; the senses, therefore, cannot image future events, because the stimuli are absent. We have, however, ideas of the future and predict future occurrences in advance. Hence, the intellect transcends all material conditions of knowledge.

Volition. A material appetitive power cannot be influenced by, or strive for, anything except a concrete physical good. The will, however, is often influenced by, and strives for, goods which are decidedly *supra-physical and supra-sensuous*, transcending all sensuous desires and sensuous goods for the sake of an ideal. The will is also free in its choice, determining itself in its action, while material realities are subject to a physical determinism.

We must conclude, then, that the soul, the ultimate subject of intellection and volition, is neither composed of matter nor intrinsically dependent on matter.

3. *The Simplicity of the Soul.* By 'simplicity' we understand that positive property in virtue of which the essence of a being is not composed of distinct and distinguishable parts or principles. An extended body is composed of *integrant*, or *quantitative*, parts into which it can be divided. Living bodies are composed of essential, or constitutive, principles, namely, matter and soul. The human soul is *simple in its essence*, possessing both 'essential' and 'quantitative' simplicity.

Essential Simplicity. Since the soul is spiritual and immaterial, matter is excluded from its essence.

Quantitative Simplicity. The soul possesses no quantitative parts, because only a material and extended body has such parts.

The act of *judgment* expresses the agreement or disagreement of two ideas among themselves. An *indivisible* intellect is required to make a judgment. If the intellect consisted of parts, then the one idea would be apprehended by one part and the other idea by another part, or both ideas would be apprehended by each part. In the first alternative, there would be no single subject to make the comparison and combine the two ideas into a statement of agreement or disagreement; in the second alternative, we would have double ideas and double judgments, but no

unitary judgment. Since the intellect makes the mental synthesis of a unitary judgment, it cannot consist of parts.

In the act of *self-reflection*, the Ego knows itself; the intellect makes its own thinking the object of its own thought. The Ego is both *subject* and *object* of its intellectual act. Such an act is a complete reversal of a thing upon itself, something impossible to a being consisting of parts. Hence, the intellect, and the soul, is a simple and indivisible entity.

4. *Extrinsic Dependence*. The intellect derives the materials for its ideas from the senses, because ideas are formed through the process of abstraction from sensory images. Hence, though the intellect and its operations are spiritual, the intellect is *objectively* and *extrinsically* dependent on the organism for the exercise of its abstracting ability.

5. *The Locus of the Soul*. By the 'locus' we mean the 'place' where the soul is situated in the body. The soul is entire in the *entire organism* and in *every living part* of it.

The soul is the vital, or life-giving, principle of the human organism. Hence, wherever life is, there the soul must be present. Every cell and every structural part of the cell is vitally active in the functions of vegetative life; and the entire body consists of living cells. The soul, therefore, must be present in the entire organism as a whole and in every living part of it. Since the soul is a simple essence devoid of parts, it must be entire wherever it is; hence, it must be entire in the smallest living portion of the organism and also entire in the total living organism. This type of presence is termed *definitive* or *non-quantitative*.

6. *Man and Brute*. On the basis of its behavior, the brute manifests no rationality. Evidence is found in the absence of *progress, language, and intellectual insight* throughout brute behavior. Instinct takes the place of reason.

Man, therefore, differs from the brute not only in degree, but in *nature* and *essence*.

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1 *On the Soul*, Bk. II, Ch. 2

2 *Man, The Unknown*, 27th ed. (Harper and Bros., 1935), p. 81. See also T. V. Moore, *Cognitive Psychology* (Lippincott, 1939), pp. 540, 541

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4 *Philosophy of Mind* (Charles Scribner's Sons, 1895), pp. 400, 401.

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Chapter 21

THE HUMAN PERSON

MAN IS AN ORGANISM. LIKE EVERY OTHER ORGANISM, THERE ARE numerous aspects to the nature of man, and each aspect gives rise to special problems. Some of these problems are comparatively simple, others are deep and perplexing. It was necessary to treat of these many phases of man's being in piecemeal fashion. Such a division of material, however, is merely methodological; in reality, man is not an aggregate of separate parts, like the various parts of a machine which a deft hand can take apart and piece together again. Eventually, the philosopher must reverse his methodological procedure and seek to synthesize into the integrated whole of the *human person* what he was compelled to treat separately for reasons of convenience and clarity.

The complete synthesis of the various aspects of man's being into the higher unity of the human person has proved to be a grave difficulty for modern psychologists.

Many aspects of man's being are 'physical' and belong to his 'body'; others are 'psychical' and belong to his 'mind.' Integrating these two large groups of items constitutes the *body-mind problem* so prominent in modern psychology.

Then, too, man consists of matter and a vital principle or, according to the usage of common language, of 'body' and 'soul.' Their relationship constitutes the age-old *body-soul problem*. Again, everything in man, 'body and mind' and 'body and soul,' is referred to the 'Ego' or 'self.' Thereby the body-mind problem and the body-soul problem merge in the modern *Ego-problem*.

And since man is a 'person,' an attempt at a complete synthesis becomes the *problem of the human person*.

The Empirical Ego

When we speak of the *empirical Ego*, we mean the 'Ego' or 'self' as it is revealed to each individual in his own *internal experience* in the introspective act of self-consciousness (Chap. 17). Usually the empirical Ego is observed by the individual in the performance of some *action*. It may be a bodily action, as when I pay attention to manipulating a tool, to humming a tune, to pronouncing words, etc.; or it may be a mental action, as when I consciously read a book, solve a problem in arithmetic, write an essay, etc. It is in this manner that I perceive my 'self' or 'Ego' concretely in action.

In a similar way, I become conscious of my 'self' or 'Ego' in certain states which affect me more or less passively. I am aware, for example, that something has struck me, that I feel the cold wind, that I have a pain or headache, etc. Here also it is through introspective self-reflection that I become conscious of my 'Ego' as the passive subject in which these states occur.

Mainly, I become aware of my 'self' or 'Ego' when I consciously exert myself, either physically or mentally, as when I push my physical powers to the limit of endurance or resist a pleasurable allurements for the sake of duty and conscience. This *concomitant awareness* of my 'self' or 'Ego' in a personal action or affecting state is *an immediate datum of my internal experience*.

I am not, however, aware of my 'self' or 'Ego' at all times, but only when my attention is focused inwardly. When my attention is focused outwardly, as when I witness a stage play or an exciting game, I may be so absorbed in what is taking place before me as to forget my 'self' or 'Ego' for the time being. Attention to external happenings is *inspection*; attention to internal happenings is *introspection*.

The 'empirical Ego,' therefore, is the 'self' or 'Ego' as observed at *any present moment* in a here-and-now experience.

The Historical Ego

The *historical Ego* is the 'Ego' or 'self' of an individual as he perceives it through *memory* of his life's experiences from the present down through the past. Every individual has a history of past experiences. The traces of these experiences are stored away in the mind and are, to a greater or lesser degree, capable of recall at the present moment. Since these experiences belonged to the 'self' or 'Ego' as to their subject, the part which the 'self' or 'Ego' played in these experiences is also capable of recall. Hence, the 'Ego' itself has a history, peculiar to each individual.

The knowledge of my 'historical Ego,' since it is based on my memory of my past experiences, is of necessity subject to all the vicissitudes and vagaries of my memory. While many events have been forgotten and are perhaps permanently beyond recall, I am usually able to remember the principal experiences of my childhood, youth, and adulthood. All such experiences pertain to my 'historical Ego.'

Viewed in retrospect, the 'historical Ego' may undergo a considerable *change* in the course of time, as the pattern of life changes. Success and failure, education and environment, influence a person in remarkable ways. We are sometimes compelled to confess: 'I have changed greatly since the days of my youth.' This change can also occur through a change in *memory itself*. Injury and illness may bring about a state of dissociation in the memory content (Chap. 9). We then observe the mental phenomenon of a 'changing personality.'

The 'historical Ego' in each individual has its beginning with the first instance of the knowledge of his own 'self' some time in *childhood*. The knowledge of the 'self' or 'Ego' is not innate; it is acquired. The prenatal life of the child is mainly vegetative. After birth, the child accumulates sense impressions and develops an acquaintance with his own body and with surrounding objects. After a few years, the child suddenly becomes aware of his own 'self' as a person set apart from other persons and things; he has reached selfhood. From that moment on he has a knowledge of his 'empirical Ego,' using the terms 'I' and 'me'; that moment is also the starting point of his 'historical Ego.' From the data

obtained in this manner man forms his *abstract concept* of the 'self' or 'Ego.'

It should be evident that the 'empirical Ego' is very meager in content and the 'historical Ego' very rich in content.

The Metaphysical Ego

From the data of the empirical and historical Ego it must be possible to draw certain definite conclusions concerning the *constitution and nature of the human Ego*. The Ego, considered in its constitution and nature, is termed the *metaphysical Ego*. The philosopher is interested in this deeper problem of the Ego.

That such a problem exists and clamors for a solution, is beyond question. Just what is this 'Ego' or 'I' or 'self' of which man is forever speaking?

Does the Ego belong to the mind, or does the mind belong to the Ego? The *mind* is generally understood to be the ultimate principle or, as others prefer to view it, the sum-total of all the powers, processes, and states found in the sensory and rational life of man. That mind and Ego are inseparably connected, is conceded by all psychologists and philosophers. Man becomes conscious of his Ego or self through a cognitive act of the mind; man, however, performs 'mental' functions in childhood before he is conscious of his Ego or self. It would seem, then, that the mind is prior to the Ego, so that the Ego is only a phase or part or state of the mind. On the other hand, after man has learned to pay attention to the workings of his mind

through introspection, he invariably refers the mind to his Ego or self, convinced that *the mind belongs to the Ego* as a part to the whole. We thus say: '*I have a mind.*' And we also say: 'My sight; my imagination; my memory; *my mind.*' Such phrases are universal, used by all persons and at all times. They plainly indicate that all mental states and the very mind itself belong to the Ego, so that the Ego or self is their *subject* and *possessor*. The Ego, therefore, is more basic and ultimate than the mind itself.

We observe a similar relationship between the 'soul' and the Ego.' We frequently say, for instance: 'I have a soul; *my soul.*' Here, too, the soul is referred to the Ego as something more basic and ultimate than the soul itself. *The soul*, like the mind, *belongs to the Ego*, and the Ego is considered as its subject and possessor. The Ego, therefore, is neither the mind nor the soul, but something deeper and more fundamental in man.

There is something still more puzzling about the Ego or self. The material, corporeal part of man's being is also referred to the Ego. We say, for instance: 'I have hands and feet and a torso, *I have a body*; my nerves, my bones, my body.' The body, therefore, and everything pertaining to it, *belongs to the Ego* as to its subject and possessor.

Thus the material and mental, the physical and the psychical, body and mind, in a word, *man's entire being*, is conceived by us as belonging to the Ego or self as to its subject and possessor.

Considered from another angle, to what is the Ego or self referred? Viewed introspectively, and judging from the expressions used by all men, *the Ego is never referred to*

any deeper reality in man. Occasionally, when a person becomes very philosophical, he may say: 'I am myself.' Since 'I' and 'self' mean the same thing, such a statement is equivalent to saying that 'I am I' and expresses a reflexive judgment of identity between 'I' and 'self'; the Ego is simply the Ego. The Ego, I, or self is the *ultimate reality* in man to which everything in man belongs, while the Ego itself does not belong to some more fundamental reality. Everything is united and unified in the Ego, and the Ego unites and unifies everything in man. Therein lies the profound *problem of the human Ego*. How can the Ego embrace within itself such disparate and, one is almost inclined to say, contradictory realities and attributes as are found in body and mind? What is the Ego in its final analysis? Is it the body, or is it the mind? If the body, then what about the mind? Man certainly has a mind. If the mind, then what about the body? He also has a body. Or, is the Ego both body and mind? But how can that be possible, since both are such totally different kinds of being? Contradictory attributes seem to exist in one and the same Ego.

Man is, in many respects, like a jigsaw puzzle. The physiologists have succeeded in putting a large number of pieces together, and the picture obtained is that of a 'body.' The psychologists have also succeeded in putting a large number of pieces together, and their picture is that of a 'mind.' Neither picture, however, is really complete, because both major portions are supposed to be fitted together into the *higher synthesis of the Ego*, so as to form the composite picture of 'the whole man.' Yet the two major portions of the complete picture, namely, body and mind

synthesized in the Ego, do not seem to match. Philosophers, by and large, find it extremely difficult to effect the synthesis.

The problem is, without doubt, not an easy one to solve. Many solutions have been offered. The best way to arrive at the correct solution will be to view the problem in its historical setting.

The Problem in History

The ancient philosophers knew nothing of an 'Ego problem.' For them the 'body-mind problem' was mainly a 'body-soul problem.' However, since the modern problem of the human Ego has its roots in the age-old problem of body and soul, it will be necessary to go back as far as Grecian philosophy.

Plato, as we have seen (Chap. 13), maintained an *ultra-dualism* of body and soul (mind). The body is a material substance, and the soul is a spiritual substance; the two substances form a dynamic unit, but not a substantial unit. The relationship between the human spirit and its body is that of a rider and his horse, of a helmsman and his ship. This theory has already been refuted.

Aristotle, the greatest scientist and philosopher among the ancients, rejected this ultra-dualism of Plato as contrary to all evidence. He synthesized body and mind (Chap. 14, 19) by assuming that the soul of man is the formal, organizing, animating principle of primal matter. Matter and soul are two incomplete substances or substantial co-principles, and their union results in a single, *unitary*

substance, namely, the human organism. While safeguarding body and mind (soul) as distinct realities, he gives a neat explanation of their synthesis into one substance.

In *medieval times*, under the guidance of *St. Albert the Great*, *St. Thomas Aquinas*, and other great masters, aristotelianism developed into a new and powerful system of philosophy. It received the name of scholasticism. Aristotle's doctrine on the nature of man as a composite substance of body and soul became one of the principal teachings of aristotelian-scholastic philosophy.

Toward the end of the Middle Ages, a period of philosophic stagnation set in. Originality of thought gave way to vain subtleties and sterile commentaries on the books of the masters. Scholasticism fell into disrepute, especially after the advent of the Renaissance and the introduction of more precise scientific methods in the solution of the problems of physics. Eventually, the genuine doctrines of the great medieval philosophers were practically forgotten by the thinkers of the rising new era.

MODERN PHILOSOPHY HAS ITS ORIGIN IN THE TEACHINGS OF *RENÉ Descartes* (1596—1650). He broke completely with the philosophy of Aristotle and St. Thomas and attempted to place philosophy upon an entirely new basis (Chap. 13). He defended an *ultra-dualism* of body and soul in man. Regarding man's body, he advocated a *mechanistic atomism*; regarding man's soul, an *ultra-spiritualism*. Man's ideas are potentially innate, not derived from sense data

through intellectual abstraction. Here were the seeds of the subsequent theories of *materialism and idealism*.¹ Since man's mind can know only its own internal states, his theory of knowledge terminated in *subjectivism*, the theory which plagues practically all modern philosophy. Descartes placed a gap between body and mind; bodily events and mental events were closed systems without intercommunication. It has become the main endeavor of modern philosophy, outside neo-scholastic circles, to find a bridge to span this gap. The gravity of the problem was obvious. Granted the assumption that body and soul (mind) were two complete substances merely in conjunction, how could the body influence the mind, and how could the mind derive any knowledge of the world through the body?

Arnold Geulincx (1625—1669) went a step farther. He denied all activity to creatural beings, reserving all activity to God. It is God who produces every kind of activity in the universe. In order to explain the apparent influence existing between body and mind, he compared them to *two clocks* synchronized so perfectly that both indicate the same hours. The two clocks do not influence each other; both are constructed by the same Divine Workman and have His will imposed upon them to work with perfect timing. Thus, when we have the will to speak, the tongue is simultaneously set in motion, but the will has no influence over the movements of the tongue. The theory that God, on the occasion of certain conditions, produces all activity in his creatures, is called *occasionalism*. Geulincx thought that his theory overcame Descartes' ultra-dualistic difficulties by simply denying all activity to both body and mind. He failed

to see that the theory is contradicted by the testimony of our *consciousness*, which is witness to the evident fact that we are the causal agents of our own acts. His theory denies *free will* and destroys the foundations of morality, making God solely responsible for every good and evil human act.

Nicholas Malebranche (1638—1715) also accepted Descartes' ultra-dualism. He was an *ontologist*, defending a modified occasionalism. According to his theory, man acquires his knowledge from the contemplation of the divine Ideas of God. Similar views were held by *Rosmini* and *Gioberti*. The theory has been refuted elsewhere (Chap. 13).

Gottfried W. Leibnitz (1646—1716) proposed the curious doctrine of monadism (Chap. 13). He recognized no interaction between the mental and the material. Every material entity, however, has also a mental side; this doctrine is called *pan-psychism*. God has established a perfect harmony between the material and mental, so that, like the two clocks of Geulincx, material and mental activities follow parallel lines throughout. His theory of 'pre-established harmony,' therefore, is a form of *psycho-physical parallelism*.

Baruch Spinoza (1632—1677) sought a different solution for the cartesian dilemma. He defined 'substance' as something the concept of which needs no other thing from which it should be formed. Such a definition can apply only to God, because God alone is a substance the concept of which involves no other concept or thing. Spinoza accepted the implication of this definition: there is but *one substance*, and that substance is *God*. Hence, everything that exists is a

modification of the divine substance, and that includes everything material and extended and everything spiritual and unextended. The divine nature, therefore, has as *essential attributes extension and thought*. As extension, the divine substance unfolds itself into the physical world; as thought, it unfolds itself into the human minds. The human mind is a mode or manifestation of the divine intellect. When, therefore, man's mind has an idea, it is really God who has this idea in the human mind, because He constitutes the essence of the human mind. And since the extended world and the unextended mind are one in the substance of God, it follows that the order and connection of ideas is identical with the order and connection of things. Viewed this way, the theory is a *psycho-physical parallelism* with its roots in a *pantheistic monism*. It is 'pantheism,' because everything is God, and God is everything. It is 'monism,' because there is only one kind of ultimate reality or substance in existence to which all things, physical and mental, are reduced; in Spinoza's system this reality is God.

There are a number of reasons which compel us to reject Spinoza's theory. God is, as Spinoza admitted, infinite. The objects in the universe and the human minds are finite; finiteness, as we know, is an attribute at least of our own body and mind. God, then, must be both *infinite* and *finite* simultaneously — a contradiction in terms. Again, if our mind is a part of God's intellect and if God's substance constitutes the essence of our mind, we should be *conscious of our identity with God*; we are, however, not conscious of this identity. Furthermore, since man is an unfolding of God's substance, all human actions are really God's actions,

and God is the responsible agent of all human *misdeeds* and *crimes*; but in that case God would not possess infinite perfection. Finally, the world consists of a *multiplicity* of objects and human beings. If we are certain of anything, we are certain that we are identical with ourselves and distinct from other things and other human beings; our consciousness does not include the consciousness of other minds, although speech assures us of the existence of other minds and physical contact assures us of the existence of other bodies. This testimony of our consciousness is either true or false. If true, then a multiplicity of things exists, and they do not form one ultimate substance, because something cannot be a single substance and a multiplicity of substances at the same time. If false, the foundation of all knowledge is destroyed, because knowledge rests ultimately on consciousness as the last court of appeal; the outcome is complete skepticism. The entire system of Spinoza is a deduction from his *definition of substance*. This definition is *arbitrary* in the extreme and rests solely on Spinoza's personal statements. It leads to contradictions and impossibilities which are a plain *reductio ad absurdum*. These contradictions and impossibilities should have warned Spinoza that his original definition must be *false*, because erroneous conclusions presuppose faulty premises.

In England the trend of philosophy was toward empiricism and sensationalism. *Empiricism* is the doctrine that all human knowledge is derived from the data of particular states of consciousness, so that experience is the exclusive source and criterion of all knowledge. *Sensationalism*, which is almost synonymous with

empiricism, is the doctrine which assumes that all human knowledge originates solely in sensation and that all intellectual cognitions are ultimately nothing more than complex and elaborated products of sense impressions and their reproduced images. In both theories intellectual knowledge is only a refined form of sensory knowledge and not of a kind essentially superior to sensory knowledge. A *sentient* nature, therefore, suffices to explain all human knowledge, and a spiritual intellect or soul is a superfluous entity. The empiricist and sensationalist theory has its origin in the teachings of Locke.

John Locke (1632—1704) was an *empiricist*. He considered 'ideas' to be the sole object of thinking, and by 'ideas' he understood 'phantasms' (sense images) and 'notions' (concepts). By wiping out the distinction between sense images and concepts, he led the way directly to *sensationalism* and *materialism*. By asserting that our internal mental states ('ideas') are the sole objects of thought, he excluded from our knowledge all *things* of the physical world, as they are in themselves, except by a mediate inference from our ideas. His teaching leads to *subjectivism* and *idealism*.

Locke was unjustified in identifying sensory phantasms and intellectual concepts under the common term 'idea,' because ideas (Chap. 20) are abstract, universal, and spiritual in nature, while sense impressions and images are always concrete, particular, and material. Hence, although Locke rejected Descartes' theory of innate ideas, he did not succeed in overcoming the cartesian ultra-dualism of body

and mind, because he could not explain how a knowledge of the material world could get into the mind.

George Berkeley (1685—1753) accepted Locke's dictum that the mind can perceive nothing but its own internal states. Locke maintained that a world of material substance actually exists, though its existence is a matter of inference only. Berkeley refused to follow Locke. Since we can know nothing but our internal states, to *be* is to be *perceived* (*esse est percipi*), and we have no right to conclude to the existence of an extra-mental world of inert corporeal substances. The only substances which exist are God and minds, i.e., spiritual substances; even the human body does not exist, except as a perception. Berkeley advocated *spiritualistic idealism and mentalism*, the theory that nothing exists but the spiritual mind.

Berkeley's theory solves the cartesian body-mind problem through the expedient of denying the existence of bodies and all material reality. The solution is entirely too simple. One cannot get rid of the human body and of the world by means of a mere denial. We are as certain of the existence of our body as we are of our own self, and the body is as much a part of our being as is the mind.

David Hume (1711—1776) adopted the empirical phenomenalism of Locke, maintaining that we can have knowledge only of our internal states. He agreed with Berkeley that we have no right to accept the existence of material substance. He even *denied the existence of all substance*. He formulated his argument in the oft-quoted passage: "I would fain ask those philosophers, who found so much of their reasonings on the distinction of substance

and accident, and imagine we have clear ideas of each, whether the idea of substance be derived from the impressions of sensations or reflection? [These are the sole data of our knowledge, according to Hume. — Author. See Chap. 13] If it be conveyed to us by our senses, I ask, which of them; and after what manner? If it be perceived by the eyes, it must be a color; if by the ears, a sound; if by the palate, a taste; and so of the other senses. But I believe none will assert, that substance is either a color, sound, or taste. The idea of substance must therefore be derived from an impression of reflection, if it really exists. But the impressions of reflection resolve themselves into our passions and emotions; none of which can possibly represent a substance. We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we talk or reason concerning it.”² And thus all substances are argued out of existence, leaving nothing but phenomena. Hume became the protagonist of *pan-phenomenalism*, the theory in which everything is reduced to mental states.

Since there is no substantial reality underlying the transitory mental states, Hume contended that man is “but a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and are in perpetual *flux* and movement.”³ We have, then, *no personal mind and Ego* as the subject of mental phenomena. There are thoughts, but there is no thinker who thinks the thoughts. We should not say ‘*I think*,’ but ‘*it thinks*.’ Here we have the psychology of the impersonal mind, and the ‘mind,’ if we speak of it at all, is not distinct

from the passing internal states. It is like movement without anything that is moving.

Locke and Hume had many followers. Chief among them are James Mill, J. S. Mill, A. Bain, J. Sully, H. Spencer, T. Ribot, H. Tame, E. Condillac, and the founder of positivism, A. Comte. They differ among themselves in many respects, but they all adhere to the general doctrine of empiricism and sensationalist phenomenalism.

Immanuel Kant (1724—1804), sought to offset Hume's skepticism and re-vindicate the validity of human knowledge (Chap. 13). He arrived at the conclusion that we can know only *phenomena* (appearances), not *noumena* (things-in-themselves, as they are in reality). Among the items of phenomenal knowledge, acquired through introspection, is the *empirical Ego*. The 'idea' of the Ego, however, is an innate, *a priori* form of reason, pertaining solely to phenomena, and tells us nothing of what the 'Ego' is as a thing-in-itself. Similarly, 'substances' is an innate, *a priori* category, and all 'categories' have only a subjective, regulating function in ordering our thoughts, without any objective value in the world of things. Hence, when we think of the soul or Ego as a 'substance' possessing actual simplicity, unity, and spirituality, we harbor an illusion, because we then confuse the real order with the mental order. There is, of course, a *pure, noumenal Ego* beyond the phenomenal Ego of which we are aware in our consciousness, but we can never attain to a knowledge of its reality; we can know only the phenomenal Ego, and such knowledge is a mere mental construction.

Kant's general theory has been subjected to a critical evaluation in connection with the origin of our ideas (Chap. 13). Here we wish to stress the point that, if Kant's theory were correct, he could not even know of the existence of the 'pure Ego,' much less tell us anything about it. In psychology, we are interested in the 'Ego' as given in our conscious experience and not in some hypothetical 'pure Ego' conceived by Kant; otherwise *psychology is an illusory science* devoid of all value for life, because everything we can discover about our body, mind, soul, and Ego would tell us nothing of what these things are in themselves as objects of reality. Kant's theory is a form of *rationalistic idealism*, although he is a hypothetical dualist postulating the existence of an external world. He failed to overcome Descartes' antithesis between mind and matter; the mind remains imprisoned in its conscious states and can know nothing of the external world and non-Ego objects. His followers developed his ideas into a stark absolutism.

Johann Fichte (1762—1814) contended that thought cannot be derived from being, but being must be derived from thought; thought, therefore, is the ultimate and only reality, and the laws of thought are the laws of being. And since all thought is contained in consciousness, there is no other reality but conscious Ego; hence, all reality is unified in the Ego. The Ego, of course, does not mean merely human consciousness, but the universal consciousness of the Absolute or God. Fichte assumes the existence of an infinite Ego which first posits itself, then posits a limited non-Ego (the world), and finally posits a limited Ego (the human

mind or Ego) in opposition to the limited non-Ego. Fichte defends *pan-Egoism*.

Friedrich Schelling (1775—1854) viewed the universe as divided into two great actualities — nature and spirit (real and ideal, object and subject, matter and self, thing and mind). In reality, however, these opposites are originally and essentially identified in the *Absolute* or *infinite*, so that they are but two phases in the evolution of the ultimate reality which is the Absolute. Hence, his doctrine is termed the *identity theory*.

Georg W. Hegel (1770—1831) also identified all things in the Absolute. But with him the Absolute is pure *Thought* or *Idea*. It evolves by means of a *purely rational and logical process of thought* into the ideal and real, into subject and object, into spirit and nature, into mind and matter. The Absolute is incessantly in a process of dialectic evolution, so that all being is thought realized. His system is *idealistic monism* driven to its highest peak; it is the one-ness of all things in the Absolute.

Idealistic monism, which seeks to eliminate the difference between the physical and the psychical by reducing them to the identity of one ultimate reality or Absolute, exerted a great influence on modern thinkers. Among those who followed this line of thought are A. Schopenhauer, E. von Hartmann, T. Green, F. Bradley, J. Gaird, E. Gaird, B. Grace, G. Gentile, and many others.

Disgusted with the brilliant obscurities of Kant and the idealists, others sought to bring the problem of man out of the clouds back to earth. Instead of following Descartes in the spiritualistic side of his ultra- dualism of human nature,

they swung to the opposite extreme and chose the atomistic-mechanistic side pertaining to man's body. In opposition to the idealists who reduced the physical to the mental, they reversed the procedure and *reduced the mental completely to the physical*. The result was a *materialistic* monism which admits but a single ultimate reality, namely, matter.

Materialism, being a form of monism, is a metaphysical identity theory, because everything in man is identified with matter and material energy. What we call the 'psychical,' such as sensation, perception, memory, intellection, etc., is regarded by materialism as a *function or property* of organized matter, essentially of the same nature as any other physiological function of the human body. There is nothing in mental facts but movements of material particles; they are obscure manifestations of material energies and as such do not transcend matter and its conditions. *No interaction* exists between body and mind, for the simple reason that 'mind' is a mere abstraction; the only reality that exists is the body composed of atoms and molecules in organization. Mental life is identified with neural action. At best, some materialists admit that consciousness is an accompaniment or by-product of neural processes, determined by them but exerting no influence upon them, so that consciousness is but an 'epiphenomenon' of matter, matter being the real phenomenon. This doctrine is the theory of *epiphenomenalism*. By ignoring the specific character of psychical events and conditions, the materialists arrive at

an easy solution of the problem of mind and body and of the human Ego.

Chief among these pseudo-philosophers were P. J. Gabanis, J. La Mettrie, L. Feuerbach, C. Vogt, L. Büchner, and E. Haeckel. Theirs was a very crude sort of materialism. Cabanis, for example, maintained that the brain secretes thought as the liver secretes bile.

Ever since experimental psychology has investigated mental phenomena with scientific thoroughness and precision, it has become increasingly clear to psychologists that the crude materialism of men like Moleschott, Buchner, and Haeckel is a failure. Nevertheless, many prominent experimentalists, due to the materialistic trend of the times in which they received their education and training, were loath to accept the idea of a spiritual soul informing the body as the principle of unification for body and mind. Generally speaking, they prefer some kind of *psycho-physical parallelism*.

Gustav J. Fechner (1801—1887) maintains that body and soul (physical and psychical) are not essentially different realities; at bottom, they are a single reality with *two aspects*. When I look at myself, I find that I am a conscious mental being; that is the 'psychical aspect' of myself as a man. When an outsider looks at me, I am a material being, because he cannot intuit my mental states; that is the 'physical aspect' of myself as a man. In so far as Fechner considers the physical and psychical to be merely two aspects of one and the same ultimate reality, his view is termed the *double-aspect theory*; and in so far as he postulates a single ultimate reality which is both physical

and psychical, depending on the point of view one takes, his psycho-physical parallelism is an *identity theory*.

Wilhelm Wundt (1832—1920) was a psycho-physical parallelist. In his 'ideal-realism' he takes a stand midway between idealism and realism; as a scientist he leaned toward realism, and as a follower of Kant he could not free himself from idealism. Wundt denies the existence of all substance: "The contents of psychological experience should be regarded as an *interconnection of processes*. This concept of process excludes the attribution of an objective and more or less permanent character to the content of psychical experience. Psychical facts are *occurrences*, not objects."⁴ Since the mind is conceived as a sum-total of psychical events, there is, in his view, no such thing as a permanent, substantial mind or Ego as the carrier of these mental states. The concept of 'mind-substance' has no value except to satisfy "a mythological and metaphysical need."⁵ The mind is simply act, actuality. All we have is a manifold of interrelated occurrences, an inner (psychical) and an outer (physical) experience. Wundt's psycho-physical theory is, therefore, also termed the *theory of actuality*. Wundt considered the will to be the real Ego.

Many modern psychologists have adopted the theory of psycho-physical parallelism as best suited to the temper of the scientific investigator. Man is, as Huxley puts it, a 'conscious automaton.' Defenders of this *conscious automaton-theory* are, among others, Hodgson and Spalding. Many also, especially evolutionists, defend some sort of atomistic *mind-dust* or *mind-stuff theory*, as proposed by W. K. Clifford and H. Spencer, according to

which an atom of consciousness or mind is attached to every atom of matter in the universe, both developing together in the evolution of beings, including man. As the material atoms, in the course of eons, massed themselves together to form the bodies of plants, animals, and men, so also the mind-atoms massed themselves together to form the more developed and refined minds of conscious animals and men. According to this view, all matter has the quality and potency of life and mind, and the 'mind' of man is a mere affair of psychic summation. The theory that all atoms of matter originally possess life is *atomistic hylozoism*; it is also a form of *pan-psychism*, since everything existing is conceived as fundamentally psychic or mental in nature.

William James (1842—1910), the eminent American psychologist, took a peculiar stand in this problem. He admitted frankly the reasonableness of the scholastic doctrine of the *soul*. "To posit a soul influenced in some mysterious way by the brain-states and responding to them by conscious affections of its own, seems to me the line of least logical resistance, so far as we yet have attained."⁶ In order, however to remain "positivistic and non-metaphysical," he considered an *empirical parallelism* to be the wisest course.

We have already seen (Chap. 17) that James viewed man's conscious life as a 'stream' of internal states *without a substantial Ego* as their subject. He followed in the footsteps of Hume and Wundt. For him, "the passing thought itself is the only *verifiable* thinker,"⁷ and he can find no rational use for the concept of 'substance' or of a 'substantial soul.' James was fully aware of the

consciousness of the 'identity of self' extending over gaps of unconsciousness, as evidenced by memory. How did he overcome the difficulty?

He compared the passing mental states to a herd of cattle, branded with the brand of the owner, who is the 'Ego' or 'self.' "How would it be," he writes, "if the Thought, the present judging Thought, instead of being in any way substantially or transcendently identical with the former owner of the past self, merely inherited his 'title,' and thus stood as his legal representative now? . . . We can imagine a long succession of herdsmen coming rapidly into possession of the same cattle by transmission of an original title by bequest. May not the 'title' of a collective self be passed from one Thought to another in some analogous way? . . . Each later Thought, knowing and including thus the Thoughts which went before, is the final receptacle — and appropriating them is the final owner — of all they contain and own. Each Thought is thus born an owner, and dies owned, transmitting whatever it realized as its Self to its own later proprietor."⁸ In this manner, James believed, he could safeguard the identity of the self or Ego without having recourse to a 'substantial' Ego or soul.

James' analogy is ingenious. The only trouble with it is, that it does not fit the case; he places the cart before the horse. In our mental life, the internal states are transient, while the Ego or self is consciously observed to be permanent; the herd of cattle (which is supposed to represent our passing internal states) is permanent, while the herdsmen (who are supposed to represent the permanent Ego or self) are transient. The roles are actually

the reverse of what they should be. In a succession of heirs to a particular piece of property (here, the herd), certainly *no heir feels himself to be identical with every other heir in the line of succession*, simply because he has succeeded to the title formerly held by the other proprietors. In the case of man, however, *the present Ego feels itself to be the one identical Ego throughout the years*. If James' analogy were correct, the present Thought or Ego could never feel itself identical with the preceding Thoughts or Egos, because they are in reality not the same any more than the succeeding heirs and owners are the same. It is always dangerous to build an important theory on an analogy. Facts should govern a theory; and the facts point very definitely to the identity and permanence of the Ego as the possessor of the transient mental states as they succeed one another. James did not prove his case; if anything, he proved that a substantial Ego is a necessary requirement for the proper explanation of our mental life.

In our *present time* there are a number of distinctive movements and counter-movements in the psychological field. *Functionalism* considers the mental processes as the functions of the organism in its adaptation to, and control of, environment; it is the psychology of William James, J. Dewey, G. T. Ladd, and the pragmatic school of thought. *Structuralism* is an 'atomistic' psychology which analyzes mental states into component sensations, images, and feelings; E. B. Titchener and his followers are representative of this type of psychology. *Gestaltism* or *configurationalism* stresses the tendency of the mind to view things as formed 'wholes' rather than as isolated items of

experience; among its advocates are W. Köhler, K. Koffka, and very many others. *Behaviorism* seeks to explain the mental in plain physiological terms of stimulus-response reactions, without taking consciousness and introspection into account; J. Watson, A. P. Weiss, and others defend this view. *Reflexological psychology* identifies mental life with neural reflexes; V. M. Bekhterev, K. N. Kornilov, A. L. Schniermann, and other Russian followers of Marxist materialism are expounders of this system. Psychoanalysis, as a psychology, explains mental life as the result of instinctive drives working in the lower levels of the mind. Then there is also the *hormic* psychology of W. McDougall which emphasizes the goal-seeking tendencies of organisms, and the *factor* psychology of C. Spearman, which seeks to determine the general and special abilities by means of correlation coefficients.

As a general policy, modern psychologists strive to remain within the limits of a 'scientific' treatment of their subject matter, disclaiming any sort of 'metaphysical' explanation of the nature of man and the relation of body and mind. The majority accept a *psycho-physical parallelism* of physical and mental events in man as a methodological convenience. As a rule, however, they make occasional commitments about the ultimate nature of man, because their basic ideas of body and mind are rooted in metaphysical concepts and theories; psychologists, therefore, often become, in unguarded moments, metaphysicians. Some individuals subscribe to panpsychism; others, to materialistic monism; others to idealistic monism; others to pantheistic monism; others, to

strict parallelism, without attempting to define their position in any more definite manner. It is perhaps safe to say that the general trend of modern psychologists is toward some form of materialism.

The *reflexological* psychology of the Russian School is avowedly a materialistic monism. Behaviorism is materialistic. *Gestaltism*, though it contains elements of a sound psychology, does not rise above the fundamental tenets of materialism, because the chief exponents of the theory find the ultimate explanation of the whole-making tendency of the mind in the conditions of the brain. The *structuralism* of Titchener is materialistic. *Psychoanalysis*, as conceived by Freud, is also basically materialistic. *Functionalism* favors dualism and interactionism. The *hormic* psychology of McDougall is interactionistic and animistic, based upon a metaphysical dualism.

And thus we see how the ultra-dualism of Descartes, by destroying the essential unity of man's nature and placing body and mind in a position of antagonism toward each other, has brought on a deplorable confusion of psychological systems. He made a real *interaction* between body and mind impossible, and it has been the endeavor of subsequent thinkers to bridge the gap between these two realities in man.

Digest of Theories

After reviewing the historical development of the body-mind problem, which is also the problem of the human Ego and the human person, it is not difficult to summarize the

various views and theories into a few *broad systems*. Starting with Descartes' ultra-dualism, which everybody seemed to accept without question, the following main solutions have been offered as a metaphysical explanation of man's nature.

Man has a *body*; man also has a *mind*. Whatever pertains to the body is physical; whatever pertains to the mind is psychical. The physical and the psychical, body and mind, have attributes and activities which are diametrically opposed to one another. The material and the mental are mutually irreducible, because the material is spatial while the mental is non-spatial; hence, they cannot reside in, nor be the product of, a single principle. Body and mind, therefore, since they have nothing in common, cannot interact upon each other; it is impossible for the mind causally to influence the body or for the body causally to influence the mind. Yet, such an interaction apparently occurs continuously. We must, then, accept a *double series of events*, one physical, belonging to the body, the other psychical, belonging to the mind. Each series is independent of the other, but running parallel to it, giving the impression of interaction. The result of this line of thought is the theory of rigid *psycho-physical parallelism* in a metaphysical sense.

Other thinkers were dissatisfied with this theory. It presupposes a *division* in man which is contrary to all experience. Man is not a double being, but a single being. If man were really a double being consisting of two irreducible parts, each part possessing an independent series of events without mutual interaction, one cannot

explain the perfect synchronization or timing that exists between the physical and psychical series. Such a parallelism is inconceivable. The body-mind problem can only be solved by maintaining that body and mind are not distinct and separate entities, but fundamentally a single reality. In other words, there exists an *identity* of body and mind; their distinctness is merely apparent. These thinkers defend the *identity theory*.

Even when maintaining the identity of body and mind, the problem is not solved thereby. This disparity between body and mind still remains. One must either reduce the body to the mind, leaving the mind as the sole remaining reality; or, one must reduce the mind to the body, leaving the body as the sole remaining reality. The psychical must absorb the physical, or the physical must absorb the psychical.

To some philosophers it seemed evident that man is conscious, senses, thinks, and wills. The *mental*, therefore, is *real*. The existence of the mind must be maintained under all circumstances, because one cannot deny the existence of psychical experiences as a part of man's life. Consequently, the physical, the material, the body, must be identified with the mind. The mind, then, is the *only reality*; the physical, the material, the body, exist solely in the mind as a percept or idea. At the most, matter and the physical world can be nothing more than manifestations or modes of mind. This form of the identity theory is characterized as *idealistic monism*.

There is, however, also a reverse side to the identity theory. Other philosophers are convinced that man is a

bodily being existing in time and space, with all the attributes and properties of matter. If we are certain of anything, we are certain that we are material organisms. The *material*, therefore, is *real*. Hence, the mental, the psychical, the mind, must be reduced to the reality of matter. Matter is, at bottom, the only reality, and the mental is fundamentally identical with the physical. The identity theory thus becomes *materialistic monism*.

Others take a metaphysical short-cut across all difficulties of explaining the union of body and mind by assuming that *all matter is living and endowed with mind*; or, as some prefer it, all bodies consist ultimately of some neutral stuff which is the substrate of both matter and mind. One need not wonder, then, that man possesses the attributes of a body and a mind in conjunction. These philosophers advocate *pan-psychism*.

It is seldom, however, that any of these basic systems are accepted in their pure form. Most psychologists and philosophers mix the principles of the one with that of another. They may be parallelists from one standpoint and idealistic or materialistic monists or pan-psychists from another; even a pantheistic monist may be a parallelist. Others adhere strictly to an idealistic or materialistic monism; the former admit nothing but mind and mental states, the latter nothing but matter and material states. Although psycho-physical parallelism really should exclude all interaction between psychical and physical events, yet some thinkers believe in interaction. Some believe that body and mind (soul) are distinct substances; others believe in one of the two as a substance; and others deny the

substantiality of both body and mind. There is no unity of doctrine; everything is confusion.

Strictly speaking, every type of monism should be opposed to the dualistic concept of psycho-physical parallelism. Some monists, however, are parallelists, as our historical survey has shown. Under the heading of *parallelism* we find grouped together the most diversified theories — interactionism, pre-established harmony, occasionalism, sensationalism, the identity theory, the double-aspect theory, the actuality theory, automatism, the mind-dust and mind-stuff theory, epiphenomenalism, pan-psychism. Yet some of these theories are also fundamentally monistic.

Critique of Theories

Some individual theories and views have been submitted to criticism in previous chapters. Here, the pure basic systems, as outlined above, will be evaluated.

PSYCHO-PHYSICAL PARALLELISM

The theory presupposes the ultra-dualistic opposition between matter and mind, between the physical and psychical, as propounded by those who deny the possibility of interaction between these supposedly antagonistic realities.

This denial is based mainly on the argument that such an interaction would be contrary to the *Law of the Conservation of Energy*, as H. Höffding contends, in as

much as the total amount of energy in the physical universe would be decreased or increased by the causal action of the physical on the psychical or of the psychical on the physical. As was pointed out in connection with free-will activity (Chap. 16), the validity of this argument is very doubtful. Furthermore, there is good evidence to show that intellectual (and volitional) activities do not consume physical energy (Chap. 20), so that there would be no infringement on the law. The main point, however, is that all evidence of our daily life definitely establishes the fact of a *mutual influence between the physical and psychical events* in man, irrespective of the postulates of any theory. The physical conditions of the body influence our sensations, imagination, memory, intellect, emotions, and will; there can be, for instance, no sensations without physical stimuli. Reverse, emotions have physical resonances in the body; and the will, as consciousness testifies, does control the movements of our bodily members throughout our waking state. The testimony of consciousness is so clear on this score and the mass of experiential evidence so overwhelming, that an unprejudiced observer cannot doubt the facts.

Parallelism rests on a *false assumption*. It places an *excessive division* between the body and mind of man, as if the two were completely separated entities. Such a division does not exist. Man is, as we have proved, a unitary, integral organism in which the physical, vegetative, sensory, and rational activities are fused into a single harmonious whole. The ultimate nature of man, therefore, must be a dynamic and entitative unit and not the extrinsic union of ultra-

dualistic entities. It follows, that Descartes' and the parallelists' concept of the nature of man is an assumption which is erroneous in its foundation. The facts are true; the theory of parallelism is wrong.

IDEALISTIC MONISM

Every type of idealistic monism, whether it be spiritualistic (Berkeley), phenomenistic (Hume, Bain, etc.), or absolutistic (Fichte, etc.), takes it for granted that, as Descartes proposed, we can know nothing but our own *internal mental states*. The body, the physical objects, the material universe — all have no existence except in so far as they are present in our perceptions and thoughts. At bottom, then, everything is mental; the mind alone exists, and matter is identified with mind. In this way, idealists claim to reduce ultra-dualism and parallelism to unity and the difficulty of the body-mind problem in man is overcome. The theory, however, is fallacious.

Idealism, for one thing, is contrary to the sound teachings and experimental findings of the *natural sciences*. Every natural science — physics, chemistry, geology, astronomy, biology, physiology, and all the rest — is based on the actual existence of *material bodies* endowed with spatial attributes and physical energy independent of the mind and its conscious contents. True, we cannot *know* that they exist unless we have a conscious percept or idea of them, but it does not follow that they have existence *only in knowledge*. Experimental psychology shows how our sensations are dependent on *external stimuli* for their

origin and specificity; it also proves that *nerves* and a *brain*, which are material realities, are required for the transformation of the stimulus excitation into conscious perception. Without the body, there can be no reception of stimuli; without the mind, there can be no knowledge of the objects transmitting the stimuli.

If nothing exists but the non-spatial mind and its ideas, then our knowledge should absolutely be *restricted to the mind and its ideas*. But then it should be utterly impossible to have any perceptions and ideas of such nonexistent things as brains, nerves, bodily organs, houses, automobiles, cities, and countries. Yet we are as certain of these material things as we are of our mind and its conscious states. Our emotions and feelings are accompanied by definite bodily changes, as we know from the findings of experimental psychology; these facts are not the result of sheer imagination. When idealists speak as scientists and psychologists, they invariably speak of sensations and perceptions as if they possessed a *bodily character*; it is only when confronted with the difficulty of explaining the reciprocal action of body and mind that they seek to evade the difficulty by denying the existence of matter and material bodies. Man has both a body and a mind, and we are conscious of both; we have no more right to deny the existence of the one than of the other.

We are conscious of being *passively influenced* by extra-mental objects. When I close my eyes and imagine a parade, I know that I am the agent producing these images; but when I watch a parade passing by, I am passive and do not myself determine what images I shall or shall not receive.

Such a situation could not arise, if the production of sensations, perceptions, and ideas were solely dependent on the mind and its operation.

Idealism is inadequate, because it leaves out of account the *body*, which is just as much a part of man as his mind.

MATERIALISTIC MONISM

Little need be said here in refutation of materialistic monism. If nothing exists but matter and material energy, then everything in man must be able to be interpreted strictly in *terms of matter and material energy*. However, not even the ordinary phenomena of sensation admit of such an interpretation. The sensation of 'blue,' for example, is something totally different from the physical stimulus of a definite frequency of light waves striking the retina; and the sensation of 'pain' has no similarity to the piercing of the skin by a needle point. *Cognition* and *consciousness* cannot be explained in terms of atomic oscillations of brain substance. *Ideas* (Chap. 12) are abstract and universal, while everything material is concrete and particular. *Intellection* (Chap. 20) is spiritual and intrinsically independent of material conditions; it cannot, therefore, be reduced to material activity.

Materialism accounts for the body, but it does not account for the mind. Yet the mind is as much a part of man as his body. The theory is inadequate, because it fails to give an explanation of the 'whole man.' Like idealism, it is an oversimplified system which evades the real issue by denying the existence of an essential part of man's nature.

PAN-PSYCHISM

Pan-psychism assumes, in one form or other, that everything material is also mental; in other words, every body is fundamentally endowed with life and mind. This assumption is gratuitously made and is contrary to the verdict of the *natural sciences*. The sciences make a clean-cut distinction between living and nonliving bodies, and they base this distinction on essential differences in *structure* and *operation*. Nonliving beings (Chap. 19) are characterized by 'transitive' action, living beings by 'immanent' action. There is not a shred of evidence for maintaining that the electron, proton, and atom have life and mind. The metaphysical necessity of overcoming the cartesian ultra-dualism of mind and matter prompted the formation of the theory; the theory, however, is contrary to all known facts.

SCHOLASTIC ANIMISM

The prodigious confusion of philosophical and psychological systems of the three preceding centuries stems logically from the *ultra-dualism of Descartes*. It is the clearest proof that Descartes' assumptions must be wrong, because this confusion furnishes a complete *reductio ad absurdum*: when the conclusion is so disastrous, the premises must inevitably be false. Wherein did Descartes err?

His error consisted in splitting man's nature into two antagonistic substances, body and spirit. He conceived the body as a mechanistic aggregate of atoms and the spirit as the sole seat of all mental states. A psycho-physical parallelism was unavoidable, and he thereby made a metaphysical explanation of man's unitary nature impossible. The result is seen in the fruitless attempt of most modern philosophers to restore the evident factual unity of man as an *integral organism* capable of both bodily and mental activities.

Descartes made his initial mistake in rejecting the traditional teaching of man's nature as embodied in scholastic anthropology. Here was the correct doctrine, but Descartes misunderstood it. In rejecting it, he led subsequent thinkers into a quagmire of errors. To remedy this desperate situation, we must return to the fundamental doctrine of the scholastics. We have shown the correctness of their views in a lengthy discussion (Chaps. 19, 20) on vitalistic animism.

In vitalistic animism we find the *solution* of all the difficulties involved in the various systems mentioned above. Parallelism stresses the difference between the physical and the mental, but finds no means of combining them into the higher unity of the human Ego. Animism preserves the difference between the physical and the psychical, because the primary source of the physical is matter and the primary source of the psychical is the soul; but the real subject of both is neither matter nor the soul, but the Ego which is the composite unitary substance resulting from the substantial union of matter and soul.

Idealism stresses the mental, but finds no place for the material side of man's nature; it reduces the physical to the psychical, thereby doing violence to man's physico-psychical nature. Animism does justice to the psychical side of man's nature, but it also safeguards the physical as an equally important part of man's being. Materialism emphasizes the physical, but it eliminates the psychical which is present in man's nature. Animism also accounts for the physical side of man's nature, but it safeguards the psychical as being equally essential to man. Pan-psychism is correct in maintaining that in man matter is living matter, but it goes contrary to all evidence when it asserts that all matter in the world is endowed with life and mind. Animism agrees with the sciences in distinguishing between living and nonliving matter, and it also agrees with biology and psychology in asserting that man's nature is both physical and psychical, material and mental. While Descartes' theory of man is an ultra-dualistic conception, based on the dissociation of man's nature into two distinct and separate complete substances, body and spirit, the theory of vitalistic animism is a *moderate dualism*, based upon the real distinction of matter and soul as part-substances, combined into the metaphysical unity of a single nature by means of a substantial integration.

Animism, therefore, contains whatever there is of truth in parallelism, idealism, materialism, and pan-psychism, while avoiding the errors of extremism found in each and all of them. The animism of aristotelian-scholastic philosophy alone accounts for all the facts and phases of man's complete nature.

The Human Person

What, then, is the human *Ego*? Whatever in man is bodily and mental, physical and psychical, material and spiritual, is referred by the Ego to itself: *I* weigh one hundred fifty pounds, *I* see a house, *I* think, *I* will. The physical and the psychical represent 'the whole man.' The *Ego*, therefore, is *the whole man*. Body and soul are integrated into one thing, the whole man, the Ego. The Ego, therefore, is not the body, not the soul, not the intellect, not the will, not consciousness, not life. All these things 'belong' to the Ego as constituting 'the whole man.'

The Ego is a *substance*. A 'substance' is an individual being whose nature it is to exist in itself and not in another as in a subject. A being whose nature it is to exist, not in itself, but in another as in a subject, is called, in philosophical terminology, an 'accident.' Accidents are modifications and modes of substance. Shape, color, motion, thought, feelings, etc., are modifications of some ultimate reality; they do not exist in and for themselves, but exist in the substance which they modify. Man, considered as a totality, is a self-contained being with a naturally independent existence of its own; man, therefore, is a 'substance.' And since the Ego is the whole man, the ultimate reality which possesses everything pertaining to man's being, it is evident that the Ego is substantial and not merely accidental.

The Ego (man) is a *person*. The term 'person' is never applied to a chemical being, to a plant, or to a brute animal; no one calls a piece of carbon, a tree, or a horse, a 'person.'

Since man alone, among all material beings and organisms, is called a 'person,' what specifically constitutes man a 'person'? It is not 'materiality,' because chemicals, plants, and brutes are material. It is not 'life,' because plants and brutes are living. It is not 'sentiency,' because brutes are sentient. It must be that which distinguishes man from all these types of being, and that is 'rationality,' 'intellectuality.' Boethius⁹ has given us the following definition of a 'person': *naturae rationalis individua substantia* — an individual substance of a rational nature. A 'person' is, therefore, an *individual, complete, subsistent, rational (intellectual) substance*.¹⁰ A moment's consideration will reveal the fact that the human Ego, or whole man, is indeed a substance which is individual and complete and subsistent and rational. Consequently, the human Ego, or man in his totality, is a 'person.'

We must make an exact distinction between 'personality' in this *metaphysical* sense and 'personality' in a *psychological* sense. Psychologists, when they use the term, mean the sum-total of human functions and capacities, traits and aptitudes, and this concept is akin to 'character.' The unity of 'personality' in this psychological meaning is a *functional* unity, and this functional unity may at times be impaired or destroyed, as we notice it in 'split personality,' 'dual personality,' and so on. 'Personality' in the philosophical or metaphysical sense is the essential mark of man's nature as a 'rational animal' and is never subject to change, because the essential constitution of man's being from the moment of conception to the moment of death remains the same. In other words, man is and remains at all

times a 'person,' namely, an individual, complete, subsistent, rational substance, irrespective of what happens to the functional unity of his mental states and operations.

The human being, the human Ego, is a person. As a person, man is a substance consisting of two really distinct substantial co-principles, soul and matter. The soul is the animating principle and therefore the primary principle (in conjunction with matter) of the *vital* attributes and activities of vegetancy and sentiency. The soul, however, is spiritual in essence and as such the sole agent (though with an extrinsic dependence on matter) of the spiritual activities of intellect and will. Matter is the principle (in conjunction with the soul) which accounts for all the *physical* attributes and activities in man's nature. Man is a unique being, the fusion of spirit and matter compounded into a single substance and organism. He is in all truth a *microcosm*, uniting within his person the essential realities of chemical elements, living plants, sentient animals, and spiritual intelligences.

How can spirit and matter be so intimately linked together that they constitute a single substance, nature, Ego, person? The *fact*, from all that has been said, is demonstrated beyond reasonable doubt; the *manner* of this union will never be clearly understood. We explain the union of spirit and matter in man by saying that the spirit is the *soul* of the body, the 'vital principle' or 'substantial form' or 'entelechy' of matter. Such terminology may not clarify the 'manner' of their union to any great extent, but it is a philosophical explanation which at least avoids the difficulties inherent in parallelism and monism and is in

accord with all the material, sensory, and spiritual phenomena observed to be present in man. T. V. Moore's remarks are classic. "Since Infinite Power cannot make a square circle, neither can it make the essentially non-thinking and lifeless matter, while it remains non-thinking and lifeless, at the same time think and live. But it is possible for living matter to live by a principle of life inherent within it; it is possible for a sensory organism to have sensations by means of sense organs vitalized by a living soul; it is possible for man to be a living being with sense organs capable of being acted on by the energies of matter in the outside world, because these same sense organs are themselves material, but not lifeless matter, and live by the soul that vivifies the body. It is possible for this same living soul, which is a principle of life, vivifying the body and animating the sense organs, to be conscious of the way in which its sense organs are affected, and to think about those revelations of the world outside, which come to it through the sense organs, by powers which are in no way the activity of bodily organs, though they can interpret the data derived from bodily organs, and so understand and interpret the world outside by non-sensual and spiritual concepts."¹¹ No other theory can explain all the pertinent facts so clearly and completely.

MAN IS THE *ULTIMATE GROUND AND AGENT* OF EVERYTHING THAT occurs within the realm of his being. Whatever pertains to his being in any manner whatsoever must, in its final analysis, be referred to his *person* and *Ego* and not to any

particular part or power. Man is material and spatial. Man is composed of a matter and a spiritual soul, and is an organism. Man assimilates food and reproduces himself. Man has a nervous system and sense organs. Man sees, hears, tastes, smells, has the sense of touch, and feels pain. Man synthesizes the sense data, imagines, remembers, and performs instinctive actions. Man strives for sensuous good, avoids sensuous evil, and experiences various emotions. Man forms ideas, judgments, and processes of reasoning. Man exercises free will and desires spiritual values. Man is conceived, lives, and dies. The immediate principles of functions are powers or faculties, but the ultimate agent is *man*, the *person*, the *Ego*.

There are a thousand-and-one aspects to man's being, but they are all just so many phases of one ultimate substantial reality, the human person, expressing itself in multitudinous ways.

Summary of Chapter XXI

We must now synthesize the various aspects of man's being into the unity of 'the whole man.'

1. *The Empirical Ego*. It is the self or Ego as observed at any present moment in a here-and-now experience.

2. *The Historical Ego*. It is the self or Ego of an individual as he perceives it through memory of his life's experiences from the present down through the past.

3. *The Metaphysical Ego*. It is the self or Ego considered in its constitution and nature. Everything in man is referred ultimately to the Ego: mind, soul, body, and all bodily and mental states and activities. The Ego, however, is never referred to anything else in man; it is the *ultimate reality* in man. How can such diverse realities be referred to the same Ego, since 'body' and 'mind' seem to possess such antithetical attributes? The attempt to bridge the gap between 'body' and 'mind' has given rise to many theories.

4. *The Problem in History*. Plato maintained a theory of ultra-dualism; body and spirit are complete substances. *Aristotle* maintained that matter and soul are incomplete substances united together into a single substance. *Medieval* philosophers followed Aristotle.

Modern philosophy begins with *Descartes* who placed an antithetical *ultra-dualism* between body and spirit; he conceived both as complete substances. Man's mind can know only its internal states. *Geulincx* advocated occasionalism and *Malebranche* ontologism. *Leibnitz* proposed his monadology, a theory of pan-psychism and

psycho-physical parallelism. *Spinoza* was a pantheistic monist. *Locke* was an empiricist who confused concepts and phantasms. *Berkeley* maintained a spiritualistic idealism. *Hume* denied the existence of all substances; his theory is pan-phenomenalism. *Kant* proposed a rationalistic idealism, which was developed by *Fichte*, *Schelling*, and *Hegel* into the idealistic monism of absolutism. Other philosophers went to the opposite extreme and defended a materialistic monism.

Fechner propounded the parallelistic view of the double-aspect theory. Wundt developed the actuality theory, Huxley the conscious automaton theory, Clifford the mind-dust theory.

W. James advocated an empirical parallelism, denying the substantiality of the soul and making the passing thought the 'thinker' or Ego.

The present-day theories of psychology mostly advocate psycho-physical parallelism, and the general trend is still materialistic.

5. *Digest of Theories*. All views can be reduced to the following general metaphysical theories: psycho-physical parallelism, idealistic monism, materialistic monism, and pan-psychism.

6. *Critique of Theories*. *Psycho-physical parallelism* cannot explain the evident relationship and mutual influence of the psychical and physical in man. *Idealistic monism* is contrary to the natural sciences which maintain the existence of material bodies; it cannot explain the facts pertaining to the human body. Materialistic monism cannot explain man's mental life, as manifested in sensation,

cognition, consciousness, ideas, and intellection. *Pan-psychism* runs counter to the findings of the natural sciences, which make a clean-cut distinction between living and nonliving bodies based on structure and operation.

7. *Scholastic Animism*. It is the doctrine that organisms consist of *matter* and *soul* as two incomplete substances united together into a single, composite substance. This unitary substance is the subject of all activities and states in man, physical as well as mental. It is the only theory which accounts for all the facts and phases of man's complete nature.

8. *The Human Person*. The human Ego is the *whole man*. The Ego, the whole man, is a 'substance' and a 'person.' The soul is the animating principle of matter and therefore the primary principle (in conjunction with matter) of the vital attributes and activities of vegetancy and sentiency; it is spiritual in essence and as such the sole agent of intellection and free will. Matter is the principle (in conjunction with the soul) which accounts for all the physical attributes and activities in man. The whole man is thus satisfactorily explained.

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- 1 Concerning the historical development of the modern theory of knowledge, see the author's *Reality and the Mind* (Bruce, 1936).
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- 3 *Ibid.*, Part IV, Sect. 6.
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- 5 *Ibid.*, 22, fl. 4, p. 312
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- 9 *De persona et duabus naturis*, c. II
- 10 See the author's *Domain of Being* (Bruce, 1939)' Ch. 17, 18
- 11 *Cognitive Psychology* (Lippincott, 1939), p. 157.

Chapter 22

THE ORIGIN OF MAN

OUR INVESTIGATION INTO THE NATURE OF MAN HAS SHOWN THAT he is a unitary but composite substance. Man consists of a material substance, taken from the ordinary elements, and a spiritual form or entelechy. The spirit of man is the animating principle of the material substrate, transforming the latter into organized, living matter; the human spirit, therefore, is the soul or psyche of the human organism, so that soul and matter are fused together into a single integral organism. Vegetative and sensory functions proceed from the organic compound as from a single principle of action or nature; they are intrinsically material vital functions. The rational activities of intellection and volition, being spiritual, proceed from the soul alone, but with an extrinsic dependence on the senses and the nervous system. Such is the constitution of 'the whole man.'

The next important philosophical question relative to man's being is the problem of the *origin of man*. The problem before us is the *ultimate origin of man*. And since man consists of a body and a spiritual soul, the question resolves itself into the double problem of the ultimate origin of man's *body* and *man's soul*.

The Origin of Life

Before going into the question of man's origin, it will be necessary to investigate the *origin of life in general*.

It is the unanimous verdict of the geologists that living beings did not always exist on our globe. There were long ages in the history of the earth, in the early period of its development, when it was in a fiery-molten state. No organism, as we know it, could possibly have existed under such circumstances. Later, after considerable cooling, the upper mass of the earth solidified into a crust, forming a suitable habitat for organisms. Eventually, the organisms appeared on the earth; their fossil remains can be traced far down in the sedimentary deposits.

HOW DID LIFE ORIGINATE ON EARTH?

Did life originate through the extra-mundane causality of *God*? If so, there are two possibilities to consider. He could have made the entire organism, matter and soul, without using any pre-existing material whatsoever in its production. Such a total production out of nothing would be *direct creation*. Or, He could have used the matter already existing on the earth and transformed it into a living being; in doing so, He would be the primary cause in the production of life, while utilizing the agencies of creatural beings as secondary causes. This type of production is *mediate creation*.

On the other hand, many scientists and philosophers are reluctant about appealing to any extra-mundane, divine

causality. Some take this position on the general principle that an appeal to divine agency must be avoided in all natural events, except as a final recourse; only when natural agencies are evidently incapable of accounting for the origin of life, would it be permissible to invoke the Creator as the cause of life on the earth. Materialistic monists, of course, approach the question from an entirely different angle. Since, in their view, there is no God and since matter and material forces are the sole agencies at work in the world, they must explain the origin of life as an emergence from matter alone.

This theory, which defends the origination of life from nonliving matter, through forces which are indigenous to matter itself, is termed *abiogenesis*. In our day, the theory of abiogenesis is also called the *theory of absolute emergence*.

Abiogenesis

Biology informs us that living beings, under present conditions, originate from other living beings of the same type. Generation may be sexual or asexual, both among plants and animals, but some form of generative reproduction is necessary. Reproduction, however, does not settle the question of the origin of the first organism which appeared on our globe.

Formerly, the defenders of abiogenesis thought they had good evidence for the origination of life out of nonliving matter in the instances of so-called *spontaneous generation*. Up to the end of the seventeenth century even scientifically

minded men believed that certain low types of animals were generated 'spontaneously,' i.e., abiogenetically. Worms were supposed to develop out of putrid flesh; frogs, it was thought, were produced from the mud of ponds through the action of the sun's rays; insects, and even rats and mice, were believed to originate without the generative action of living beings. Aristotle, St. Thomas Aquinas, and the medieval Schoolmen generally, taught spontaneous generation in such cases. Lack of scientific training and instruments were responsible for such views.

At present, no scientist would dare defend spontaneous generation on *scientific* grounds.

In 1668 Redi made a scientific experiment in the city of Florence. In midsummer, he placed two pieces of meat side by side, one covered with gauze, the other exposed to the free air. The latter alone developed maggots, because the flies could deposit their eggs on it.

Thereupon the defenders of spontaneous generation adduced other instances which seemed to exclude definitely any form of generation proper, since one never found eggs. Some organisms live in inaccessible places within animals, for example, in the peritoneum of rabbits, inside the muscles of pigs, in the brain of sheep, in the intestines of men and animals. Soon, however, it was proved that these organisms were reproduced through normal generation and then changed their habitation by entering into the system of other animals.

Driven back almost to surrender, the advocates of spontaneous generation received new courage when the high-powered microscope revealed organisms so minute

that they seemed to be a transition stage between matter and organic life. Vegetable and animal infusions, when exposed to the air, were seen to contain innumerable little organisms for whose origin one found no generative cause. Hence, these 'infusoria' were considered to be the product of spontaneous generation. Tyndall, however, did much to disprove this contention.

The epoch-making experiments of *Louis Pasteur*, begun in 1860, exploded the theory of spontaneous generation beyond recovery. The genius of Pasteur, through a life-time period of experimentation, established beyond the shadow of a doubt that germs can originate only from germs. Against the claims of Pouchet, Musset, and Joly, Pasteur proved that putrifiable matter of any kind whatever, if sterile and properly protected against contamination from germs present in the surrounding media, such as the air, will never produce living beings. Although nothing was known at the time about such germs except their bare existence, the classic experiments of Pasteur convinced the scientific world that spontaneous generation never actually occurs.¹ Later, as microscopy became perfected, the lowly bacteria and protozoa were seen to reproduce their kind by means of division, a definite proof of Pasteur's original contention.

In 1905, John Butler Burke claimed to have discovered a case of abiogenesis. His experiments seemed to show that *radioactive substances* acting on gelatin media produced 'bacteria-like' cells, containing a nucleus, and that these cells grew and finally subdivided. But Sir William Ramsay, the famous investigator of radium, showed that the

emanation of the radium decomposes the water in the bouillon into oxygen and hydrogen and coagulates the albumin. Hence, little bubbles of gas are formed, surrounded by a covering of coagulated albumin. As more gas is produced, the bubbles increase in size, so as to give the appearance of very small growing organisms. Burke had also noticed that the new-born organism melted away in the water. Ramsay supplied the explanation: the water gradually removed the gelatin from the 'cell walls,' the gases escaped, and the bubbles collapsed. The phenomenon was thus seen to be nothing more than an ordinary chemical, lifeless process.

In our own day, the discovery of *viruses* and *bacteriophages* has brought the question of abiogenesis again into the foreground. It is not known whether they are true organisms or chemical substances. Perhaps the electron microscope will determine their exact nature. If they turn out to be true organisms, the probabilities will not favor spontaneous generation.

Historically, the formula of the Law of Biogenesis has undergone the following development:

William Harvey (1651): *Omne vivum ex ovo*; every living being originates from an egg.

Francesco Redi (1698): *Omne vivum ex vivo*; every living being originates from a living being.

Rudolf Virchow (1855): *Omnis cellula ex cellula*; every cell originates from a cell.

Walter Flemming (1882): *Omnis nucleus ex nucleo*; every nucleus originates from a nucleus.

Theodor Boveri (1903): *Omne chromosoma ex chromosomate*; every chromosome originates from a chromosome.

All observations and experiments, therefore, have confirmed that organized substance originates only from organized substance. Hence, so far as science is concerned, *spontaneous generation (abiogenesis) never occurs*.

Helmholtz, Van Tiegham, Lord Kelvin, Arrhenius, and others have advanced the theory that life might have originated on earth through life-germs carried by *meteorites* from some other stellar body; or, the germs could possibly have *floated across* the intervening space and landed on the earth. This arbitrary assumption merely defers the question without solving it. How did life originate on these stars? They, too, were at one time in a fiery-molten state. Meteorites melt through friction on contact with the atmosphere of the earth, and the heat would kill all germs; the absence of heat and moisture in interstellar space would freeze the germs and desiccate them. Becquerel placed germs in a vacuum with a temperature of liquid air, thus approximately reproducing the conditions of interstellar space. The result, after exposing the germs to ultraviolet rays, which are so abundant in interstellar space, was the death of all germs. Hence, all life-germs would have died in transit. The theory is hardly worthy of serious consideration, but it reveals the desperate extremity in which the theory of abiogenesis has been placed.

When, therefore, certain scientists and philosophers maintain that abiogenesis must have occurred in the

bygone ages of the earth's development, their assertion no longer rests on scientific proof. Abiogenesis is thus advanced as a *postulate* of science and philosophy. But a postulate is the assumption of something as true which is either so self-evident that it needs no proof or which must be accepted as true because it is the only rational and logical explanation of a fact which is obvious to us and of which we have certainty, although we cannot verify the assumption by direct demonstration.

From what has been discovered by science concerning the fact of abiogenesis, it is clear that abiogenesis is not a self-evident postulate; every bit of evidence is against its actual occurrence. Nor can it be said to be the only rational and logical explanation of the origin of life. Only on the supposition that a Supreme Being does not exist, would abiogenesis, or the absolute emergence of life in virtue of the forces inherent in matter, be a necessary postulate. Is the existence of a Supreme Being inconsistent with reason and logic? If not, then abiogenesis is not the only rational and logical explanation of the origin of life.

THE PRINCIPLE OF CAUSALITY IS THE FOUNDATION OF ALL SCIENCE and philosophy. Reason and logic, according to this principle, demand that there be a *proper proportion between cause and effect*. The effect can never be actually greater than what is virtually contained in the cause, otherwise a part of the effect would be without an adequate cause and as such could never come into existence. It is true, that organisms consist of material elements in their

structure and utilize material forces in their vital functions. But the *intrinsic purposiveness* of organic structure and function and the *spontaneity* and *immanence* of action, as manifested in metabolism and reproduction, far exceed the capabilities of matter and material forces taken by themselves. The simplest forms of plant and animal life, bacteria and protozoa, are so superior to inorganic elements and compounds, that even confirmed materialists are now forced to admit that they belong to different levels of being.

There is no need to restate the proofs that, besides matter and material forces, a *vital principle* or *soul* is required in plants and animals (Chap. 19). Unless we wish to make the gratuitous assumption that all matter is living, the arrival of the organism on earth involves the arrival of something *totally new and superior*, namely, the vital principle or soul. The soul cannot be accounted for on the basis of mere matter and material force. Hence, it must be accounted for by some cause *outside of matter itself*; and, since the cause must be at least equal to the effect, this extra-material cause must itself be endowed with life. That the complicated structure and purposive function of even the lowest unicellular organism could be the result of haphazard chance-factors, *without intelligent planning*, would indeed be a greater miracle than creation. It is not sufficient for the first organic being to arise somehow through a fortuitous concurrence of atoms; this first organic being must have arisen completely endowed with cytoplasm, nucleus, chromosomes, and genes, and with the *perfect mechanism of the process of reproduction*. If this

were not so, *no reproduction could occur*, and there would be no offspring, no second generation; life would become extinct with the very first organism, and there would be no life today. Yet there are no grounds for supposing that the first organism, arising from unintelligent matter and itself unintelligent, could have the power of reproducing future generations and transmit this power in perfect condition to its offspring. Reproductive power has a purpose for the future, but it is of no advantage for the reproducing individual organism. Such a purpose for the future implies intelligence, but this intelligence does not lie in the speck of living substance which we call 'organized matter.' Neither does the intelligence in question reside in the inorganic elements. Hence, there must have been an *Intelligent Cause*, distinct from matter and the material world, which produced life on our globe. Any other supposition is against logic and reason.

The statement of W. Branca, the well-known scientist, is as true today as when he uttered it in 1910: "Whoever accepts spontaneous generation [abiogenesis] here on earth, thereby believes that two diametrically opposed Laws of Nature have equal value. The first states: Life can originate only through Life. The second states: Life originates also or at least has originated in the past out of non-life. *The first law is proved by billions of facts*, and it is true without any doubt. The second, however, has until the present *never been proved by a single fact*. Both Laws of Nature contradict each other diametrically."²

Since, therefore, science cannot prove abiogenesis either by observation and experiment or by logical principle

and deduction, abiogenesis is not a postulate of science but of *materialistic philosophy*. But a postulate which is based neither on reason and logic nor on the approved findings of science, is no real postulate at all; it is nothing more than a subterfuge designed to bolster a bankrupt philosophy of the origin of life.

Direct Creation

It is not within the province of psychology to prove the existence of an extra-mundane Supreme Being; the proof for the existence of a personal God, all-intelligent and all-powerful, belongs to the philosophical department of theodicy. In this connection, we are entitled to accept His existence, particularly in view of the fact that the origin of life must be attributed to an intelligent cause distinct from all matter and material force. It will not be amiss, however, to quote the following statement of a modern scientist, C. C. Hurst: "At present it seems to be generally agreed that the material universe is finite and not infinite in space and time. If the material universe is finite in time, the matter of which it is composed must have had a beginning. In the strictest sense a beginning implies creation and creation involves a Creator. That is as far as modern science will take us."³

Granting, then, the existence of God, the question arises as to how He produced the first living being on earth. Was it by means of a *direct creation*? By direct creation we understand the production of a new reality *in its total being from nothingness*, so that no pre-existing entity contributes anything at all to the making of the new reality except the

Creator and His creative power. Applying this concept to the origination of the first organism, it means that no material substance of any kind was used by the Creator in the production of the organism; the complete organism, both as to its matter and vital principle (soul), was produced directly by the creative act out of nothing and then placed readymade on earth.

It is obvious that a direct creation of this sort *could* have occurred. God in His omnipotence can create anything which does not involve a contradiction in terms. That no intrinsic contradiction exists in an organism, is evident from the very fact that organisms actually exist. Hence, a direct creation of the first organism is *possible*. It would, however, be a fallacy to conclude from possibility to actuality; because something 'can be,' does not prove that it 'actually is.'

In all probability, a direct creation, in the sense defined, did not take place. We must bear in mind that the body of all organisms is composed of the ordinary elements found everywhere on earth and in the physical universe. Consequently, there was *no need* to create the bodily elements of the first organism out of nothing. As R. E. Brennan remarks: "No builder would go to the trouble and expense of bringing in a whole new array of materials if he already had all that was necessary for the construction of his building."⁴ While the argument is not strictly cogent, it has enough force to make the theory of a direct creation of the total being of the first organism highly improbable.

Mediate Creation

How, then, did God produce the first organism? Life could not originate through an absolute emergence solely from matter and its indigenous forces. In some manner the creative causality of God was necessary for the production of the first organism, even though He used the pre-existing elements of the earth, because the *vital principle* or *soul* is by its very nature *superior to matter and material forces*. The vital principle or soul, therefore, demands the causality of God for its production, at least for the first organism.

Did the first vital principle or soul come into existence through direct creation on the part of God? Again, it *could* have; there can be no question of the *possibility*. On the other hand, the vital principle or soul of the plant and animal, as we have seen (Chap. 19), is essentially *material* in nature, being intrinsically dependent on matter in its entity and existence; it is, in aristotelian-scholastic terminology, *educed* out of the potentiality of matter. Hence, a direct creation from nothingness is not required. All that would be required for the appearance of life and for the production of the first organism is the original *fiat* of God ordering and disposing matter and material agencies in a purposive fashion, so that at a given time and place the first organic vital principle or soul, the conditions being favorable, would emerge out of the hidden potentialities of matter. Life would thus emerge spontaneously, but in virtue of an *inherent tendency* placed in bodies from the beginning by the Creator. God would be the primary cause

of the origination of life, with the agency of bodies as a secondary and instrumental cause.

If we wish to call this form of production a 'creation,' it could be called a *mediate* or *derivative creation*. The term *relative or restricted emergence* is perhaps a better designation.

According to the 'law of parsimony,' one should ordinarily accept a theory which provides the smallest amount of assumptions in reasoning and employs an economy of means for the realization of an end. The animation of pre-existing matter seems to conform to this law. Hence, mediate or derivative creation (relative or restricted emergence) appears to have been the method of production used by the Creator in the origination of organic life. The theory is, to say the least, very probable.

Organic Evolution

In a broad sense, *organic evolution* is understood to be the theory according to which the various species and types of animals and plants derive their origin, not through distinct and separate creative acts of God, but through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws. The theory maintains that the higher forms of animals and plants developed genetically from the lower, so that all species and types are the descendants of a very few simple organisms, perhaps even of a single one. The general trend of evolution has been from the simple and homogeneous to

the complex and heterogeneous. Hence, the organic descent of all animals and plants should be viewed as representing a 'genealogical tree,' the various branches exhibiting manifold degrees and stages of divergence from the parent stock acquired in the course of time.

Most scientists advocate a *monophyletic* evolution, so that all organisms derive their descent from a single primitive organic cell; at least, they say, all plants evolved from an original plant and all animals from an original animal. Others advocate a *polyphyletic* evolution; according to this view, there are several independent pedigrees of plants and animals, representing distinct natural species, each of which has its own point of departure from which the evolutionary process started.

As for the *evidence* for evolution, the theory is based on a number of observations and deductions pertaining to various fields of science.

Paleontology, the science which treats of the life of past geological periods, shows the phylogeny and relationships of organisms and seeks to determine their age and chronology in the history of the earth. The story of life is contained in the fossils found in the superimposed strata of rock deposits of the earth's crust. The fossil remains are a record of the various species of animals and plants through the ages. From this record it is proved that animals (for example, trilobites) and plants (for example, algae) existed side by side in the earliest (Cambrian) formation. Some of the types are highly specialized forms of life. Generally speaking, the trend is from more primitive forms to more complex structures; the mammals, for instance, appear

rather late. In some cases, there has been a deterioration of organic structure. Scientists find in this *progressive succession* a potent argument for organic evolution.

Scientists point to the *morphological* and *physiological similarity* of organic types as another general argument in favor of the evolutionary theory. There are certain structures which are fundamentally similar, though they belong to different species and genera. Thus, the hand of man, considered structurally, bears a remarkable resemblance to the paws of lions and mice, to the hoofs of cows and horses, to the wings of birds and bats, to the fins of fishes, and to the flippers of seals and whales, etc. The spinal column of vertebrates is, of course, similar in all these types of animals. The structure of plants is very much alike. The most important feature of morphological similarity, universal throughout the plant and animal kingdoms, is the cell, the basic unit of biological structure and function; it is fundamentally the same in every type of organism. Such similarity in structure, evolutionists claim, shows genetic descent and a common origin.

Ontogeny, the life history of the individual organism, is also adduced as evidence. Accepting E. Haeckel's 'biogenetic law,' evolutionists see in the ontogeny of the individual in its embryonic stage a recapitulation of the phylogeny of the race. As an example, they refer to the whalebone whale. As an adult, this whale has only dental plates, but in its foetal life it has teeth; in former ages, as paleontology reveals, it had teeth also in its adult life. The flounders, and similar fishes, have their two eyes on top of the head, because they swim in horizontal fashion, with one

side of their body close to the ground; but when hatched, they have one eye on each side of the head, like ordinary fishes, and the one eye gradually moves over until it is near the other. Many such instances are known to science. Even man, they say, shows gill-pouches in his prenatal development, reminiscent of his phylogenetic relationship with the fishes. All that is required, in order to establish organic evolution on a sound scientific basis, is the extension of this biogenetic principle to all organisms.

There are other arguments, but these are broadest in scope and most fundamental in significance. It is the *cumulative force* of the various pieces of evidence upon which evolutionists rely to prove their case. While the outline just given is extremely brief, it indicates the line of thought which underlies the evolutionary theory.

HISTORICALLY, THE FIRST SERIOUS ATTEMPT TO EXPLAIN THE ORIGIN of the various species through genetic descent was made by *Jean de Lamarck* (1809) who accounted for all specific changes through the use and disuse of bodily organs. *Geoffroy Saint-Hilaire* (1828) sought the explanation more in the influence of the environment. *Herbert Spencer* (1852) stressed the 'survival of the fittest.'

The extraordinary work of *Charles Darwin* (1859), as expounded in his *Origin of Species*, made organic evolution acceptable to the scientific world. His famous 'principle of natural selection,' enabling the fittest to survive in the struggle for existence, seemed to supply the universal factor for changing one species into another in a practically

mechanical way according to a purely natural law of development. All animals conform to a general type, but individuals possess slight variations. Such variations, gradually accumulated, are transmitted through heredity. Some of these variations are bound to give their possessors an advantage over their competitors in the struggle for existence, because the former are more fit. The result will be that the fit will survive, while the unfit and the less fit will perish. This preservation of advantageous variations and the rejection of injurious variations, is what Darwin meant by 'natural selection.' Through countless generations, succeeding one another over vast periods of time, the constant addition of small variations will eventually produce types so divergent from the original parent stock that new species arise. Such was Darwin's theory.

Hugo De Vries defended the theory of mutation, according to which important variations occurred suddenly, so that the offspring differed from the parent in well-marked characters. *August Weismann* (1893) opposed the view that acquired characters could be transmitted by heredity and based evolution on natural selection affecting the germ plasm. *Hans Driesch* (1894) invoked his quasi-intelligent entelechy to account for evolutionary development. *Lloyd Morgan* advocates an *emergent evolution*, in which unpredictable new levels of organic beings arise. Other theories have also been advanced.

According to the modern biological concepts of genetics, based on the laws of heredity discovered by the Augustinian Abbot *Gregor I. Mendel* (1822—1884) in 1866, the genes

and chromosomes are the main factors in evolution. Four different vital processes contribute to the origin of new species: the mutation of genes, the transmutation of chromosomes, the mixing of genes and chromosomes through sex reproduction, and the progressive adaptation of their product to the manifold conditions of the environment.

The authors of these theories of evolution usually disclaim anything like *purposiveness* in the process of development. Modern biologists, however, in explaining evolution, use terms which savor strongly of 'purposiveness,' although they are very loath to admit it outright. The recent trend to teleological concepts, i.e., that there is a *tendency* in evolutionary processes to develop higher organisms, is represented by such scientists as L. J. Henderson, Jennings, Vialleton, Coghill, Agar, Goldschmidt, T. H. Morgan, Wheeler, and others.

In opposition to organic evolution is the *theory of permanence or fixity*. It maintains the stability of organic species, acknowledging only minor variations within the framework of the specific type. The theory presupposes that every single species received its existence through a creative act of God. The systematic arrangement and plan of organisms, based on their structural similarity, is merely an *ideal unity*, founded on the unity of the plan conceived and executed by the Creator of the universe. Up to the time of Darwin, this theory was the only one held by scientists and people in general. They observed no transformation of one species into another. The fact that hybrids of different species could not propagate, at least not indefinitely,

seemed to preclude the possibility of all species having a common genetic origin.

EVOLUTION OR PERMANENCE?

Strictly speaking, the problem of evolution or permanence is a *scientific problem*. If we grant the existence of God as the Author of nature and of life, either theory is tenable. It is evident that God could have created the various species of animals and plants directly. He could also have implanted in the first organism the tendency to develop into increasingly higher forms of life under the influence of internal and external developmental factors. There is nothing contradictory in either theory. Which plan was actually carried out, would be difficult to ascertain.

St. Thomas Aquinas and scholastics in general have always maintained the principle that, if something can be explained through the agencies of creatural causality, one should not have recourse to divine power. It has also been the consistent teaching of St. Thomas⁵ that a planned hierarchy exists in nature, so that there is a *tendency* for elements to lead to compounds, for compounds to lead to vegetant beings, for vegetant beings to lead to sentient beings, and for sentient beings to lead to man, who is the end and the aim of all development. While St. Thomas was not an evolutionist in the modern sense of the term, because he was unacquainted with the data of the modern problem of evolution, his general metaphysical teaching about the world and about spontaneous generation could very well be harmonized with the theory of evolution,

provided this evolution be conceived as being inaugurated by God according to a purposive plan. The rest would be left to the agency of natural causes.

The theory of evolution is not, in itself, irreligious and atheistic; but the scientists and philosophers are often irreligious and atheistic. The theory does not, in all probability, run counter to Christian principles and belief⁶ or to the scriptural account in the Book of Genesis. A number of the early Christian philosophers maintained that creation was a single act of God set at the beginning of the world. All further developments occurred through natural agencies. If scientists can prove conclusively that evolution is a fact, then a fact it is.

HAS SCIENCE *PROVED THE FACT OF EVOLUTION*?

The answer is definitely in the negative, as every reputable scientist admits. At best, it is a very plausible theory, but nothing more than a 'theory', the dogmatic claims of certain pseudo-scientific magazine writers notwithstanding. Let us evaluate briefly the evidence.

Paleontology is a static, fossilized record; it must be interpreted to be understood, because it does not explain itself. It is a record of the *succession* of organic forms; succession, however, does not necessarily mean descent. *Post hoc, ergo propter hoc*, is a fallacious piece of reasoning. The white man came after the Indian in North America, but he did not on that account descend from the Indian. The succession of forms can be explained either by creation or evolution. Natural descent, therefore, would

have to be established on other grounds than mere succession in time.

In *morphological* and *physiological similarity* the argument for evolution is based on *analogy*, and such an argument may easily be false, as every scientist and philosopher knows only too well. Similarity does not necessarily involve genetic descent. The camel and the llama are similar in many respects, but neither is the direct descendant of the other. Similarity *could*, without doubt, be due to phylogenesis and evolution; but it could just as well be the result of creation according to a plan of similarity.

The argument from *ontogeny* and *embryology* is a favorite with many evolutionists. This argument for general evolution, however, is not at all stringent. Articulate animals, such as insects, have their central nervous system on the ventral side of their body, while the vertebrates have theirs on the dorsal side. Now, the embryo of a vertebrate does not begin to develop its central nervous system on the ventral side and then gradually change it over to the dorsal side; the vertebrate's central nervous system is developed from the start on the dorsal side, contrary to the so-called 'biogenetic principle' that the embryonic development of the individual is a recapitulation of the history of the race. And it must be borne in mind that the invertebrates and the vertebrates are the two great divisions of the animal kingdom. Since the vertebrates are supposed to be the descendants of the invertebrates, no sound reason can be given why the former, if the biogenetic principle were correct, does not recapitulate the race history of the latter. That vertebrates and invertebrates start from a single cell

and develop their embryonic body gradually is due to the fact that all embryonic body development proceeds from the 'general' to the 'special.'

It is necessary to stress a few *important facts* in connection with the theory of a general organic evolution. There is absolutely no evidence for the descent of *animals from plants*, or of plants from animals. Thousands of species and hundreds of genera appear *suddenly* and *without transition* in the geological record at various periods, and there is no evidence that they descended genetically from preexisting types; all intermediate types are missing. Many types appear immediately as *highly specialized forms* of organisms; no pre-existing simple and primitive types exist from which they should have evolved, as might be expected. Of course, the geological record is, without question, fragmentary; but the burden of the proof for evolution rests upon the shoulders of the evolutionists.

These critical remarks *do not disprove evolution*. As a matter of fact, *partial evolution* seems a fairly established fact. *Eric Wasmann* has made out a good case for the *Dinarda* forms, a type of beetle. One might also cite the case of the horse, the whale, the elephant, and some others, as evolutionary in character. But such instances are a far cry from a proof for evolution in general. Nevertheless, the cumulative evidence makes the theory of general evolution a fascinatingly plausible and, perhaps, even a *probable theory* which cannot be lightly discarded. Man appeared so late on the globe and his span of historical knowledge is so short and piecemeal that a conclusive proof or disproof of

the theory of evolution, whether general or partial, is practically impossible.

Much can be said for and against evolution. A mechanical evolution does not satisfy the philosopher. A purposive evolution, deriving its inherent tendencies from an Intelligent Creator, should be acceptable to all. Since the causal influence of God is necessary for the origin of life, as we have shown, it is reasonable to suppose that He would put the proper dispositions and tendencies in the original organisms, so that they would develop along definite lines into different species. This view is based, of course, on the supposition that He decided on an evolutionary development of species. The direct creation and permanence of all species is not required. Partial creation and partial evolution might be the answer, but it seems a half-hearted position. What method brought about the divergence of species among plants and animals, facts alone can determine, and the facts are obscured. The problem is still very debatable.

Origin of Man's Body

Not long ago it was almost a dogma among a large class of scientists that man is a direct *descendant of the apes*. All that seemed necessary for definite proof of this contention was the existence of fossil 'missing links' connecting man and ape. For a time the search for these links was carried on with feverish activity. At present, the view that man is a direct descendant of the ape has been relegated to the limbo of discarded theories. The theory now prevalent is

that man and ape represent collateral lines of descent from a generalized common stock, known as the *Dryopithecus*, which is thought to have existed about ten million years ago.

Man is a newcomer on earth. Some of the fossil skeletal remains of ancient man date back to the *glacial epoch* of the Pleistocene Age, the geological age immediately preceding our own. It is customary to speak of four glacial epochs, though some geologists admit only two. There is no uniformity in the calculation of the lengths of these glacial epochs; depending on the methods of calculation, the time that man has existed on earth is variously estimated as being anywhere between twenty thousand and one million years. Even were no skeletal remains ever discovered, the presence of *flaked flint tools* is a sure indication that man existed in an early glacial period. Such tools of undoubtedly human manufacture are found in the deposits of the *Middle Pleistocene*. The eoliths (ancient chipped stones) of the Lower Pleistocene may have a natural and not human origin.

The *fossil remains* of prehistoric man are rather few. Leaving out of consideration the skull top of *Pithecanthropus erectus* of Trinil, Java, about whose simian or human nature scientists disagree, probably the oldest known human skull is that of the *Piltdown man*,⁷ found at Piltdown manor in Sussex, England, by William Dawson and Sir Arthur S. Woodward in 1912. The deposit of gravel, it appears, might possibly belong to an early Pleistocene period. Only parts of the fragmentary skull remain, and reconstruction was difficult. About a yard away from where

the skull had been, the greater part of a jaw was found, but it is impossible to determine whether this jaw belonged to this particular skull. The jaw, it is claimed, is rather 'simian' in character, but the skull, oddly enough, except for the thickness of the bones, is essentially modern in type. The brain capacity of this individual is figured at approximately 1,350 cubic centimeters, practically the same as that of many living persons. Such a large brain capacity was rather disconcerting to evolutionists, who loved to picture primitive man as always having large supra-orbital ridges, a low, receding forehead, a small cranial capacity, etc. It sounds almost like a complaint, when Alfred S. Romer, a confirmed believer in the evolution of man, writes: "To the type of skull . . . with the great brow ridges, retreating forehead, etc., the term paleoanthropic, 'ancient human,' may be usefully applied. At the end of the Pleistocene appears our own species, *Homo sapiens*, with new human' or neanthropic characteristics — the brow ridges reduced, the forehead high, the skull contours rounded. It is frequently assumed that neanthropic modern man has ascended through a long series of paleoanthropic ancestors. But in the Piltdown skull we have one of the oldest of human known fossils — a form probably considerably older than the paleoanthropic Java and Peking men — and yet the skull here is already of a typical modern neanthropic type!"⁸

The *Peking man*, or *Sinanthropus*, was discovered near Peking, China, in 1929. Various skull fragments, belonging to individuals of both sexes and to young and old, were found. All skulls are incomplete, but together they give a

fairly accurate picture of the skull formation. The supra-orbital ridges are pronounced, the forehead is low and receding, the skull is narrow and long. The jaw is chinless, as in all ancient men, but essentially human. The Peking man used tools and fire. The animal skeletons present indicate the period as *Middle Pleistocene*. The brain capacities reported are given as 915, 1,050, 1,100, and 1,200 cubic centimeters.

There are other fossil remains of ancient man — the *Solo* man, the *Rhodesian* man, the *Heidelberg* jaw, the *Swanscombe* skull fragment, the *Galley Hill* skeleton. They are, apparently, more recent than the Piltdown and Peking remains. In the earlier part of the last glaciation, there lived the *Neanderthal* race, of which a number of variants existed, distributed over Europe and western Asia. The men of this race had strong brow bridges, low foreheads, and prognathous jaws, similar to the Peking man. The *Cro-Magnon* race, of the Upper Pleistocene and last glacial period, was a type of tall, well-built individuals, with long heads and high foreheads, and a chinless jaw. They were an artistic race, as their implements and cave paintings reveal. The brain capacity of the skull sometimes exceeds that of modern individuals.

Modern man, of whom we are the descendants, seems to have migrated into Europe from Asia or Africa. Nothing is known as to how or where or when the human sub-races (white, negroid, mongoloid, etc.) originated. This much, however, is certain: All human beings, no matter what their color or structural differences may be, are true men. They intermarry, and their offspring is not sterile but fertile. We

can, therefore, draw the conclusion that prehistoric man was also a true human being, like ourselves. Here and there we find living men whose skull structure resembles an ancient type, but they are not less 'human' on that account. What, then, are we to think of the question of the *evolution of man*?

Theoretically, viewed from a purely scientific and philosophic standpoint, the hypothesis of human evolution through brute ancestry, at least so far as man's body is concerned, could be maintained, *provided the general* evolution of all organic species from a primitive stock is established as a *fact*. After all, man is a mammal among mammals. His bodily structure and organs are patterned on the general plan of the vertebrate animals. *If* a universal evolution has actually occurred, it would be but natural to include man in the general scheme, because evolution, with its driving force of intrinsic purposiveness and direction, would then have been planned by God in the creation of the first organisms. We must, therefore, state that the evolution of man's body *could, per se*, have been included in the general scheme of the evolutionary process of all organisms. Evolution would be a fair *working hypothesis*, because it makes little difference whether God created man directly or used the indirect method of evolution. Man in either case, would be a creature of God.

Evaluating the *existing evidence*, we find it to be extremely meager. The lack of factual evidence, which makes the theory of general evolution so inconclusive, is even more pronounced in the past history of man. Millions of years, if the calculation is correct, in an enormous gap to

span, and there is *no evidence* of the existence of *intermediate forms* linking man to the proposed and supposed ancestral stock. In no other field of scientific research would scientists dream of rearing so stupendous an edifice upon so precarious a foundation as they feel inclined to do in the case of the 'descent of man.' It is amusing and at times irritating, to read their statements on man's 'unquestionable descent' in the face of this absence of factual evidence.

Origin of Man's Soul

Whatever may be the ultimate verdict of science and philosophy concerning the origin of man's body, whether through organic evolution or through a special act of divine intervention, *man's soul is not the product of evolution.*

Materialistic evolutionists, since they deny the existence of a Creator, have no choice in the matter; they must maintain, at the expense of reason and logic, that life evolved out of lifeless matter, that consciousness evolved out of unconscious atoms, and that the total man evolved out of brute animals. We have demonstrated (Chap. 20) that man's soul is a *spiritual entity* endowed with the spiritual powers of intellect and will. As such, the soul transcends matter and material conditions. Matter is essentially quantitative, and so are its energies. Its causality is restricted to the material order. Unless we wish to see the entire edifice of science and philosophy crumble into dust, we must uphold the validity and inviolability of the Principle of Causality and maintain that no cause can produce an

effect superior to itself. The effect, before being produced, must be contained virtually in the nature and power of its producing cause; this conclusion follows from the self-evident principle that a thing cannot give what it does not possess. Since matter and material energies do not possess spirituality, because that would be a contradiction in terms, they cannot produce a spiritual being. Man's soul, however, is a spiritual entity, devoid of quantitative parts. Hence, matter and material energies cannot produce the human soul. Plants and animals are organisms, material systems; even plant and animal souls are material in essence, completely immersed in matter and intrinsically dependent on matter in entity and operation. Consequently, neither the matter nor the soul of plants and animals could give rise to the existence of the human soul. Therefore, whether we view the human soul as originating by means of an *absolute emergence* from lifeless matter directly, or through a *generative process* on the part of plants and animals, or through the *transmutation* of a plant or animal soul into a human soul, the effect would exceed the capabilities of the cause. In no case can the spiritual and simple soul of man originate from material beings or through material agencies, whether inorganic or organic.

Pantheists identify the soul with God. The Stoics considered the human soul to be a *particle* of the divine substance. St. Augustine fought this view, He pointed out that, under this supposition, the substance of God would be subject to error and deception and would undergo many kinds of accidental changes; the substance of God, however, being infinitely perfect, is unchangeable in every respect.

Other pantheists, especially in our era, look at the human soul as an *emanation* or *mode* of the divine substance passing through a process of development according to intrinsically necessary laws. The soul is considered a form or modification of God's substance. God's substance, however, as will be seen in theodicy, is an infinitely simple, unchangeable, spiritual, and perfect substance, without accidents or modes of any kind. Hence, the soul as an emanation or mode of the divine substance is a contradiction and therefore impossible.

The theory of *traducianism* or *generationism* sought to explain the origin of the individual human soul as the product of *parental generation*. *Corporeal traducianism* maintained that the material semen of the parents produced the entire child, body and soul; Tertullian and Apollinaris defended this view. *Spiritual* traducianism was the theory that a spiritual semen passed from the soul of the parents to the child in the moment of conception and thereby generated the spiritual soul of the child; St. Augustine upheld this opinion for a time. The former theory is erroneous, because a material generation of the spiritual soul would violate the Principle of Causality. The second theory is erroneous, because the soul of the parents, being spiritual and simple, cannot transmit a part of its substance to the child; besides, the soul of the child would consist of a part of the father's soul and a part of the mother's soul, and thus its essential unity, simplicity, and indivisibility would be destroyed.

THE SOUL CANNOT BE PRODUCED OUT OF A PRE-EXISTING MATERIAL or spiritual subject.

Since the human soul is spiritual in nature, it does not consist of matter nor is it intrinsically dependent on matter. Hence, it can not be produced out of matter as out of a preexisting subject. Nor can it be produced out of a spiritual substance, because a spiritual substance, since it is simple in essence and does not consist of parts, cannot give away a part which could be used for the production of the new soul. Hence, the human soul cannot be produced out of any spiritual substance as out of a pre-existing subject. Anything, however, which is brought from non-existence to existence without being derived from a pre-existing subject, is produced *completely out of nothing*. Such a production is termed creation in the strictest sense of the term. Creatures cannot 'create' things in this way; their total activity is restricted to influencing and changing existing beings. It follows that only an extra-creatural and extra-mundane cause can create the individual human soul, and that cause is God. Hence, every individual human soul is *created by God*. This doctrine is termed *creationism*.

The *objection* is made that, in the event of such a creation, parents are parents of their child in name only; they would not usher into this life a being of the same nature as themselves, but only a human body. The objection is valid only under the supposition that the soul and body form merely an accidental unit. Soul and matter, however, form a *single substance*, an *integral organism*. God, it is true, is the author of the soul through a creative act. But the formation of *the whole man* is also the work of the

parents, because their generative act is the determining factor of the origin of the child; through their generative act it is brought about that God creates the soul and unites it substantially to matter, so that the *total effect* is a *human being* similar to their own nature.

Time of the Soul's Origin

At what particular time is the individual soul created? Were all souls created in the *beginning of time* and then united singly to their respective bodies? Or is the individual soul created at the moment of its *union with matter*?

Plato contended that the human spirits (souls) *pre-existed* in a noumenal world before being united with a body.

Origenes also believed in the pre-existence of souls. *No solid grounds* exist for such a belief. The soul must have been either active or inactive in its state of pre-existence. If inactive, there could have been no purpose to such an existence, and it is inconceivable that God would have created the soul for a purposeless existence. If *active*, the total lack of memory concerning events in our previous existence remains inexplicable. One might say that the union with the body brought on the loss of memory. But why should this happen? The soul being spiritual, its intellectual memory is spiritual and should not be affected by matter. Could the loss of memory be a punishment for some crime committed by the soul in its former state? Hardly, for how could the soul expiate its crime in this life, if it knows nothing of the crime? Furthermore, our present life would

be a condition of deterioration for the soul. In that case, however, the union of body and soul would not be natural (though it is); and one cannot understand why the instinct of self-preservation should be so strong in us and why we should shrink from the separation of body and soul. If anything, we should naturally welcome death, so as to be relieved from the state of punishment; such, however, as we know only too well, is not our attitude toward death. Preexistence, therefore, must be rejected.

There remains, then, the view that the human soul is created by God at *the moment of its union with matter*. This view alone is reasonable. The soul is a spiritual entity, but it is also the *vital* principle or substantial form of the body. Body and soul (matter and spirit) constitute a single nature and substance. The soul receives its entitative perfection in animating matter so as to form an integral organism; therein lies the natural purpose of its existence. When separated from the body, many of its natural operations, namely, vegetative and sensory functions, are impossible. Hence, since the soul has its natural existence only in conjunction with matter, thereby constituting the 'rational animal' which is the true 'human being,' it receives its existence when the human organism comes into existence.

Is the human soul created at *the moment of conception*, that is, at the moment when the male sperm cell unites with the female ovum? The question is controversial and highly speculative. *St. Thomas Aquinas*⁹ held that the rational soul is not present in the earliest stages of the embryo's development. In his view, the paternal semen first disposes the maternal substance into organized matter; then a

vegetative vital principle or soul is educed out of this organized matter, so that the human embryo at this stage is a vegetant organism; after the vegetative principle has developed and disposed this body for the reception of a sentient vital principle or soul, the sentient soul replaces the vegetative soul, so that the organized foetus is now capable of vegetative and sensory functions. When, under the progressive influence of the sentient soul, the foetal body is sufficiently organized and proximately disposed for the reception of the spiritual rational soul, the rational soul is created in the body, replacing the sentient soul and taking over all functions.

Duns Scotus differed with St. Thomas on this question. He would not admit a temporal succession of vital principles in the foetus. After the initial preparation of matter by the parents, and after the foetal body had developed sufficiently and was disposed to receive the vital principle, the rational soul is infused by God. In his view, no vegetative and sentient vital principles, distinct from the spiritual soul itself, are present in the human foetus before the creation of the spiritual soul. All vital functions, therefore, are performed by the rational soul, and not by any other.

Both St. Thomas and *Duns Scotus* have had a considerable following. D. Card. Mercier, one of the most prominent of modern scholastics, preferred the opinion of St. Thomas, although few accept his opinion in our day.

The *prevailing view* is that the soul is created and infused into the body at the moment of *conception*. Here is the argument. Since the rational soul contains within itself the capabilities of vegetative and sentient souls and

performs the triple functions of vegetancy, sentiency, and rationality in the human body at a later stage of its existence, no genuine reason can be adduced why the same spiritual soul should not be present from the very *beginning*, first performing vegetative functions, then sensory functions, and finally rational functions, depending on the developmental stage of the organism. In the prenatal life of the child, the vegetative development must prepare the organism for sentient life, and then the sensory development must prepare the organism for rational life. It is, therefore, only natural that sentiency should follow vegetancy, and rationality follow sentiency; but there is no need to postulate distinct vital principles in each of these successive stages of organic development. After all, it is the *same* body that is being developed, and it is a *human* body, not first a plant body and then a brute body. It is very difficult to grasp how a mere vegetative soul should fashion a 'sentient' body, and how a sentient soul should fashion a 'human' body; a development of this kind, since it tends toward a higher level of being, seems to exceed their intrinsic capabilities. But one can readily understand that a 'human' soul would be capable of fashioning the foetus into a 'human' body through the intermediate vegetative and sensory stages of organic development, because it is the purpose of the human soul to develop a 'human' body. Since, however, the development of the human body begins at the moment of conception, when the paternal sperm cell and the maternal ovum unite in fertilization, it is reasonable to suppose that the *organizing principle*, the spiritual vital principle or soul, be present at and from that very moment.

That the human soul does not need to exercise its triple functions immediately and at all times, is proved by the fact that the rational activities of intellection and volition are in abeyance until some time after birth. Yet it is universally conceded that the human infant at birth possesses a rational soul, so that up to the point of the awakening of reason the soul exercises only vegetative and sensory functions. According to the 'law of parsimony,' therefore, no stringent reason can be assigned why the rational soul should not be present from the moment of conception, beginning its organization of the human body at that time. The position here taken, though not capable of direct proof, is undoubtedly logical.

Life thus originated in this world through the causative action of the Creator; abiogenesis, according to the evidence of science, never occurs. Organic evolution is a probable theory, but its factual occurrence has not been definitely proved. The descent of man from brute ancestry is, on purely scientific and philosophic grounds, a tenable but doubtful theory. The spiritual soul of man is created. The exact moment of the creation of the individual human soul is not known with certainty; it would seem, however, that it is created at the moment of conception. That is as far as philosophy can lead us.

Summary of Chapter XXII

The problem to be investigated is the ultimate origin of man's *body* and *soul*.

1. *The Origin of Life*. Life did not always exist on the earth. Theoretically, there are two possibilities to be considered. Life could have originated either through an act of creation or through abiogenesis (absolute emergence).

2. *A biogenesis*. Abiogenesis, or spontaneous generation, is the origination of living beings from nonliving matter through forces which are indigenous to matter itself. A common opinion formerly, it has been definitely *disproved by science*. Living substances can originate only from living substance. The principle of causality precludes the possibility of a vital principle or soul originating from matter through material forces alone, because the effect would be greater than the cause.

3. *Direct Creation*. Life owes its existence to the action of the Creator. *Direct* creation, the production of a new reality in its total being from nothingness, could have been the cause of life; but there was *no need* of creating the elements of the first organic body, because these elements were already at hand.

4. *Mediate Creation*. Since the bodily elements are material, and since the plant and animal souls are educed out of the potentiality of matter, a mediate or *derivative creation* (relative or restricted emergence) would suffice for the origination of the first living organism. This method

of production seems to have been the one used by the Creator.

5. *Organic Evolution*. 'Organic evolution' is the theory that the various species and types of animals and plants derive their origin, not through distinct creative acts of God, but through *development* from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws. Evolution may be considered as monophyletic or polyphyletic.

The *evidence* for evolution is found mainly in the *fossil remains* present in the rock deposits of former geological periods, in the morphological and physiological *similarity* of organic types, and in the *ontogeny* and *embryology* of existing types. The various *factors* of evolution, as stressed by different authors, have given rise to a number of evolutionary theories.

The theory of *permanence* or *fixity* is in opposition to evolution and maintains that every species is fixed, having come into existence through a creative act of God.

6. *Evolution or Permanence?* Both evolution and special creation are acceptable theories. The *fact of evolution* has not been definitely proved by scientific research, but it is a *probable theory*, provided evolution be purposive. God, having created the first organisms, could have put the proper *dispositions* and *tendencies* in the first organisms, so that they would develop along definite lines into different species. From a scientific and philosophic standpoint, it is unnecessary to postulate special creation for the various species.

7. *Origin of Man's Body.* Man existed in the glacial epochs of the Pleistocene Age. A number of skeletal remains of ancient man have been found, chief among them being the Piltdown man, the Peking man, the Rhodesian man, the Neanderthal man, and the Cro-Magnon man. This evidence is very meager, if used as a proof that man descended from a stock which is common to ape and man. As a *working hypothesis*, the descent of man through evolution, if we exempt man's soul, is tenable, but the fact itself has not been proved.

8. *Origin of Man's Soul.* Man's soul is *not the product of evolution*. Since it is a *spiritual* entity, the Principle of Causality precludes the possibility that it could have evolved out of the material body or the material soul of animals or plants. It cannot be a *particle or emanation or mode* of the substance of God, as pantheism asserts, because God's substance is infinitely perfect and unchangeable. Nor can it be the product of corporeal or spiritual generation, as *traducianism (generationism)* claims; the material semen could not produce a spiritual soul, and the souls of the parents, being simple and indivisible, could not emit a spiritual semen.

Since, therefore, there is no material or spiritual subject from which man's spiritual soul could have been made, the soul must be produced completely out of nothing. A total production is called *creation*.

9. *Time of the Soul's Origin.* The theory of the pre-existence of human souls must be rejected. We have no memory of a previous existence. The theory is a gratuitous assumption.

The soul is created at the moment of its union with matter. The soul, being the animating principle of the human organism, has its natural existence only in conjunction with matter; consequently, it receives its existence when the human organism comes into existence. In all probability the soul is created at the *moment of conception*, because it is a 'human' body that is fashioned from the beginning.

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¹ For a brief summary of Pasteur's experiments, see the author's *Science of Correct Thinking* (Bruce, 1935), p. 313 ff 287

² *Der Stand unserer Kenntnisse vom fossilen Menschen* (1910), p. 91.

³ *Heredity and the Ascent of Men* (The University Press, Cambridge, England, 1935), pp. 105, 106

⁴ *General Psychology* (Macmillan, 1937), p. 7

⁵ See *Contra Gentiles*, III, c. 22.

⁶ See E. C. Messenger, *Evolution and Theology* (London: Burns, Oates and Washbourne, 1935); Canon Dorlodot, *Darwinism and Catholic Thought*, tr. by

E. Messenger (Benziger, 1923)

7 Piltdown Man has since been proved a hoax. - ed.

8 *Man and the Vertebrates*, 3rd ed. (University of Chicago Press, 1941), p. 214

9 *Contra Gentiles*, II,

Chapter 23

THE DESTINY OF MAN

ALL ORGANISMS — PLANT, ANIMAL, AND MAN — OWE THEIR ultimate origin to God. Man is neither altogether animal, nor altogether rational. Animality and rationality are fused into a single substantial synthesis; man is in all truth a *rational animal*. So far as his physical being is concerned, he is akin to the mammalian vertebrates; so far as his spiritual soul is concerned, he is made in the image and likeness of God.

It is unthinkable that the all-wise Creator would make a purposeless being. In creating man's soul and giving man existence, God gave a purpose to man's being. The fulfillment of that purpose is *man's destiny*.

What is man's destiny? Can it be specified more exactly? To know his destiny is obviously an important matter for the individual and for mankind in general, since man's knowledge of his destiny will impart *meaning, value, and direction* to his life; without this knowledge, man will either live the life of a brute or wander about in a senseless maze of aimless endeavors. To be worthy of his dignity as a human person, man must discover his true place in the universe and then work diligently and conscientiously

toward the fulfilment of whatever immediate and ultimate purpose God has set for his being.

The Rhythm of Growth

In a normal span of life, the individual human being passes, biologically and mentally, through a number of *natural periods*. There is a rhythm of growth for the whole man in the progress of his individual life. A. Willwoll very aptly likens these progressive periods to a symphony unfolding itself according to an inner law of art.

The *first phase* comprises *prenatal life* and *childhood*. Prenatal life builds the fundamental bodily structures and establishes the relationships of parts to parts and of all parts to the organism as a whole. It is in this stage that heredity is mostly at work. After birth the child receives and correlates the manifold impressions of sense. External and internal senses work together and develop harmoniously. The child learns to speak, becomes conscious of self, and after a number of years its reasoning powers are awakened. *Childhood* extends from birth to the age of puberty.

The *second phase* of man's growth begins with the completion of puberty. It is the period of adolescence. The body undergoes a profound biological change, preparing the boy and girl for fatherhood and motherhood. It is also the period in which the higher mental powers reach out to maturity. The individual becomes more serious-minded and strives to find his proper place in society by fitting himself

for a definite vocation, so as to have an independent existence of his own.

The *third phase* sets in around the turn of the third decade. As a rule, the individual in these years of *middle age* attains the highest point of physical efficiency. The specific direction of his life's course is now set. Even though mental maturity does not follow bodily maturity as an effect upon a cause, there is a close relationship between the two, so that experience and achievement, in very many instances at least, reach their peak in these years.

The *fourth phase* begins with the changing years, when a person is about forty-five or fifty. Biologically, this is a period of gradual decline; the bodily mechanism has passed its zenith of maturity and slows down in efficiency. By contrast, due to the consolidation of the accumulated store of experience and knowledge, many persons, especially professional people, achieve their greatest mental vigor in this period.

The *fifth and last phase*, setting in with the sixth decade or thereabouts, is the period of final decline. Life obtains a leisurely aspect of rest and retrospect. Old age, with its retarded metabolism and with its infirmities, creeps over the bodily system. The sensory and mental faculties lose their keenness and alertness, and the mind turns more and more to events of the past. Occasionally, however, some individual seems to rise above the deterioration of the organic powers and attains the highest point of mental perfection in old age. Eventually, though, senility and general decrepitude mark the ruins of a once vigorous personality, until death steps in and ends the individual's

earthly existence. The rhythm of growth has run through its cycle, and the symphony of life is ended in a whisper and a sigh.

Life is thus never at a standstill. Man is in a continuous stage of transition, from the moment of conception to the moment of death. Biologically, his development and decline proceed according to the inexorable laws of nature, even though the inevitable end be not hastened by unavoidable disease and avoidable neglect. Mentally and intellectually, his development and decline are governed far more by individual initiative and effort.

Man and the World

It would be a very grave mistake to consider man as an individual in isolation. According to the cartesian tradition, carried on by the empiricism of Locke and Hume and by the idealism of Kant and his followers, man's mind is forever chained within the prison of its own ideas and subjective states. Other things and objects either have no existence in their own right, or they cannot be effectively known as they exist in themselves. It is the fundamental error of all modern philosophy and psychology, that they attempt to derive the existence of the world from our subjective ideas, instead of deriving our ideas of the world from the objective things and objects existing in the world.

The world exists prior to man, and man is a part of the world. The earth is man's home and workshop. The earth influences him, and he influences the earth.

There is no question that *geographical conditions* exert a profound influence on man's body and mind. It makes a difference whether he lives in the mountains or on the plains; in the tropical, or the temperate, or the arctic zone; in the steaming jungles or on the coast; in an arid or a fertile region; in an area of moderate or extreme changes in temperature. In the tropics, if food is abundant, the heat makes man indolent and sluggish; his culture, as a rule, does not reach a high level. In the arctic, climatic conditions are so severe and the battle for subsistence so hard, that man has no time for anything but the mere acquisition of food and shelter; he finds few opportunities for the things of the mind and of the spirit. It is in the temperate zone that man thrives best, both from a bodily and a mental point of view. The climate is stimulating, the seasonal changes tend to toughen the body, the labor involved in making a living is neither too hard nor too easy, and all conditions serve as an incentive to man to develop new methods of technique to conquer the earth, to establish an appropriate culture, and to give play to the higher mental powers in various forms of art and science.

The earth is not a paradise. Difficulties beset man at every step on his way through the lands. He can fulfill his destiny only through *work*. But man has an intellect and will, setting him apart from all other creatures of the universe, and with these superior powers he fashions the creative tools to master the earth wherever he chooses to roam and live. Nature thus becomes man's servant. The impress of his genius is seen everywhere.

Some authors, with a facetious turn of mind, speak of man as a worm crawling on a pebble, the earth, as a speck of life floating aimlessly through the immeasurable vastness of the universe. The idea is puerile. As if the greatness of a thing should be measured in terms of physical size and linear dimensions!

Man's body stands at the half-way mark between the mass of the infinitesimal electron and the mass of the most ponderous star; he is the *pivotal point of the universe*. Comprising within his organic body subatomic particles, the chief elements, and all that is best in plants and animals, he is the *supreme representative of the universe*. His spiritual soul, with its penetrating intellect and conquering will enables him to pierce the veil of phenomena and uncover the hidden essences and laws, so that he is the natural *interpreter of the universe*. One single spiritual concept far outweighs the huge massiveness of an entire world of mere matter. One single spiritual soul has a greater value and a nobler destiny than a million solar systems and a billion galaxies of blindly whirling stars. In the spirituality of his soul, he is the *crown of the universe*. With his feet he is rooted in matter; but his soul reaches out beyond the uttermost boundaries of matter and space.

Man and Other Minds

Man is not a solitary, isolated being. There are other human beings in this world. The individual cannot fulfill his destiny by himself; he needs the assistance of other minds. How

does he contact these *other minds*? How does he know what takes place in the minds of other persons?

The bridge which spans the gap between one mind and another must have a *sensory* component and an *intellectual* component. Man does not know directly what another mind is thinking about; hence, the indirect path of the senses must be used in communication between one mind and another. Sense knowledge alone, however, is not in itself sufficient. A system of sensory expressions must be devised, and these expressions must be symbols of ideas; only in this manner can the ideas present in one mind be communicated to another mind. *Language* fulfills these conditions.

The accumulated knowledge of millions of individuals and of thousands of generations is made available for everybody through the medium of spoken and written language. The wisdom of the ages becomes the property of individuals through language. It is not necessary for each individual to relearn everything through personal experience and observation. Whether transmitted by word of mouth or preserved in writing and print, the intellectual, emotional, religious, and moral experiences of other minds can be assimilated by each individual, according to his capacity and inclination, for his personal development.

Man and Society

Man, it is often stated, is a *social animal*. Though an individual human being, he must fulfill his destiny as an integral member of the *community of men*.

A *society* is a permanent union of a number of persons in fellowship and co-operation for a common purpose of benefit to all. There are two kinds of society, conventional and natural. A conventional society is one founded by a group of persons from free choice, for the attainment of some purpose specifically agreed upon. Examples of this type of society are political parties, labor unions, study clubs, commercial associations, athletic organizations, student fraternities. They satisfy the desires and needs of a certain class of individuals who band together for a common purpose by means of mutual agreement or 'convention.' A *natural* society is one which is established by men in general under a mandate of the 'natural law,' the law inherent in them as human beings. There is in man the *natural aptitude, inclination, and need* for a permanent union and companionship with his fellowmen, so that he cannot escape membership in this kind of society without doing violence to his human nature and running the serious risk of frustrating the purpose of his existence. Man is not born perfect; but he is born with a perfectible nature. It is his right and duty to perfect his nature; he cannot perfect his nature, however, except in a stable union with others throughout the course of his life. There are three natural societies among men, domestic society or the family, civil society or the state, and religious society or the church.

That man has the natural 'aptitude' for membership in such societies, can be seen from the fact that he is gifted with speech. Speech enables men to communicate with one another, to exchange ideas, and to make known their needs and achievements; they can, therefore, give mutual

assistance and work for the common good of all concerned. That he has the natural propensity' to combine his efforts with others, is also evident; he dislikes prolonged solitude and isolation, he seeks companionship, and he feels the necessity of consulting others for the solution of important problems. That he has the natural need' of association with his fellowmen, is all too obvious; he simply cannot receive life and grow to the full status of his bodily, mental, and spiritual maturity except in community with others within the framework of such natural societies. To be a member of these social organizations is, therefore, a requirement of his *nature* as a human being.

Membership in the community does not entail depersonalization of the individual. The individual possesses *inalienable rights*, flowing from his nature as a rational person, and these rights are never lost or forfeited by belonging to a society. Society respects and safeguards the rights of the individual, because its fundamental purpose is to work for the welfare of all members through mutual co-operation and the pooling of resources for the benefit of all in the fullest measure obtainable. The individual, however, also has *social duties* toward the other members of the community. If he is to receive the services of others for his own benefit, he must give his services for the benefit of the others. Society makes its contribution to his personal development, and he in turn must make his personal contribution toward the furtherance of the interests of society. Community life is thus grounded on the principle of *mutual benefit* and *mutual service*, because of the natural limitations and needs of man as an individual who must

work out his destiny by developing all his powers, so far as possible, to their full capacity. Natural societies are, therefore, a mandate of the natural law. In its final analysis, of course, the binding force of the natural law is derived from the will of the Creator who made man to be what he is.

Man and Domestic Society

The *fountainhead* of social life lies in the union of man and woman in *marriage*. Biologically and mentally, the two sexes are complementary to each other. Perfect equality between the sexes never has existed and never will, due to their natural difference of position in the divinely ordained scheme of life. The man is the breadwinner, the worker, the explorer, the inventor, the scientist, the governor. Woman is essentially the homemaker and mother of the race who gives, nurtures, forms, and rears the new life. Masculinity and femininity are emotionally opposites and attract each other instinctively. Love and the sex urge prompt the man and the woman to enter into the most fundamental union of human society — marriage. Here the 'I' becomes the 'We' of society.

In marriage the purpose of their sex reaches its fulfillment in the procreation of a new human being similar to themselves — the child. The child is the concrete embodiment of their marital love. The parents now submerge their individual interests and their interests as husband and wife into the higher and more unselfish love of both for their child. The child and its interests enjoy a primacy. The presence of the child brings about an

extension of the community life of husband and wife into that of father, mother and child. There now exists the family.

The *family* is the *basic unit of human society*, because the family is the source of life for all members of the human race and the primary institution for the bodily, mental, moral, and social development of man from birth to maturity. Man has the natural aptitude, propensity, and need to enter into the bond of marriage and establish a family; hence, the family is a natural society dictated by natural law. The single individual is not obligated to establish and rear a family; the obligation is incumbent upon mankind as a race, because the purpose of the law is the perpetuation of the race as such, and mankind as a whole does not fail to fulfill this obligation.

Authority in the family is divided between both parents, since both share in the giving of life and are responsible for the welfare of the children they beget. Due to their difference of position in the heart of the family, the father is the authoritative head of the family, while the mother is primarily concerned with the upbringing and education of the children. The relationship of parenthood confers upon father and mother certain rights, and involves specific duties, toward their children. On the other hand, children, both as individual human beings and as members of the family, enjoy the rights of proper sustenance and training; but they also have the duties of respect, obedience, and, when necessary, support of their parents. The family, in its very essence, is the fundamental form of human society.

Man and Civil Society

Just as man is by natural law a member of domestic society or the family, so he is also a member of *civil society* or the state. The state is an extension of the family. The family is prior to the state. The state results from the combination and organization of a number of families into a social union for the furtherance of their mutual welfare.

Man has the natural aptitude, propensity, and need to establish the broader social unit of the state, and hence the formation of the state is a mandate of the natural law. The state is a *natural society* and as such lies within the order ordained and willed by the Creator for the greater benefit of mankind. Neither the individuals nor the families are, as a rule, capable of acquiring and supplying everything needed for the maximal welfare of all. Resources are limited, and so are opportunities and capabilities. Dangers threaten from all sides, and the individuals and families are incapable of coping with them adequately. It is necessary, therefore, for individuals and families to form groups, communities, cities, tribal organizations, and national governments for mutual assistance and protection. Thus does the *state* or *commonwealth*, namely, a body of people occupying a definite territory and politically organized under a stable government, come into existence as a natural society. The particular form of government is of minor importance.

The state, since it is the outgrowth and extension of the family, must protect the inherent and inalienable rights of the family, because the family is the basic unit of society.

The rights of the family have a primacy over the rights of the state. The rights of the family are not derived from the state, but existed before the state could even be established. Hence, the doctrine of the *absolutism* of the state is radically wrong. The intrinsic goal of all man's social activity is the satisfaction and completion of his natural powers, so as to insure *temporal happiness*. It is, therefore, the duty of the state to assist man in the realization of this supreme goal of earthly existence. It follows that the state does not possess arbitrary powers of government over its subjects, but must be guided by the essential purpose of all government in relation to its constituent groups, families, and individuals, namely, the common weal in accordance with the destiny of man. Hence, the state must establish and maintain *peace* and *order* throughout its domain, upholding all natural and legal rights and compelling the fulfillment of all civic duties on the part of its members. It must also, so far as possible and feasible, place within the hands of its members the opportunities and means of a full bodily, mental, and moral development. To achieve its mission, authority must be vested in an individual or representative body, together with the power necessary to enforce the laws for the benefit of all.

Man and Religious Society

Man is by nature not only a domestic and political, but also a *religious being*. Man is specifically what he is through his rational, spiritual soul. Whatever we may think of the origin of his body, his soul owes its total being and origin to the

direct creative act of God. Everything man is and has, he is and has through the loving kindness of his Creator. The bond between man and God, therefore, is infinitely more intimate than the bond between child and parent.

Here we have the ultimate foundation of the *equality of all men* and the ultimate source of the inalienable rights of all men to *life, liberty*, and the *pursuit of happiness*. Man is a creature of God, made in His image and likeness, irrespective of sex, color, or race. The concept of a 'super-race' is an insult to man and God.

The very nature of man demands that he recognize his creature-ship and dependence on the Creator. This relationship implies reverence, adoration, and homage; expressed externally, reverence, adoration, and homage assume the form of a religious rite. Man, therefore, has the natural obligation to *worship* his Creator, so that religious worship is incumbent on man as a dictate of the *natural law* of his being.

First and primarily, the *individual* has the obligation of worship. Since, however, he is by nature a social being, he has the aptitude, propensity, and need to fulfill the obligation of worship in his social union with others in a public manner. In other words, not only the individual but *society* must worship God. In accordance with this dictate of natural law, we find that all peoples have exercised their duty of worship through religious rites as a social group and even as a state. In virtue of his very being, then, man has the right and the duty to worship God as a member of a religious organization or society, either in conjunction with the state or apart from it.

Viewed from the standpoint of reason and philosophy, we must say that man is by nature impelled to be a member of domestic, civil, and religious society.

Man and Morality

Man is born not only into the physical and social order, but also into the *moral order*. Unlike brute behavior, human conduct is characterized by the quality of *right* and *wrong*. By 'human conduct' we understand those actions of the human persons which are controlled by the free will; these are qualified by the attribute of morality, in so far as they conform or do not conform to the norms and principles governing right living.

All men at all times have recognized the fact that free human actions are 'good' or 'bad,' 'right' or 'wrong.' It is not a question of whether certain actions are efficient or inefficient, expedient or inexpedient, pleasant or unpleasant, convenient or inconvenient; irrespective of such considerations, they are deemed to be good or bad *in themselves*. All agree that what is good 'ought to be,' while what is bad 'ought not to be.' The 'good' should be loved and striven for the 'bad' should be abhorred and avoided. Who does what is 'right,' deserves praise; who does what is 'wrong,' deserves blame and punishment. This attitude is fundamental and universal.

Man feels under *obligation* to do what is good and avoid what is bad. He stands *under* the law of morality, not above it. There is an absolute and immutable element in morality which binds man's will in all deliberate, free acts and

imposes itself upon him as an authoritative command. Kant terms this command the 'categorical imperative.' Whence the authoritativeness of this command?

Consider the *basic principles of morality*. They are general in character, but specific in intent. Such principles are: 'Do what is right, and avoid what is evil; reverence and worship the Supreme Being and do His will; do unto others as you would have others do unto you; respect your fellow man's person and property; you must not steal; you must not lie; esteem and obey your parents and lawful superiors and show them gratitude; murder and adultery are wrong and must be punished, etc.' It is obvious that such and similar moral precepts are not based on pleasure or external restraint or the limitation of physical capability. The moral principles just enumerated often run counter to natural inclination, impulse, and pleasure. Even when no restraining external force is present, man feels the obligation to carry out these precepts. The physical capability of performing a prohibited act may be unimpaired, but the sense of obligation still remains. The obligation to abide by the moral precepts, therefore, is not of man's own making, because man, of his own accord, would not impose such onerous duties upon himself.

We must conclude that morality is a *law* imposed on man by his own *rational nature*. Man is distinguished from the brute by the rationality of his intellect and the morality of his free will. Because man is a rational being, he is also a moral being. Man will lead a moral life, if his free actions are in harmony with his rational nature. Man's rational nature is thus the proximate ground of human morality. The

ultimate ground lies in the will of the Creator who has endowed man with a rational nature. Brutes, not possessing rationality, have their behavior regulated by irresistible drives and impulses. Man, possessing intellect and will, must freely choose to regulate his conduct by practical principles and judgments, so that his conduct will be in conformity with his rational nature by free choice. Morality, therefore, is a *natural law* based upon an intellectually perceived obligation, not upon physical or physiological constraint. Man *can* violate the moral law, but he *should* obey it.

By the very fact that man is endowed by the Creator with the power and use of reason, he soon learns to make the necessary and practical judgments that some acts are in harmony with his rational nature, and therefore 'good' and 'right,' while other acts are in opposition to the fundamental character of his rational nature, and therefore 'bad' and 'wrong.' The practical judgment which applies the moral law to our own acts, informing us whether a particular act is in agreement or disagreement with the moral law, is called *conscience*. Conscience is an act of reason which interprets the moral law and demands obedience to the law. It is 'God's voice,' to use an apt figure of speech, telling man what to do and what not to do, if he would follow God's will. Conscience is the supreme arbiter in moral life, and its commands must be obeyed.

What is the *purpose* of conscience and morality? To make us live a life worthy of our dignity as rational beings and to make us like to God who created us. The *whole man*, not a mere part of his nature, must be taken as the norm and

criterion of morality. Man is an individual being, with sensual and intellectual potentialities; he is also a social and a religious being. Whatever befits him in these various capacities and helps to develop them in their proper order, is morally good. Man's nature gives him a definite *scale of values* to guide him in right living. St. Thomas Aquinas marks off the scale of values in clear and concise terms: "There are certain activities naturally suited to man, and these activities are in themselves right and not merely by positive law... It is natural to man to be a social being. Those things, therefore, naturally befit man without which the maintenance of human society would be impossible... The use of lower creatures to meet the need of human life is a natural property of man. Now there is a certain measure in which the use of aforesaid creatures is helpful to human life. If this measure is transgressed, as in the disorderly taking of food, it results in harm to man and is inappropriate. In the natural order, man's body is for his soul, and the lower powers of the soul for reason. It is therefore naturally right for man so to manage his body and lower faculties of his soul so that the good of reason may be helped... To every man those things are befitting, whereby he tends to his natural end; and the contraries are naturally unbefitting. But God is the end to which man is ordained by nature. Those things therefore are naturally right, whereby man is led to the knowledge and love of God."¹ It is, then, the purpose of conscience and morality to make man acquainted with what is befitting to his rational nature and to oblige him to seek the various values in their proper order; and man has the duty to follow the dictates of

conscience and morality. Otherwise he cannot fulfill his destiny as a human being.

What is the *end* and *goal* of the moral order for the *individual*? It is the perfection of the 'whole man'; and this perfection entails *happiness*. The end and goal of all man's activities is his personal happiness. Whoever fulfills his moral obligations faithfully, is bound to obtain happiness; and whoever refuses to submit to the moral order, must reach a state of final unhappiness. St. Thomas expounds this point with his usual clarity: "Wherever there exists a well-regulated order of ends, it is necessary that this established order lead to an end; anything which separates itself from that order, at the same time separates itself from its end. God has ordained a certain order for human acts in as far as their end is concerned, and this end is happiness. It follows, therefore, assuming this order to be solidly established, that those who follow its dictates will obtain their end, happiness; in other words, they will be rewarded; and those who disturb this order by the commission of sin will not obtain their end, happiness; in other words, they will be punished."²

Morality involves *sanctions*. A 'sanction' is a reward given for the observance of a law and a punishment meted out for the violation of a law. Sanctions are necessary to make the law effective. If there were no punishment for evil doers and no reward for the observers of the law, right order would end in chaos, the self-denial of the virtuous would be useless, and the wicked would be triumphant. Justice thus demands sanctions. Furthermore, the frailty of man needs a stimulus for the performance of duty and a

deterrent which serves to curb his inclination and will to do wrong. The legal sanctions of the state are insufficient for the purpose, because the state has control only over external actions, and many violations of the moral law never become known. The sanctions of the moral law must come from the *author* of the moral law; since God is the Supreme Lawgiver, He must have attached the necessary sanctions Himself. God alone knows the secrets of the human will, and He alone can reward the just and punish the unjust in adequate measure. Now, happiness is the natural reward of the good, and misery the natural punishment of the evil. God, therefore, in His justice will see to it that the good receive their reward and the wicked their punishment.

Man *cannot escape the law* of morality. He may sidestep the duties of domestic and civil society by isolating himself from the rest of mankind, living by himself in some inaccessible place. But he cannot escape from himself and from God; he carries the moral law and his conscience with him wherever he goes. Hence, he cannot escape from the sanctions of the moral law.

And yet, is it true that the observance of the moral law brings happiness to the good and the violation of it brings unhappiness to the wicked? We are here face to face with a profound problem.

Survival After Death

Death is the cessation of life in an organism. When vital functions cease in an organism, without the possibility of the resuscitation of these functions, the organism is 'dead.'

Since vital functions have their existence primarily from the vital principle or soul, death supervenes upon an organism when the soul of plant, animal, or man is no longer capable of animating the material substrate with which it is substantially conjoined as the vitalizing 'form.'

Death may occur in one of two ways: *dissolution or annihilation* of the organism. 'Dissolution' takes place, when matter and form are separated. The elements of the organic compounds then revert to the inanimate status of ordinary chemical elements and enter into new combinations according to the laws of chemical affinity. In 'annihilation' the total organism (matter and form, body and soul) is reduced to complete nothingness, so that no vestige of the organism remains in existence.

Man, of course, dies. His vital functions as an organism cease. Man, however, considered as an organism, is *not annihilated* in death. The material elements of his body remain in existence in the corpse, just as they do in the case of plants and animals. Man, therefore, dies by means of a dissolution of the substantial bond between body and soul (matter and form). The body disintegrates after death.

What happens to the *soul*? Does it also disintegrate? Does it cease to exist, when man, as an organism, ceases to exist? Or, does it survive the death of the organism as a whole and exist for itself? The answer to these questions is of surpassing importance for each individual human being. If the soul ceases to exist with the death of the organism, man's destiny is completed in his span of earthly life; if the soul survives the death of the organism, his destiny receives its fulfillment after death.

SURVIVAL AFTER DEATH IS POSSIBLE.

Whether the human soul can survive the death of the organism, depends on two factors: the intrinsic essence of the soul itself and its relation to the body with which it forms one nature.

Of itself and in virtue of its essence, the soul cannot be destroyed through death except on the supposition that it were composed of quantitative or entitative parts. A *composite* being can, by its very nature, be dissolved into its constituent parts and thus lose its identity through dissolution and disintegration, either through the power of an outside agent or through internal weakness. Conversely, what is not composed of quantitative or entitative parts, cannot be dissolved and so destroyed. Now, the soul is not composed of any parts whatsoever, because it is a *spiritual* and *simple essence*. Hence, in virtue of its essence, it cannot be destroyed. The death of the organism, therefore, does not entail the destruction of the soul.

In virtue of its *relation to the body*, the survival of the human soul would be naturally impossible, if the soul were completely immersed in matter and would thus be *intrinsically dependent* on matter for its existence and operations. It was, however, proved before (Chap. 20) that the human soul, unlike the plant and animal soul, is a subsistent spiritual entity, *intrinsically independent* of matter in its essence and only extrinsically dependent on the senses for the object of its intellectual knowledge. Vegetation and sensation are organic functions, but

intellection and volition are spiritual activities essentially devoid of materiality. Hence, so far as its essence and rational activities are concerned, the dissolution of the organism does not necessarily involve the destruction of the soul. The human soul, therefore, being a spirit, can survive the death of the organism and carry on an independent existence of its own.

In such a disembodied existence after the death of the organism, the soul would not, of course, be capable of vegetative and sensory functions, because these require material structures and organs. The *rational activities* of intellection and volition, however, would remain intact in this after-death existence; they are not organic functions, but reside in the spiritual soul alone. The intellectual memory of past experiences would be carried over into the new life. Elaboration of previously acquired knowledge would also be possible, and no legitimate reason can be advanced against the acquisition of new knowledge, because the soul now has the mode of existence of a pure spirit and no longer needs the co-operation of the senses. The will, too, following the intellect, must be unhampered in its activities.

SURVIVAL AFTER DEATH IS MORALLY CERTAIN.

It has been the *universal conviction* of mankind that the human soul survives the death of the body.

Ethnology has supplied a practically complete proof of this conviction. There is a considerable difference of belief as to the kind of life the soul will lead after death; but of the

fact of survival itself there is a universal conviction throughout the world.

A universal fact of this sort demands a *universal cause* as an explanation. It is useless to assign ignorance, prejudice, or deception as the cause; these are not universal in character. The only adequate cause, co-extensive with man himself through all types of culture, is the *rational intellect* of man which finds itself constrained to accept the survival after death as a *necessary truth*.

But on what is this judgment based? On the *moral nature* of man. Man is subject to the moral law. This law, to be effective, must be enforced by sanctions, reward or punishment. In this earthly life, however, reward and punishment are not of such a nature that they are adequate for the purpose intended. The good are by no means always rewarded in proportion to their virtues, nor the evil punished according to their misdeeds. Occasionally, virtue is a source of happiness, and vice a source of misery. In general, however, pleasure and pain, comfort and discomfort, wealth and poverty, honor and disgrace, enjoyment and self-denial, happiness and misery, are not meted out to the good and evil according to their just deserts, as the divine sanctions would demand.

The best proof for the inadequacy of the moral sanctions in this life is found in those instances where a person voluntarily *sacrifices his life* in supreme devotion to the moral law. Many maidens have died in defense of their chastity; many persons have been martyred for the sake of God and their conscience; many heroes have given their life in the charitable effort to save others; many soldiers have

fought until death because of their sublime sense of duty. If the soul did not survive death, where is the sanction, the reward, for a magnificent moral deed magnificently done? Such actions, which we prize and praise so highly, would be utterly useless and foolish.

It is unthinkable that God, who is *infinitely just*, would permit such deeds of supreme devotion to the moral law to go un-rewarded, particularly when man, out of love of God and His law, sacrifices his highest earthly possession, namely, his life. Since the sanctions of the moral law are of divine origin, and since the reward for good and the punishment for evil are not adequate in this life, we must conclude that the soul will survive the death of the organism and receive its just dues in the life to come. Without this balancing of the scales on the part of eternal justice in the soul's life after death, the entire moral order would be a delusion and a mockery, and man would be the most deplorable of all God's creatures. God is infinitely good and infinitely just; He will therefore, reward the virtuous and punish the wicked in adequate measure. Hence, the survival of the human soul after death is certain.

There is another point which must be considered. God does not create a thing without a purpose to its being; and the *purpose* of a being is revealed by the kind of essence which God has given it. Now, the essence of man's soul is spiritual, incorruptible, indestructible; by nature it can and should survive the death of the organism. Creatural powers cannot touch the essence of the soul; they are as incapable of annihilating it as they are of creating it. Only God can create and annihilate the spiritual soul of man. The very

fact, however, that God created the soul as a spiritual and naturally incorruptible essence, capable of surviving the dissolution of the body, shows that it was His *purpose* that the soul should live on after death. Since the purposes of God are infallible in their power of execution, He had the intention that the soul should not cease to exist with the cessation of life in the human organism. Of course, God *could* annihilate any of His creatures; He gives existence, and He can also take away existence. No creature has an indisputable and absolute right to existence. God, however, is not fickle and capricious. If He chose freely to create the soul of man as a spiritual and incorruptible essence, so that by its very nature it is capable of survival after death, we are justified in drawing the conclusion that it is His *will* that the soul survive. The spiritual essence of the soul, together with the necessity of adequate sanctions for the observance of the moral law, makes the actual survival after death not only a probability but a certainty.

Spiritism and Survival

Spiritism (or, as the adherents of the cult term it, *spiritualism*) makes the claim to have furnished empirical proof of the continued existence of the human soul after death. Many disembodied souls, spiritists maintain, not only can, but actually do, establish contact with the living in various ways. The chief manner in which the souls of the dead communicate with the living is through certain psychic persons. Such a specially gifted person is called a *medium or sensitive*.

Spirit communications are usually received in a seance, a meeting held in a more or less darkened room. The medium goes into a trance, and the spirit makes use of the bodily organs of the medium to produce 'manifestations.' Such manifestations are manifold in character; some are physical, others psychical.

Among the *physical phenomena* attributed to discarnate souls in mediumistic seances, the following are the most outstanding. Heavy bodies are moved with contact, but there is no mechanical exertion involved in the movement. Heavy bodies are moved without contact. Objects and human beings are lifted off the floor and remain suspended in mid-air without visible support. Articles move about from place to place without contact. Bodies change their weight, even when subjected to laboratory conditions. 'Raps' or percussive sounds are heard and are used as a means of intelligent communication. 'Spirit-lights,' resembling the luminosity of glow worms, appear and travel about the room. Phantom forms and faces 'materialize' and are visible to those present; these phantom shapes are said to be developed from ectoplasm, a psychic substance obtained from the body of the medium.

The *psychical phenomena* attributed to the spirit intelligences are equally remarkable. One is automatic writing concerning subjects with which the medium is totally unfamiliar. Then there is the writing done with the planchette or ouija-board, an instrument similar to a miniature table with three legs, one of which is a pencil or pen. Clairvoyance, telepathy, and psychometry also occur quite frequently. A medium of mediocre education and

intellectuality may speak brilliantly on very abstruse and strange topics or in an archaic language. Detailed facts of historical events, long forgotten, are brought to light and verified through subsequent research.

The phenomena are startling. Numerous scientific bodies have investigated the occurrences happening in the seance room. In many instances fraud has been detected. It would be rash, however, to ascribe everything to deception; some mediums are apparently above reproach. Eminent scientists and investigators have become convinced that many phenomena are genuine. Among them are Sir William Crookes, Alfred Russel Wallace, W. F. Barrett, Sir Oliver Lodge, Henry Sidgwick, F. W. H. Myers, Charles Richet, Fred. H. Van Eeden, R. Hodgson, J. H. Hyslop, William James, Gustav T. Fechner, Frederick Bligh Bond, Hans Driesch, and others. They have arrived at the conclusion that 'intelligences are at work and manifest themselves to the living.

Are these extraneous intelligences the discarnate souls of persons who formerly lived on earth? The 'spirits' frequently make this claim in spiritistic seances and adduce evidence in support of their claim. That these intelligences are discarnate human souls is the central dogma of the religious cult of spiritism (spiritualism). In evaluating this main doctrine of spiritism as *empirical evidence for the survival of the human soul after death*, we must bear the following facts in mind.

First, the spiritistic practices of the ordinary seance room, as honest observers admit, are permeated by *fraud* and *trickery*. Since even the best of the famous mediums

have occasionally been caught in the perpetration of fraud, the entire evidence of spiritism is of doubtful validity.

Second, the chief objection against the spiritistic hypothesis lies in the impossibility of establishing *spirit identity*. To be acceptable, spiritism must prove beyond reasonable doubt that the communicating intelligence is really identical with the soul of a former person. Though claims of identity are frequently made by the 'spirits,' and though investigators have done everything possible to establish identity, indubitable and conclusive evidence of spirit identity has never been proved in a single case even under most favorable conditions. Ignorance and deception on the part of the 'spirits' have frustrated every attempt to establish identity. The case of Stainton-Moses, one of the best mediums, is illuminating. His principal spirit controls gave their names as 'Imperator,' 'Rector,' and 'Doctor.' Before he died, Stainton-Moses obtained the supposedly real earth names of his controls and communicated these names to a single living person, F. W. H. Myers. After his death, a 'spirit' communicating through Mrs. Piper, another famous medium, claimed to be the soul of Stainton-Moses. It was suggested to the alleged spirit of Stainton-Moses that he reveal the three names given by him before his death to Myers, in order to establish an indubitable case of identity. After considerable delay and evasion, the control revealed three names. Not one of them had the least resemblance to the original names given by Stainton-Moses to Myers. Myers himself attempted to establish identity in his own case. Shortly before his death he gave a sealed message to Sir Oliver Lodge. Lodge placed the sealed letter in a bank

vault. Soon after Myers' death, messages were received from all parts of the world, purporting to come from the spirit of Myers. After a few months, the message of Myers was taken from the vault and opened in the presence of official witnesses. None of the communications sent in bore the remotest resemblance to Myers' original message. The test ended in dismal failure, as did every other test ever made.

Whatever may be the nature of the intelligences operating in seances, we must conclude that spiritism does not furnish empirical proof of the survival of the human soul after death. The arguments for survival still rest, so far as philosophy is concerned, on the rational grounds adduced by speculative reason.

Immortality of the Soul

So far we have shown that man's soul will actually survive the death of the human organism and pass over to a new life after death. How long will this life of the soul last? Will it eventually come to an end? Will it last forever? Is the soul immortal?

By *immortality* is meant *endless duration of life*. The soul has a beginning to its existence, because it is created. Must it also have an end to its existence in the future life? If not, then it is immortal. Of itself, the human soul, since it is a spiritual and therefore a naturally incorruptible and indestructible essence, *can* live forever. Absolutely speaking, God *could* terminate its existence through annihilation. Consequently, the question resolves itself into

this: *Will* God annihilate the soul at some point in the future or leave it exist forever? The philosopher must attempt to answer this question, not by an appeal to Christian revelation, but on the grounds of reason. On the *grounds of reason* alone, we must draw the following conclusion:

THE SOUL WILL LIVE WITHOUT END; IT IS IMMORTAL.

Every individual living being seeks existence according to its nature. In beings endowed with knowledge, this seeking of existence and its preservation takes the form of a *natural desire* of the appetency, because knowledge precedes and produces desire. When something is known to be a 'good,' it is desired as such; and existence and its preservation is such a 'good.' The brutes apprehend existence and its preservation as a here-and-now 'good' and strive for it in that manner; their natural desire for existence and its preservation does not range beyond the present moment into the future. The intellect, however, apprehends *existence as such*. Existence conceived in this manner is simply pure duration extending endlessly into the future without limitations of time and space. The intellect, furthermore, apprehends this endless existence as a supremely valuable and desirable 'good.' The human will, then, following the lead of the intellect, naturally desires this endless existence, because it is the nature of the will to desire what the intellect proposes to it as a 'good' eminently suited to man's being and life. This desire for endless existence, therefore, flows from the very nature of man; it is a *natural desire*, the result of man's rational constitution.

Such a natural desire cannot be futile, because God does not create a futile thing; but it would be futile, if it were incapable of realization.

Hence, this desire for endless existence is capable of realization and will be realized.

Another important point. Man has a *craving for perfect happiness*. This craving is universal and irresistible. It is *universal*. The craving for perfect happiness is the root of all man's striving; it underlies all the tendencies and urges of sensuous and rational appetency. It is at the bottom of the desire for power, for wealth, for honor, for pleasure, for comfort, for achievement, for sex love, for all the efforts expended in domestic and civil society. Art and science, industry and commerce, international rivalry and treaties, war and peace, morality and religion — all are inextricably tied up with man's insatiable craving for happiness. It begins with the infant's cry for food, endures through the years of youth and mature age, and flickers in the centenarian's feeble clutch at the thinning thread of life. Wherever man goes and whatever he does, everything in his being is an expression of this craving. And this craving for happiness is *irresistible*. It is not a matter of free choice on the part of man's free will. The will *must* desire what is proposed by the intellect as a perfect 'good,' and perfect happiness is such a 'good.' To strive for the realization of perfect happiness is simply the dictate of the *nature* of rational appetency. No human person can rid himself of this craving. It is only with a 'good' of limited value that man has freedom of choice; in its striving for perfect happiness the will is determined by the law of inexorable necessity.

Deliberate violation of the moral law and blasphemous disrespect toward God may seem in opposition to this principle; nevertheless, a person exhibiting such conduct prizes his own will more than that of the Supreme Being and thinks he can find happiness in this kind of self-assertion and pride, notwithstanding the punishment which may follow. Even the act of suicide of a frustrated person is nothing else than an attempted escape from misery for the sake of a negative happiness in death and in possible extinction. The universality and irresistibility of man's craving for perfect happiness can only be explained on the supposition that it is a part of man's nature.

Such a *natural* craving, universal and irresistible in character, demands that the perfect happiness, toward which it is directed, *exist and be attainable*; and this happiness must be of *endless* duration. Why? For various reasons.

Contrary to the contentions of materialists and extreme mechanists, we live in a *rational teleological world*. This world is a world of order, not of irrational chance. Even the atom is a miniature world of orderly arrangement. The biological sciences, in particular, disclose more and more the marvelous reciprocal relationship which exists between organic structure and function and between the organism and its environment. When a biologist discovers an organ in a living being of any kind, it is a foregone conclusion that this organ has a definite function to perform in the cycle of the organism's life. He is so certain of this fact that he sets himself the task to find out the purpose and object of this function and the conditions under which it operates. If he

discovers a 'rudimentary organ,' which now seems useless, he immediately draws the conclusion that this rudimentary organ either had a specific function in the past history of the organism or that it is in the evolutionary stage of becoming a useful organ in the future. He never judges such an organ to be an accidental, useless excrescence on the organic body. In fact, the existence of rudimentary organs is one of the main arguments used as proof for the theory of evolution.

Applying this principle of universal teleology or purposiveness to man's desire for endless existence and craving for perfect happiness, it is obvious that man must be *able to attain* endless existence and perfect happiness. Should man, the highest and noblest creature in the universe, alone be frustrated in his nature? If the digestive apparatus has the natural aptitude to assimilate food and actually does assimilate it, and if the nervous system has the natural aptitude to receive sense impressions and does actually receive them, then the human soul, since it has the natural aptitude for endless existence and perfect happiness, must be capable of actually attaining immortality and perfect happiness. Otherwise the constitution of his nature would be meaningless, and the natural tendencies of his innermost being would be purposeless. It is contrary to reason to suppose that the universal purposiveness of the world would reach its highest peak in man and then suddenly stop and end in a contradiction.

Again, God is the *Creator of all beings* through an act either of direct or derivative creation. He gave to each being its specific nature with all its powers and tendencies.

Since God is infinitely *wise*, He would not have given man a soul which is naturally indestructible and therefore immortal, without making it also possible for his soul actually to be immortal. Nor would He have placed in the soul of man the irresistible craving for perfect happiness, if He never intended to place this perfect happiness within his grasp. God is also infinitely *just*; but it does not seem consonant with infinite justice to give man a rational nature which is filled with an unquenchable desire for endless existence which will never be fulfilled and with an irresistible craving for perfect happiness which can never be attained. God's wisdom and justice, therefore, demand immortality for the human soul.

Finally, the very *concept of perfect happiness*, which man craves with every fiber of his being, demands immortality. Perfect happiness involves the complete realization and satisfaction of the natural tendencies of man's spiritual soul after death. Now, if this happiness were not endless in duration, one of *three possibilities* would of necessity occur. Either the soul, while living its new life after death, would be aware of the eventual termination of its happiness; or it would be unaware of its termination, in such a manner that its ignorance is invincible; or, its ignorance would not be invincible, so that it could arrive at a knowledge of the actual or probable termination of its happiness. In the first case, there could be no perfect happiness; the mere fact of being aware of its termination would haunt the soul during every moment of its existence, and so its happiness would never be perfect, because it knows it will lose it some time. In the second case, this

invincible ignorance would be an evil which precludes perfect happiness; besides, such an ignorance could only prevail under the unthinkable supposition that God would deliberately blind the soul to its real condition and permanently deceive it. In the third case, knowledge or doubt as to the actual or possible termination of its happiness would, as in the first case, destroy perfect happiness from the very beginning of its knowledge or doubt. Hence, the happiness of the soul in its life after death, in order to be perfect, would have to be endless in duration, or there is no possibility of perfect happiness at all. And yet, as we have shown, perfect happiness must not only be possible but actual. Consequently, this happiness must be endless in duration, and the soul must be able to enjoy it endlessly, knowing that it is endless. In other words, the soul is *immortal*.

The argument based on perfect happiness applies only to those who have followed the moral law and have died in the friendship and love of God, because they alone merit the eternal reward of perfect happiness. Whether those who have flouted the moral law and have died in wickedness should suffer an immortal life of punishment, is, viewed from a purely philosophical standpoint, not so clear. They certainly do not deserve eventual perfect happiness, because they have voluntarily separated themselves from the Author of perfect happiness. Since their death in wickedness is of their own choosing, it would be *reasonable* to conclude that God will leave them eternally in this state of wickedness and consequent punishment.

Some thinkers advance the doctrine of *metempsychosis*. Metempsychosis, or reincarnation, is the teaching that human souls at death transmigrate into another body or succession of bodies, whether of a brute or a man, for the purpose of purification or gradual perfection. If such were the truth, souls should remember the experiences of their former incarnation. The assertions of a few persons notwithstanding, man is not conscious that his soul has ever transmigrated from one body to another. Metempsychosis contains this grain of truth that the wicked must suffer punishment in the life to come; but the doctrine itself is without a shred of proof.

In as much as the soul of the wicked is naturally indestructible and immortal, the same as the soul of the just, reason is justified in assuming that it will also lead an immortal life, but in eternal separation from God. The thought is terrifying indeed. We must, however, bear in mind that God gives all men the same nature, with the same fundamental powers and tendencies, with the same calling for endless perfect happiness, and with the same opportunities to work out their destiny. The *destiny of all man*, as intended by the Creator, is *immortality with perfect happiness*. If the just fulfill this intended destiny, it is because, through free choice, they loved God and observed His moral law; if the unjust fail to fulfill this intended destiny, it is because, also through free choice, they ignored God and deliberately violated His moral law. Whatever befalls them in the life to come, the blame is theirs and theirs only. So much is certain: God cannot be ignored or offended with impunity. The sanctions of the moral law

would become ineffective, if man could persistently disregard the moral law and yet attain perfect happiness or annihilation after a while.

We must, therefore, conclude that the soul after the death of the organism will enter upon an endless life. The soul of man, then, is truly immortal.

The Restoration of Man

What about the human body (matter)? Should not the *whole man* (body and soul, matter and form) be the bearer of immortal life in the world to come? Why should it be necessary for man to pass through the grim tragedy of death before entering upon immortal life? *Why death at all?* Is not the soul alone an incomplete substance in the new life, so that it is a sort of truncated being deprived of its natural counterpart, and would not this condition entail an *incomplete happiness*, at least on the part of the just who have fulfilled their natural destiny? These are pertinent questions.

We will consider the last question first. It is true that the soul alone is an incomplete substance and that the body is its natural counterpart. *Here on earth* the soul is destined to be the substantial form and animating principle of the body. The body, united substantially with the soul into one nature, has the natural purpose of being the *bridge of communication* between the spirit of man and the physical world; it supplies the sensory materials necessary for the formation of intellectual knowledge. As such, therefore, it acts very much in the nature of an 'instrument' for the

spiritual soul. It could very well be that the body is no longer required in the new life of the soul's immortality. If this is the correct view, the soul would have *two forms of natural existence*, one with the body in its earthly life and the other without the body in its immortal life after death. In that case, the soul would not be a truncated being after death, nor would its happiness be incomplete: This solution, however, does not seem to be rationally satisfying. After all, man is by nature an *organism* of which the body is an integral substantial part. But then again, why death at all? Philosophy stands here before an apparent contradiction or at least before a mystery.

Christian faith gives a solution. Mankind in its present situation is a *fallen race*. It has sinned, and sin has tainted man's nature. Man's intellect is darkened, his will is weakened, and the flesh is in rebellion against the spirit; the result is ignorance in spiritual matters, difficulty in observing the moral law, and proclivity toward sensual excesses. And 'the wages of sin is death.' Even the just, in the vast majority of instances, shrink from death. There should have been no death; death and organic dissolution is a punishment for sin. The human organism, however, will eventually be restored, for there will be a *resurrection of the body*, and the body will again be *reunited to the soul*. The body had its share in the performance of virtue and in the practice of vice, so it also shall share in the happiness of the just and in the misery of the wicked in the life to come. Philosophy, basing its conclusion on the findings of reason alone, can neither prove nor disprove this doctrine. The doctrine, however, explains many things in the life of the

individual and in the history of the human race which are very obscure and puzzling. As for the final restoration of the total man in the resurrection of the body some time after death, it is in eminent accord with the *logic of nature and reason*. Since the soul is by its very nature the substantial form or entelechy of the body, it has the natural exigency to be united to the matter of which it is intended to be the form. Hence, a final restoration of 'the whole man' is at least probable. We must, from the standpoint of philosophy and psychology, leave it rest at that.

AND SO WE COME TO THE END.

Psychology is the philosophical study of life of the whole man.

Man's body consists of physical elements, but these elements are compounded together into a living being, an organism. This organism consists of various types of structures. Some of these structures perform functions relating to nutrition and reproduction; man is a 'vegetant' being. Other structures perform functions relating to sensory perception; man is a 'sentient' being. Over and above these functions, man has the 'rational' activities of intellect and free will. Man is a *single vegetant-sentient-rational substance*, an integral organism, a unitary nature. Vital activity demands a vital principle, an animating substantial form, a soul. Man, therefore, is a single substance composed of matter and form, *body and soul*. This soul of man is spiritual and simple and comes into existence through an act of divine creation. The whole man

belongs to the physical, the social, the religious, and the moral order — a veritable microcosm. Man must die, but his soul is created for immortality.

Man has a *glorious destiny*. God did not make man to live for a few years on this spinning planet and then doom him to death and extinction. The life on this earth is only a period of probation. Here man must become worthy of the perfect happiness which is intended for him in the endless existence of an immortal life. C. P. Bruehl has expressed this thought beautifully: “On account of the unlimited reach of his rational power, the object to give man perfect happiness must itself be limitless. It must be the fullness of truth, goodness, beauty, and every conceivable perfection. This is God, who is the plenitude of being. In Him unalloyed happiness can be found. It will be found in communion and fellowship with the Supreme Being, who is not impersonal but a personal Self and will be to us Father and Friend. With Him and all the good, man will live in a blessed community in which eternal harmony prevails and into which no disturbing shadow can fall, because it is centered on Him who is the source of all good, infinite, changeless, and everlasting. Perfect happiness will be ours when God, for whom we are made, becomes for us all in all.”³

Summary of Chapter XXIII

God gave a purpose to man's being; the fulfillment of that purpose is man's *destiny*.

1. *The Rhythm of Growth*. Biologically and mentally, man passes through a number of *natural periods* in his development: prenatal life and childhood; adolescence; middle age; gradual decline after about forty-five or fifty years; the last phase, old age, after about sixty years until death. Mental maturity is slower than biological maturity.

2. *Man and the World*. The earth is man's home and workshop. Geographical conditions exert a profound influence on man's body and mind. Man is the pivotal point, the representative, the interpreter, and the crown of the universe.

3. *Man and Other Minds*. Man contacts other minds through the medium of language.

4. *Man and Society*. Man is an integral member of the community of men, of *society*. He has the natural *aptitude*, propensity, and *need* for a permanent union and companionship with his fellowmen in three great natural societies: domestic society, civil society, and religious society.

5. *Man and Domestic Society*. The fountainhead of social life is marriage. Marriage develops into the *family* which is the basic unit of human society.

6. *Man and Civil Society*. The *state* is the extension of the family. The essential purpose of the state is the common weal of all individuals, families, and communities.

7. *Man and Religious Society.* Man is also by nature a *religious* being, because he owes everything he is and has to his Creator. As an individual and as a member of society, he has the obligation of worship.

8. *Man and Morality.* Human conduct is characterized by the quality of *right* and *wrong*. Man has the obligation to do what is good and avoid what is wrong. Morality is a law imposed on man by his own rational nature as its proximate ground and in the *will of God* as its ultimate ground. *Conscience* is an act of reason which interprets the moral law and demands obedience to the law. The end and goal of the moral law for the individual is the perfection of the 'whole man, and this perfection entails *happiness*. In order that the moral law be effective, God must have attached sanctions to it, i.e., reward and punishment.

9. *Survival After Death.* Death may occur either through dissolution or annihilation. Man is not annihilated in death, because the corpse with its material elements remains after death. Does the *soul* survive the death of the human organism?

Survival is *possible*. In virtue of its essence, the soul is not subject to dissolution, because it is a *spiritual* and *simple* substance. It need not pass out of existence in virtue of its *relation to the body*, because it is intrinsically independent of matter.

Survival is *certain*. It has been a *universal conviction* of mankind that the soul survives the death of the body; such a conviction must be a necessary truth, the natural expression of man's rational intellect. This conviction is based on the *moral nature* of man. The sanctions of the

moral law do not find their fulfillment in this life; hence, the moral sanctions must be applied in a life after death. Survival is necessary, particularly in the case where man gives his life in the performance of duty. God, who is infinitely just, would not permit such devotion to go unrewarded; there must, therefore, be a life for the soul after the death of the organism. Besides, the *essence* of a thing bespeaks its purpose of existence. Since the soul was made by God as naturally indestructible, it must live after death.

10. *Spiritism and Survival*. Spiritism makes the claim to have furnished empirical proof of the continued existence of the human soul after death. There are two main objections against this claim. For one thing, the *fraud* and *trickery* which permeates spiritistic practices makes the evidence doubtful. Furthermore, all attempts to establish *spirit identity* have ended in failure.

11. *Immortality of the Soul*. Man has the *natural desire* for an endless duration of life, because the intellect apprehends 'existence as such' which is *pure duration*. Such a natural desire cannot be futile. Man also has a *craving for perfect happiness*, and this craving is universal and irresistible; as such it is the dictate of the nature of rational appetency, and perfect happiness must therefore exist and be attainable. Perfect happiness, however, demands immortality.

The world is a rational, *teleological* world in which every natural power has its proper function. Man's natural desire for endless existence and perfect happiness must, therefore, be capable of fulfillment. God is infinitely *wise*

and *just*; hence, lie would not implant in man's nature such a desire and craving, if He did not intend that it should be fulfilled. The very *concept* of perfect happiness demands immortality, because it would not be 'perfect' if it were not endless in duration. Consequently, the soul of man is immortal.

12. *The Restoration of Man*. It is in eminent accord with the logic of nature and reason that there will be a resurrection of the body, so that the 'whole man' will eventually be restored.

READINGS

Bruehl, Charles P., *This Way Happiness*. — Maher, M., *Psychology*, Ch. XXIV. — Brennan, R. E., *General Psychology*, pp. 483-485. — Fell, G., *The Immortality of the Human Soul*.

1 *Contra Gentiles*, III, C. 129.

2 *ibid.*, III, C. 140

3 *The Way Happiness* (Bruce, 1941), p. 43

GLOSSARY

Note: In the case of qualified words, look for the word or noun qualified. For example: in looking for *Scientific Psychology*, see *Psychology, Scientific*.

ABIOTENESIS. The origination of life from nonliving matter, through forces which are indigenous to matter; spontaneous generation.

ABSTRACTION. The intellectual process in which, through an act of selective attention, we leave out of consideration one or more aspects of a complex total object so as to attend to some other aspect or aspects of this object.

ABSTRACTION, GENERALIZING. That form of abstraction in which we separate mentally, through an act of selective attention, items which are common to a number of individual objects from those items in which these objects differ and then arrange the objects having the common items into a class as a unit.

ABSTRACTION, ISOLATING. That form of abstraction in which we mentally separate, through selective attention, a particular feature from the subject in which it exists.

ACTION, REFLEX. An act performed automatically and involuntarily, as a response to a stimulus, by a partial mechanism of the nervous system.

ACTUALITY, THEORY OF. The theory that the mind is the sum-total of psychical events, there being no permanent mind or Ego as the carrier of these mental states.

AFTERIMAGES. Sensations occurring after the stimuli causing them have ceased.

ANABOLISM. The synthesis of living protoplasm by which nutritive materials are absorbed and changed into the living substance of the cell.

ANIMISM, VITALISTIC. The vitalistic, holistic theory which maintains that every organism consists of two ultimate constitutive substantial principles, matter and the vital principle (soul), which are united into a complete substance and nature.

ANNIHILATION. The reduction of the total being to complete nothingness.

ANTI-CONSOLIDATION. The theory of retroactive inhibition which maintains that intense mental activity of any kind, following a period of learning, hinders the original memory traces from going through their normal phase of consolidation.

APPETENCY. The tendency of one thing toward another.

APPETENCY, CONCUPISCIBLE. The propensity to enjoy a good.

APPETENCY, IRASCIBLE. The propensity to fight an evil.

APPETENCY, RATIONAL. The will.

APPETENCY, SENSUOUS. The power in virtue of which a sentient being tends toward a consciously apprehended

sensuous good and away from a consciously apprehended sensuous evil.

ASSIMILATION. See Anabolism.

ASSOCIATION. The reproduction of related phantasms.

ASSOCIATION, LAWS OF. The principles which condition the reproduction of a related set of phantasms.

ASSOCIATIONISM. The theory that simple ideas are derived from the senses and that mental development proceeds entirely and exclusively through the combination of sensory elements according to the Laws of Association.

ATTENTION: The direction of the cognitive process toward an object, an activity, or a thought.

AUTOMATISM, AMBULATORY. See Fugue, Amnestic.

BEHAVIORISM. The doctrine that psychology should restrict itself exclusively to observations and concepts relating to behavior.

CEREBRUM. The large brain which is the final enlargement and amplification of the Spinal cord and brain stem.

CLAIRVOYANCE. The extra-sensory perception of objective events.

COCONSCIOUS. Any actual subconscious idea or thought process unknown to the human subject in his ordinary waking state.

COCONSCIOUSNESS. That form of consciousness which is characterized by any actual subconscious idea or thought process unknown to the human subject in his ordinary waking state.

COLOR BLINDNESS. The partial or total inability to distinguish or recognize chromatic colors.

COLOR CONTRAST. The difference in the appearance of colors brought about by the stimulation of adjacent sets of rods and cones in the retina.

CONSCIOUSNESS. A state of the mind in which we are aware of our experiences.

CONSCIOUSNESS, SENSORY. The awareness of sensations and of the sense qualities present in the sensations.

CONSCIOUSNESS, SUBLIMINAL. See Subconsciousness.

CONSCIOUSNESS, SUPRALIMINAL. Normal waking consciousness. See Consciousness.

CONTROL, VOLUNTARY. The control which the will exercises over the powers and actions of the human organism.

CREATION, DERIVATIVE. See Creation, Mediate.

CREATION, DIRECT. The production of a new reality in its total being from nothingness, so that no pre-existing entity contributes anything at all to the making of the new reality except the Creator and His creative power.

CREATION, MEDIATE. The spontaneous emergence of life from non-living matter in virtue of an inherent tendency placed in matter from the beginning by the Creator.

CRITICISM, TRANSCENDENTAL. The theory of Kant and his followers that the universality and necessity of scientific knowledge is derived from certain a priori forms innate to the human mind.

DEDUCTION. The legitimate inference from the more general to the less general, from a law or principle to a particular instance falling under the law or principle.

DELUSION. A mental disorder which manifests itself in a misinterpretation of the general state of affairs, characterized by a false belief or judgment regarding the self.

DEPERSONALIZATION. An abnormal state of consciousness in which a person experiences a profound change in his own personality, so that his own actions, thoughts, and emotions appear to be those of an automaton or to belong to a totally different person.

DEREALIZATION. An abnormal state of consciousness in which a person suffers from a disturbance of perception, so that the objects of the world have a sensory appearance quite different from that in his normal experience.

DESIRE. The longing aroused by the conscious representation of an absent good.

DETERMINISM. In the problem of free will, the doctrine that the will is determined by the antecedent psychical and physical conditions and causes to act as it does.

DEUTERANOPIA. Green blindness.

DICHROMATISM. Partial color blindness.

DISASSIMILATION. See Katabolism.

DISSOCIATION. The splitting of the consciousness into disunited parts.

DOUBLE-ASPECT THEORY. The theory that the physical and the psychical are merely two aspects of one and the same ultimate reality.

ECTOPLASM. A hypothetical psychic substance, derived from the body of the medium and supposedly used by spirits in the phenomena of materialization.

EGO, EMPIRICAL. The self or Ego as observed at any present moment in a here-and-now experience.

EGO, HISTORICAL. The self or Ego of an individual as he perceives it through memory of his life's experiences from the present down through the past.

EGO, METAPHYSICAL. The self or Ego considered in its constitution and nature.

EIDETIC. A person capable of producing eidetic imagery. See Imagery, Eidetic.

EIDETIKER. See Eidetic.

ELAN VITAL. Original life force.

EMERGENCE, ABSOLUTE. See Abiogenesis.

EMERGENCE, RELATIVE. See Creation, Mediate.

EMERGENCE, RESTRICTED. See Creation, Mediate.

EMOTION. An affective mental state of the animal organism, following the cognition of an object or situation, characterized by strong feeling, by an impulse to action, and by physiological changes in bodily function.

EMPIRICISM. In the problem of the perception of visual space, it is the theory which claims that our perceptions of space are entirely and exclusively a matter of experiential education; opposed to 'nativism.'

EMPIRICISM. The doctrine that all human knowledge is derived from the data of particular states of consciousness, so that experience is the exclusive source and criterion of all knowledge.

ENTELECHY. In Driesch's vitalistic holism, the formative agent, non-spatial and supra-material, which is responsible for the structural organization of matter in the organism; it is an operational principle. In Aristotle's vitalistic holism, it is the substantial form or soul which unites with primary matter to constitute the unitary substance of the organic body; it is primarily an entitative principle.

EPIPHENOMENALISM. The theory that consciousness is an accompaniment or by-product of neural processes, determined by them but exerting no influence upon them, so that it is but an 'epiphenomenon' of matter, matter being the real phenomenon.

EVIL. The unsuitability of something for a natural tendency or appetency; the privation of a required good.

EVOLUTION, EMERGENT. The theory that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality.

EVOLUTION, ORGANIC. The theory according to which the various species and types of animals and plants derive their origin, not through distinct and separate creative acts of God, but through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws.

EVOLUTION, PURPOSIVE. The doctrine that the Supreme Intelligence (God) endowed nature with a purpose and with the necessary principles of action to realize this purpose through evolution.

FEELING. An elementary affective state characterized by pleasantness or unpleasantness.

FIXITY. THEORY OF. See Permanence, Theory of.

FORM, SUBSTANTIAL. The determining principle which, by uniting with the matter which it actuates, constitutes a complete substance of a definite species.

FREE WILL. The ability of the will, all conditions for action being present, to decide whether to act or not act and whether to act in this manner or in that manner.

FREEDOM. In the widest sense, the absence of external coercion or restraint which hinders an appetency from expressing itself in external action; in the strict sense, the absence of intrinsic necessity or determination in the performance of an act.

FREEDOM OF CHOICE. See Freedom of Indifference.

FREEDOM OF CONTRADICTION. See Freedom of Exercise.

FREEDOM OF CONTRARIETY. The freedom of the will to choose between a moral good and a moral evil.

FREEDOM OF EXERCISE. The freedom of the will between acting and not acting; freedom of contradiction.

FREEDOM OF INDIFFERENCE. The freedom of the will in so far as it is subjectively indifferent in the presence of conflicting motives; freedom of choice.

FREEDOM OF SPECIFICATION. The freedom of the will to choose between one object and another object and therefore also between one act of the will and another act of the will.

FUGUE, AMNESTIC. An abnormal state of consciousness consisting in a somewhat protracted condition

characterized by wandering and other abnormal actions, followed by considerable loss of memory concerning this particular period.

FUNCTIONALISM. The doctrine which considers the mental processes as the functions of the organism in its adaptation to, and control of, environment.

GAMETE. Sex or germ cell; spermatozoon and ovum.

GENERATION, SPONTANEOUS. See Abiogenesis.

GENERATIONISM. See Traducianism.

GESTALT. Form, shape, configuration; as used in psychology, it is the theory that there are wholes, the behavior of which is not determined by that of their individual elements, but where the part-processes are themselves determined by the intrinsic nature of the whole.

GESTALTISM. The psychological theory of Gestalt. See Gestalt.

GOOD. That which is suitable in Some manner for the striving subject.

GOOD, ABSOLUTE. Anything suitable to a being itself, irrespective of other beings.

GOOD, APPARENT. Something which is judged to be good for a being, but which actually is not good for it.

GOOD, DELECTABLE. A relative good which gives pleasure and enjoyment to another.

GOOD, DISINTERESTED. Any good considered merely as giving perfection, irrespective of any pleasure derived through its acquisition or from its possession.

GOOD, MORAL. A thing or act which has everything demanded of it by the moral law.

GOOD, OBJECTIVE. Anything that is a good in itself.

GOOD, ONTOLOGICAL. What is good in its very entity or reality.

GOOD, PHYSICAL. A good that satisfies the demand of the nature of a being.

GOOD, REAL. Something which is judged to be a good for a being, and which actually is good for that particular being.

GOOD, RELATIVE. Anything suitable to another being.

GOOD, SUBJECTIVE. The actual possession of an objective good.

GOOD, USEFUL. A relative good which is desired as a means to acquire perfection or pleasure.

GOODNESS. The suitability of a thing to a natural tendency or appetency.

HALLUCINATION. An abnormal mental state in which a person has subjective perceptual experiences which lack relevant stimuli.

HEARING. The sense by which the vibrations of certain media acting upon the ear become known as sounds.

HOLISM. The 'totality-theory' which considers the organic body to be primarily an organized unit, an integrated whole, and this unit or whole is more than the mere addition and summation of its constituent parts.

HYLOMORPHISM, ARISTOTELIAN-SCHOLASTIC. The theory that the unitary substance of the organic body is composed ultimately of two incomplete substances or substantial part-principles, namely, primordial matter and the vital principle (substantial form, soul).

HYLOZOISM. The theory that all atoms of matter originally possess life.

HYPNOSIS. A trance-like nervous condition resembling sleep, induced by the suggestions and (or) manipulations of the operator ('hypnotist'), the hypnotized subject remaining in mental communication ('rapport') with the operator and responsive to his suggestions.

HYPNOTISM. See Hypnosis.

IDEA. The intellectual representation of a thing.

IDEALISM. In general, the doctrine which holds that the being of things is conditioned by their being known; consciousness is constitutive of its objects; the being of sensible things is simply their being sensed, and their true characters are their sensed characters; the world we know is the world of our perceptual content; the mind cannot transcend its own internal, conscious states.

IDENTITY-THEORY. The theory that the physical and the psychical are at bottom identical realities.

IDEOGENY. The formation or genesis of ideas.

IMAGE, EXPRESSED INTELLIGIBLE. The essential elements of a thing, abstracted from the phantasm by the agent intellect, gathered together by the potential intellect into a definition or abstract representation; the 'idea' or 'concept' of a thing.

IMAGE, EXPRESSED SENSIBLE. The completed sensory cognitional image representing the sensed thing in the sentient subject; phantasm, formed by the synthetic sense.

IMAGE, FORMAL INTELLIGIBLE. See Image, Expressed Intelligible.

IMAGE, FORMAL SENSIBLE. See Image, Expressed Sensible.

IMAGE, IMPRESSED INTELLIGIBLE. The cognitional image of a thing, abstracted from the phantasm by the agent intellect, which is the vital determination of the intellect to the act of understanding, to the intellectual perception of the quiddity of the thing represented in the phantasm.

IMAGE, IMPRESSED SENSIBLE, In the genesis of ideas, the sensation arousing the synthetic sense into action by its presence; the rudimentary cognitional image of the sensations.

IMAGERY, EIDETIC. Images of unusual clarity and vividness which are faithful reproductions of the original sensory experiences.

IMAGINATION. The power to form mental images or phantasms of perceived objects, together with the ability to reproduce these images or phantasms even in the absence of the perceived objects.

IMAGINATION, CONSERVATORY. The imagination in so far as it conserves the images or phantasms of previous sensations and perceptions.

IMAGINATION, CONSTRUCTIVE. The imagination, in so far as it has the power to unite phantasms which, in this particular combination, have never been experienced by the subject.

IMAGINATION, REPRODUCTIVE. The imagination, in so far as it has the power of forming phantasms of objects and events which have been previously perceived.

IMMATERIALITY. See Spirituality.

IMMORTALITY. Endless duration of life.

INDETERMINISM. See Libertarianism.

INDUCTION. The legitimate inference of universal laws from individual cases.

INFERENCE. A reasoning process in which, from truths known, we conclude to a truth previously unknown.

INHIBITION, RETROACTIVE. The tendency of mental activity to impair the recall of memorized material, if this activity is placed between the time of learning and the time of recall.

INNATISM. As a theory of the nature of instinct, the doctrine that the intrinsic factors of instinct are inherited and therefore innate; not learned, at least not fundamentally and ultimately, by experience.

INSTINCT. An innate disposition which determines the organism to perceive (to pay attention to) any object of a certain class, and to experience in its presence a certain emotional excitement and an impulse to action which find expression in a specific mode of behavior in relation to that object.

INTELLECT, AGENT. The power or capability which actively modifies itself so as to represent within itself in an abstract manner what is concretely represented in the phantasm.

INTELLECT, POTENTIAL. The power or capacity to express the essence of the represented thing in an 'idea' or 'concept.'

INTELLECTION. Rational cognition.

INTELLIGENCE, ANIMAL. The capacity to improve upon native tendency in the light of past experience.

INTERFERENCE, OR TRANSFER. The theory of retroactive inhibition which maintains that the original and interpolated activities intermingle, so that the two sets of memory traces become a single mixed set with subsequent confusion of recall results, or that the traces of the original material are used with the traces of the interpolated material and become modified thereby.

INTROSPECTION. The method of studying mental phenomena by means of the internal observation of experience on the part of the individual person.

IRRITABILITY. The property of living matter of responding to changes in the environment (such changes are called 'stimuli') by change in shape, production or cessation of movement, or other activities of their organs or parts.

JUDGMENT. The pronouncement of agreement or disagreement between two ideas.

KARTOKINESIS. See Mitosis.

KATABOLISM. The destruction of protoplasmic material in the course of vital processes.

LIBERTARIANISM. In the problem of free will, the doctrine that the will, no matter what the strength of the conflicting motives or the nature of the antecedent external and internal conditions may be, is not determined to act by necessity.

LIBIDO. In psychoanalysis, the instinct of Eros or sexuality.

LIFE. Immanent action.

MAGNETISM, ANIMAL. An obsolete name for hypnosis. See Hypnosis.

MATERIALISM. In general, the doctrine which finds the ultimate solution of all phenomena, physical and psychical, in the nature and activity of universal matter or force.

MATTER, PRIMARY. An incomplete corporeal substance, undetermined but determinable, capable of receiving any kind of substantial form.

MATURATION DIVISION. The cell division characteristic of gametes, preparatory to fertilization.

MECHANISM, BIOLOGICAL. Mechanism, i.e., atomism, as applied to organic nature.

MEMORY. The power to recall past objects and states of consciousness and recognize them as having been present in former experiences.

MENTALISM. The theory that nothing exists but the spiritual mind.

MERISM. The doctrine that the organic body is nothing more than an aggregate resulting from the additive summation of cells, chromosomes, and genes; the latter, in turn, are mere aggregates of molecules, atoms, electrons, etc.

MESMERISM. See Hypnosis.

METABOLISM. The processes in plant and animal cells involved in the construction and destruction of living tissue during the course of the activities of life.

METEMPSYCHOSIS. The teaching that human souls at death transmigrate into another body or succession of

bodies.

MICROMERISM See Merism.

MIND. The conscious knowing subject or the conscious knowing part of the subject.

MIND-DUST THEORY. The theory that an atom of consciousness or mind is attached to every atom of matter in the universe, both developing together in the evolution of beings.

MITOSIS. The biological process of cell division.

MONADISM. The theory that all beings consist ultimately of monads.

MONISM. The doctrine which seeks to deduce all the varied phenomena of both the physical and spiritual worlds from a single principle which is in a continuous state of evolution; specifically, the metaphysical doctrine which holds that there is but one substance, either mind (idealism), or matter (materialism), or a neutral substance that is neither mind nor matter but is the substantial ground of both.

MONOCHEOMATISM. Total color blindness.

MOTIVATION. The arousal of the will from a state of inaction into a state of action.

MOTIVE. An appreciated value realizable through an act of volition.

NATIVISM. In the problem of the perception of visual space, it is the theory which claims that our perceptions of space are the result of a native or constitutional property of vision itself, independent of learning and interpretation; opposed to 'empiricism.'

NECESSITARIANISM. See Determinism.

NEOVITALISM. The vitalistic theory of organic bodies which maintains that the vital energies are subject to the general law of the conservation of energy.

NERVE SYSTEM, AUTONOMIC. That part of the peripheral nervous system regulating responses not directly under voluntary control.

NERVES, AFFERENT. Sensory nerves.

NERVES, EFFERENT. Motor nerves.

NEURON. A nerve cell, with all its processes.

NEUROSIS. A functional mental disorder.

OCCASIONALISM. The theory that God, on the occasion of certain conditions, produces activity in His creatures, although the creatures, to all appearances, produce this activity themselves.

ONTOLOGISM. The theory that God and the divine Ideas are the primary object of the human intellect, and the first act of the intellect is the intuition of God.

ORGANICISM. The theory of holism. See Holism.

ORGANISM. Biologically, an individual constituted to carry on the activities of life by means of parts or organs more or less separate in function but mutually dependent. Considered philosophically, a substance consisting of matter animated by a vital principle.

ORGANIZATION. Biologically, the characteristic of living bodies possessing organs or structural parts distinct from one another, each of which has a specific function to perform.

PAN-EGOISM. The doctrine which identifies all reality with the universal consciousness or Ego.

PAN-PHENOMENALISM. The doctrine which holds that the human mind can know nothing but the phenomena or appearances of things.

PAN-PSYCHISM. The theory that everything existing is fundamentally psychic or mental in nature.

PANTHEISM. The theory that God is everything that exists.

PARALLELISM, PSYCHO-PHYSICAL. The doctrine which holds that the psychical and physical are but a manifold of interrelated occurrences, running parallel to one another without mutual influence.

PARAPSYCHOLOGY. The psychology of extra-normal phenomena, for instance, of extra-sensory perception.

PERCEPTION. The cognizing of the object which produces sensation.

PERCEPTION, EXTRA-SENSORY. A perception obtained through channels other than those of the known senses.

PERMANENCE, THEORY OF. The theory which maintains the stability of organic species, acknowledging only minor variations within the framework of the specific type; opposed to organic evolution of species.

PERSON. An individual, complete, subsistent, rational (intellectual) substance.

PERSONALITY, SPLIT. An abnormal condition of mental dissociation in which the same human mind manifests alternately two or more very different characters or personalities.

PHASE, REFRACTORY. The period of recuperation of an activated nerve during which it resists stimulation.

PRESENCE, DEFINITIVE. As applied to the soul, it is the presence of the soul in the body in virtue of which the soul exercises its life-giving power ubiquitously in the whole body and in every living part of it.

PROTANOPIA. Red blindness.

PSYCHIATRY. That branch of medical science which treats of mental disorders.

PSYCHOANALYSIS. A method devised and developed by Sigmund Freud for the examination of the contents and mechanisms of an individual's mind, for the purpose of treating and curing mental disorders.

PSYCHOLOGY. Literally, the science of the soul. Some define it as the science of the mind; or, as the science of consciousness or of the conscious states; or, as the philosophy of organic life; or, as the philosophy of the nature of man.

PSYCHOLOGY, EMPIRICAL. See Psychology, Scientific.

PSYCHOLOGY, EXPERIMENTAL. See Psychology, Scientific.

PSYCHOLOGY, PHILOSOPHICAL. The philosophic science of the life of the human organism.

PSYCHOLOGY, RATIONAL. See Psychology, Philosophical.

PSYCHOLOGY, SCIENTIFIC. A department of knowledge which seeks to discover all facts pertinent to mental phenomena by means of observation and experiment, to describe these facts in their proper order, and to establish the general laws according to which these facts occur.

PSYCHOMETRY. Clairvoyant knowledge of facts concerning an object or its possessor through contact with, or proximity to, the object.

PSYCHO-PHYSICS. That branch of psychology which studies the relations between mental and physical processes by investigating the response to stimuli and the perception of physical magnitudes.

PSYCHO-VITALISM. The vitalistic theory of organic bodies which maintains that the vital forces existing in every type of organism are conscious, psychic factors.

RAPPORT. In hypnosis, a mental alertness in the hypnotized subject toward the suggestions given by the operator.

REASON. The power of the mind which perceives the truth and validity of derived ideas, judgments, and principles on the basis of indirect and mediate evidence.

REASON, PARTICULAR. See Sense, Cogitative.

RECALL. The mental reproduction of a former stimulus or experience.

RECEPTOR. A cell or group of cells which function in the reception of stimuli; a sense organ.

RECOGNITION. The apprehension of the sameness of two representations or perceptions, one present and one past. Remembrance.

REFLEX. See Action, Reflex.

REFLEX, CONDITIONED. The reflex response of a neural mechanism to a stimulus which has been substituted for the natural stimulus normally evoking this particular reflex action.

REFRACTORY PHASE. See Phase, Refractory.

REMEMBRANCE. See Recognition.

REMINISCENCE. The spontaneous and gradual improvement of memory with a subsequent higher score in recall, without a relearning or rehearsal of the memorized material.

REPRODUCTION. Biologically, the process by means of which cells produce new cells and plants and animals produce new plants and animals of the same kind.

SANCTION. A reward given for the observance of a law and the punishment meted out for the violation of a law.

SELF-CONSCIOUSNESS. It is man's consciousness of his self or Ego as the subject and bearer of all the conditions and states affecting his being, particularly of consciousness itself.

SENSATION. A conscious experience aroused by the stimulation of an organ of sense.

SENSATIONALISM. The doctrine which assumes that all human knowledge originates solely in sensation and that all intellectual cognitions are ultimately nothing more than complex and elaborated products of sense impressions and their reproduced images.

SENSE. A specialized mechanism or function by virtue of which an animal organism is receptive and responsive to a certain class of physical stimuli, resulting in knowledge of some sort.

SENSE, CENTRAL. The mental power to consciously perceive, distinguish, and synthesize the objects and operations of the presently active external senses; synthetic sense.

SENSE, COGITATIVE. Man's perception of the useful or harmful character of particular things not merely in a purely sensory fashion, but also by means of a collation of ideas. Particular reason.

SENSE, COMMON. See Sense, Central.

SENSE, CUTANEOUS. A sense located in the skin region. Pressure, pain, warmth, and cold are experienced by the cutaneous or skin senses. See Senses, Somethetic.

SENSE, EQUILIBRIUM. See Sense, Static.

SENSE, ESTIMATIVE. The brute animal's sensory appreciation or estimation of the concrete usefulness or harmfulness of a perceived object with reference to the animal's organism or to the species.

SENSE, EXTEROCEPTIVE. A sense which is activated by stimuli originating outside the organism. The exteroceptive senses are sight, hearing, taste, smell, and the cutaneous senses of pain, pressure, cold, and warmth.

SENSE, INTEROCEPTIVE. A sense which is activated by stimuli originating within the viscera and within the vestibule of the internal ear. The interoceptive senses are the intraorganic visceral and static senses.

SENSE, KINESTHETIC. The sense which mediates sensations of the position and of the active and passive movements of the bodily members in relation to one another. See Senses, Somesthetic.

SENSE, LABTEINTHINE. See Sense, Static.

SENSE, PROPRIOCEPTIVE. A sense activated by stimuli originating within the organism by movement or tension in its own tissues; the kinesthetic sense.

SENSE, SKIN. See Sense, Cutaneous.

SENSE, STATIC. A sense, the end organs of which lie in the internal ear and are stimulated by the pull of gravity and by head movements. See Senses, Somesthetic.

SENSE, SYNTHETIC. See Sense, Central.

SENSE, TEMPERATURE. The sense or senses responding to stimuli with the sensation of warmth or cold. See Senses, Somesthetic.

SENSE, VESTIBULAR. See Sense, Static.

SENSE, VISCERAL. A sense which is activated by stimuli originating in the viscera. See Senses, Somesthetic.

SENSES, INTRAORGANIC. The somesthetic senses which are activated by stimuli originating within the organism. The kinesthetic, visceral, and static senses belong to this group. See Senses, Somesthetic.

SENSES, SOMEESTHETIC. What is generally referred to as the sense of 'touch'; they comprise the intraorganic kinesthetic, visceral, and static senses, and also the cutaneous senses of pain, pressure, cold, and warmth.

SIGHT. The sense, whose end organ is the eye, which is responsive to the stimuli of radiant energy or light.

SIMPLICITY. That positive property in virtue of which the essence of a being is not composed of distinct and distinguishable parts or principles.

SMELL. The sense by which certain properties of bodies (called their smell, odor, or scent) become known through the stimulation of receptors responsive to chemical substances in a gaseous form or to minute particles which reach them normally from a distance and in low concentration.

SOCIETY. A permanent union of a number of persons in fellowship and co-operation for a common purpose of benefit to all.

SOMNAMBULISM. Sleepwalking; in hypnosis, the production of action on the part of the hypnotized subject through images derived from the suggestion of the operator.

SPECIES, EXPRESSED INTELLIGIBLE. See Image, Expressed Intelligible.

SPECIES, EXPRESSED SENSIBLE. See Image, Expressed Sensible.

SPECIES, IMPRESSED INTELLIGIBLE. See Image, Impressed Intelligible.

SPECIES, IMPRESSED SENSIBLE. See Image, Impressed Sensible.

SPIRITISM. The belief that departed spirits communicate with the living by means of physical and psychical phenomena, commonly manifested through a medium.

SPIRITUALITY. The property in virtue of which a being is neither composed of matter nor intrinsically dependent on matter; immateriality.

STRUCTURALISM. The theory that all thought processes can be reduced to sensations, so that the sensation is the 'structural unit or element' of everything occurring in consciousness.

SUBCONSCIOUS. Certain mental items and processes which are apparently of the same nature as the normally conscious items and processes, yet of which the subject is not aware in the waking state.

SUBCONSCIOUSNESS. That part of consciousness which is, figuratively speaking, 'beneath the threshold' of the normal waking consciousness.

SUGGESTION, POST-HYPNOTIC. A suggestion given during hypnosis, but to be carried out by the subject after hypnosis has been terminated.

TASTE. The sense by which certain qualities (taste, savor, flavor) of soluble substances become known by contact with a particular set of epithelial end organs (taste buds) located mainly in the papillae of the tongue.

TELEPATHY. The extra-sensory perception of subjective events, i.e., the knowledge of objects or occurrences obtained from another mind in an extra-sensory manner.

TENDENCY, DETERMINING. A postulated psychic force which, acting subconsciously, proceeds from a resolution and carries out the task to a correct conclusion, notwithstanding the fact that the former resolution is forgotten.

THOUGHT, IMAGELESS. The theory that an idea can occur without a perceptible image being present.

TOUCH, SENSE OF. See Senses, Somesthetic.

TRADUCIANISM. The theory which explains the origin of the individual human soul as the product of parental generation; generationism.

TRANSFER. A theory of retroactive inhibition. See Interference.

TRICHROMATISM. The ability to perceive the three primary colors equally well.

TRITANOPIA. Blue-yellow blindness.

TROPISM. The involuntary movement of an organism or any of its parts, involving turning or curvature and axial orientation, and induced either automatically or in response to one or more stimulating influences.

UNCONSCIOUSNESS. The absence of consciousness.

UNDERSTANDING. The power of the mind which perceives the truth and validity of ideas and principles on the basis of direct and immediate evidence.

UNIT, KINETIC. The neuro-muscular co-ordination of a number of nerves and muscles in an intricate series of part movements.

VALUE. That which is perfect or perfective.

VISION, ACHROMATIC. Vision of neutral (achromatic) colors, namely, of white, black, and intermediate grays.

VISION, CHROMATIC. The vision of chromatic colors, namely, of the colors of the spectrum.

VITALISM. The theory which demands something distinctly vital in the organism, over and above the physico-chemical forces, in order to account for the structural and functional unity of the organism as a whole.

VITALISM, OLD. The vitalistic theory of organic bodies which ascribes the phenomena of life to some kind of immaterial vital force.

VOLITION. Rational appetite.

VOLITION, DELIBERATE. Volition which results in consequence of a deliberation over the respective merits of particular values.

VOLITION, NATURAL. Volition which must follow the apprehension of a perfect good.

WILL. The rational appetency or the power to strive for an intellectually perceived good and to shun an intellectually perceived evil.

MAN AND MORALS

ETHICS

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PREFACE

EVERYONE is aware of the distinction between right and wrong, between what is morally good and morally bad. The distinction is made by people every day, in the home and in the school, in business and labor, in courts and police actions, in politics and in government. And yet, the attitude of many persons toward human conduct is largely amoral.

Tradition and training direct conduct toward correct living. However, due to the separation of religion and education, the rising generation lacks the foundation of true morality. Actions are frequently good, but a knowledge of principles is often missing.

Since the belief in revelation and Christianity has become weakened in the minds and wills of so many persons, they know intuitively 'that' some actions are morally good and others morally bad, but they are not sure 'why' they are so. It is therefore necessary to reaffirm the principles which underlie morality. Natural morality is the foundation and bulwark of supernatural morality, just as nature is the substructure of grace. Even the Christian must base his moral life to a great extent on conscience and natural law.

Ethics, or moral philosophy, seeks to lay bare the natural foundations of correct living, to uncover the principles which govern morality and make individual actions to be right or Wrong, and thus develop the science of right conduct. In view of the secularistic trend in modern institutions of learning, a thorough knowledge of ethical principles and their applications is imperative. Incompetence here would be a calamity. Not rationalism or liberalism, but ethics based on eternal and natural law, is the safe guide for human conduct in personal and international affairs.

Rationalism set up the principle that human reason is supreme and independent. Liberalism accepted this principle and proclaimed the supremacy and independence of man as a law unto himself, so that man is free from every type of law except the law which proceeds from his own will. The result was the ethical system of 'independent morality.' It was but logical that liberalism would eventually terminate in the vicious doctrine of nazi, fascist, and communistic dictatorship which recognizes no law but that of superior force and is expressed in the immoral formula that 'might is right.' Instead of becoming free, man became the slave of the political state and its ruthless leaders; and untold misery engulfed the world as a consequence.

Ethics, as here presented, is a department of philosophy. As such, this book is primarily intended as a textbook for the college undergraduate. In accordance with this purpose, the style is essentially non-technical, because it was felt that this method is best suited to the mentality of the student. The presentation adopted has proved workable

in the colleges and universities where the other books of the series are used. It is also hoped that the book will furnish profitable instruction for others, especially for professional people who are confronted by ethical problems in their daily occupation. Once they are certain of the principles, the application of the principles to particular situations should not be too difficult.

The students of today will be the leaders of tomorrow. Their ideals must be grounded on a solid ethical foundation. Loose thinking on the great moral issues of the times will inevitably lead to confusion in action, and confusion in action will be disastrous both for the individual and for society. The salvation of the individual and of society depends vitally on a correct system of ethics. Pagan and Christian, Jew and Gentile — all are in need of sound ethical principles if mankind is to escape moral chaos and final dissolution.

May 8, 1950

CELESTINE N. BITTLE, O.F.M. CAP.

PART I

GENERAL ETHICS

Chapter 1

NOTION AND SCOPE OF ETHICS

MAN, BECAUSE HE IS RATIONAL, IS A MORAL BEING. WHETHER learned or ignorant, civilized or savage, rich or poor, isolated or in social relations, man feels constrained to guide his conduct by rules and codes which are, no matter how primitive and confused, distinctly moral in character.

The entire recorded history of mankind can be viewed as a history of morals, because moral factors have always played a prominent part in the rise and fall of nations. That moral considerations have swayed the conduct of individuals and nations in the international upheaval of our recent world wars is apparent. The widespread discussion of the guilt of aggressor nations and of the morality of the use of bombs on cities and civilians is an instance. The establishment of the organization of the United Nations, which attempts to define and regulate the rights and duties of individuals and nations, is another. Civilization is permeated with moral problems and principles.

All people, then, live according to a more or less definite code of right and wrong. To determine the ultimate basis upon which their isolated moral actions rest, one must delve beneath the surface of these actions. The science

which results from such an investigation is the *science of ethics*.

The Meaning of Ethics

The word 'ethics' is derived from the Greek word *ἠθική*, which in turn has its origin, as Aristotle¹ points out, in *ἔθος* (habit, custom). The word 'moral' comes from the Latin word *mores* (customs). By 'customs' one usually understands usages, practices, standards, and codes which are common to certain groups or classes of people and which regulate their actions in social and religious affairs. In so far as such customs contain laws governing actions with regard to their 'rightness' or 'wrongness,' they are 'ethical' or 'moral'; otherwise they are of a purely social nature.

The *basis* of ethics (morals) is the *rightness* or *wrongness* of human conduct. Almost all ethicists, no matter to what particular school of thought they belong, agree on this. A random selection of definitions of ethics, as proposed by various authors, brings this point out clearly. Here are some. James Seth: "Ethics, or Moral Philosophy, is the Philosophy of Morality or Conduct"; J. H. Muirhead: " . . . the science of moral character"; Ella L. Cabot: " . . . the science of right-choosing and well-doing"; John S. MacKenzie: " it considers the actions of human beings with reference to their rightness or wrongness, their tendency to good or to evil"; Joseph Rickaby: " . . . the science of human acts in their bearing on human happiness and human duty"; S. Alexander: the proper business of ethics is

the study of moral judgments . . . which express approval or disapproval of certain kinds of human conduct”; John Dewey and James H. Tufts: the science that deals with conduct, in so far as this is considered as right or wrong, good or bad”; D. Card. Mercier: it deals with the order to be realized in the free acts of the will.” The wording differs, but the general meaning is much the same.

An analysis of these views and definitions shows that ethics is considered by all to be a science which deals with human conduct from the standpoint of ‘good’ or ‘bad,’ ‘right’ or ‘wrong.’

Ethics — A Philosophical Science

Ethics is a department of philosophy. Many authors simply designate ethics as ‘moral philosophy.’ *Philosophy* is defined *as the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone.*

When it is stated, therefore, that ethics is a department of philosophy, we mean that it treats of human conduct in its ultimate reasons, causes, and principles, so far as is possible by the aid of human reason alone, according to the definition just given. Consequently, ethics properly is called *moral philosophy* or the *philosophy of morals*. In this respect ethics takes its place among the other departments of philosophy, namely, logic, epistemology, ontology, cosmology, psychology, and theodicy.

There are two types of philosophy, just as there are two types of science in general: speculative and practical. A ‘speculative’ science is any science whose fundamental

purpose is the acquisition of *knowledge as such*; it seeks to discover the truth about objects for the sake of knowing the truth. The objects themselves are given, and the mind endeavors to conform itself to them by knowing as many facts about them as it is able to ascertain; in a speculative science, therefore, the mind is concerned with the 'being' of objects and wants to know 'what they are.' A 'practical' science, although it is also concerned about the truth of things, seeks to discover the rules and norms which determine how an object 'ought to be' in order to be correct; its fundamental purpose, therefore, is the knowledge of the principles of regulation which govern the correctness of certain acts in accordance with definite rules and norms. Among the philosophical sciences, cosmology, for instance, attempts to penetrate to the ultimate reasons, causes, and principles of the universe at large and of the essential constitution of the bodies which compose the universe; cosmology is a speculative science. Logic, on the other hand, analyzes the various functions of the human intellect and expounds the rules and norms which the intellect follows and ought to follow in order to think correctly at all times; logic is a practical science.

Like logic, *ethics is a practical science*. It investigates human conduct from the standpoint of 'rightness' and 'wrongness' and searches for the rules and norms which must regulate this conduct, so that man may know how to lead a life which is good and right. Since the practical sciences treat of 'norms of action,' they also are designated 'normative' sciences. Ethics, then, is numbered among the *normative*, not the speculative, sciences.

Furthermore, ethics does not merely show how the will must regulate itself, if man desires to lead a good life; it also points out and demonstrates the *duty* of man to order his life in such a way that it will conform to the principles of proper conduct. The intellect, of course, has as its purpose in ethical study to discover the 'truths' which underlie morality, but it does not labor for its own benefit, merely seeking knowledge for the sake of knowledge; rather, the intellect labors in the service of the will, placing all its information at the disposal of the will, so that man may know definitely what he 'ought to do' and act accordingly. And since intellect and will are the highest powers of man, in virtue of which he is a rational being, superior to all other beings in the visible universe, ethics or moral philosophy is the pre-eminent practical science.

We are now in a position to define ethics. *Ethics is the philosophical science of human conduct in so far as conduct is viewed as good or bad, right or wrong.* Every science has a material and a formal object with which it occupies itself. The 'material' object of a science is the general subject matter which it treats in its investigation; usually this material object is common to two or more sciences. The *material* object of ethics is the conduct of man — the acts controlled by his will. The 'formal' object of a science is that specific aspect of the general subject matter which is taken as the proper object of this particular science and which distinguishes this science from all others. The *formal* object of ethics is the 'rightness' and 'wrongness,' the 'goodness' and 'badness,' of human conduct. This aspect, or viewpoint, is characteristic of ethics

and is not found in any other science. Ethics, therefore, is a science in its own right, distinct from all others.

At the present juncture, the definition of ethics as a philosophical science of human conduct is, of course, an unproved statement. The entire subsequent treatise will have to show whether ethics is really a true 'science' and whether it actually succeeds in explaining moral conduct in its 'ultimate reasons, causes, and principles.' But a preliminary definition of this kind is necessary, because only in this manner will the student of moral conduct know what ethics is supposed to be and to treat. As a matter of fact, ethics as a philosophical study of conduct has been carried on since the days of Plato and Aristotle and has verified the above definition to the fullest extent. The definition, therefore, can be accepted safely as true.

The Scope of Ethics

It is the general *scope* of ethics to outline the main facts of moral conduct, investigate their implications, examine the grounds of the 'oughtness' or necessity which underlie them, and expound the rules and norms to which conduct must conform in order that it may be designated 'right' and 'good.'

Ethics is a *science* and as such seeks to discover the 'truth' about these things, for the purpose of every science is to discover 'truth.' The knowledge acquired through the study of ethics will never, of its own accord and by itself, 'make' a person good; knowledge alone cannot compel the will to do good and avoid evil. But this knowledge will

furnish the principles which can be applied to conduct, so that man will be able to form correct judgments about what is right or wrong, good or bad; in other words, ethics 'shows the way' to right living, just as a road sign indicates the right road to travel. The decision to follow or not follow such directions will always be left to the individual's choice.

The scope of ethics does *not* consist in giving a mere *history* of moral judgments and customs. Such a history can only pose the problems, but offers no solutions. Ethics, to be of any practical value, must strive to find the solution; in doing this, it becomes a 'moral philosophy' in the true sense of the word. The history of morals is important for the science of ethics, but it must not be identified with ethics itself.

Some are of the opinion that ethics is primarily the 'art of right conduct.' An art, however, is a facility or skill acquired through practice. The art of right conduct, therefore, is the facility or skill of doing good and avoiding evil derived from persistently following the rules and methods necessary for destroying evil habits and acquiring good habits. The person using the art of right conduct already possesses a knowledge of what is right and wrong and knows why it is necessary to do the right and avoid the wrong. But the art itself does not supply this prerequisite knowledge. The art of right conduct tells a person 'how' something should be done, but not 'why' it should be done. Ethics lays the foundation of the art of right conduct by supplying the necessary information concerning the distinction between right and wrong and the reasons upon which this distinction is based. Ethics is like a book which

explains the rules of the game of football and the reasons for the rules and also expounds the fundamental principles and tactics of the game; the art of playing the game, however, must be learned by continued practice on the gridiron itself. Ethics treats of the truths and principles which underlie the art of right conduct; the art of right conduct is the application of these truths and principles to the actual conditions of life in all their concrete details.

The Facts

Ethics begins by accepting certain *unquestionable facts*. These facts are the *moral convictions* prevalent in mankind, no matter what our ultimate verdict may be as to their worth and truth.

Each individual's experience is witness to the fact of moral convictions. And since all persons have the same or similar experience, this experience is practically that of all men.

All people make a distinction between the *physical conditions* of life, such as health and disease, and the morality of acts and things, such as are involved in the quality of 'good' and 'bad,' 'right' and 'wrong.' True, people speak of a 'good' and a 'bad' heart, etc. But they use the words in an entirely different sense when they speak of virtues and vices, such as honesty and dishonesty. With reference to physical conditions, the terms 'good' and 'bad' denote proper or improper function; with reference to morality, a course of action to be approved or condemned. The distinction is paramount. Furthermore, all people have

the conviction that the *morally good should be done and the morally evil should be avoided*. They may act in opposition to this standard, but they are convinced that the standard 'should be' observed as a norm of conduct in themselves and in others. Self-interest may prompt them at times to excuse their own wrong action, but they usually are quick in condemning the same action in others.

People are convinced also that there are such things as *rights* and *duties*. Each individual feels that he has certain inherent rights which others have the duty to respect. Prominent among these rights are the right to life, liberty, and the pursuit of happiness, the right to the ownership and use of property, the right to defend oneself against unjust aggression and interference, the right to obtain the sustenance necessary for the maintenance of life, and the right to enter marriage and raise a family. In marriage, husband and wife have corresponding rights and duties toward themselves and their children. Children have rights and duties toward their parents and among themselves. Definite rights and duties pertain to individuals as members of a community, clan, tribe, or state. Violation of these rights is called 'wrong'; performance of these duties, 'good.' Rights and duties have a 'moral' character.

Many of these rights and duties are crystallized in the *customs* of groups and nations. As a general rule, people make a clear distinction between 'social' and 'moral' customs. The violation of social custom involves an impropriety of some sort, but not moral turpitude. Most of the customs of etiquette are of a social, not moral, nature; they should be observed, if one wishes to be a gentleman or

lady, but there is no moral obligation to observe them. To eat peas with a knife may be bad etiquette, but it is not morally bad to do so; to use a knife to stab someone in a brawl is a morally reprehensible act. We fought not' eat peas with a knife and we 'ought not' stab another in a brawl, but everyone is convinced that the instances of 'ought not' in the two cases are poles apart so far as morality is concerned. Customs themselves often are judged to be morally good or morally bad. The mere conformity, therefore, of some course of action with a certain custom does not exempt it, in the estimation of upright persons, from the demands of good morals.

Every individual experiences within himself the *dictates of conscience*. Conscience makes us aware that certain actions should be performed because they are right, and others should be avoided because they are wrong. We experience a sense of satisfaction and self-approval if we do what we believe is right, and a sense of guilt and self-condemnation if we do what we believe is wrong. And this feeling is present, irrespective of the approval or disapproval of others. Social effects and personal prestige make no difference; even when actions are strictly internal or private, we experience the feeling of righteousness or guilt. Conscience does not always give commands and make demands. It differentiates between 'indifferent' and 'moral' acts. Under ordinary circumstances, our conscience, for example, will consider it to be indifferent whether we indulge in a smoke and select this or that particular brand of tobacco; but if our health is such that a competent physician has forbidden us this type of indulgence as a

serious matter, then our conscience will upbraid us for any infraction of his orders. It is the steadfast conviction of people who mean well that conscience and its dictates must always be obeyed.

History is also a witness to the fact of moral convictions among men in all ages.

Contracts between individuals and organizations and treaties between governments and nations always have been considered sacred obligations. Their stipulations bind the contracting parties under the conditions laid down in the contract or treaty, both as to the matter and the time. To violate a contract or treaty always has been held as criminal. All tribes and nations have courts to uphold rights and punish infringements of the law. All tribes and nations have codes and laws which regulate the rights and duties of its citizens. Law enforcement is universal in some form or other. It is the uniform conviction of people all over the world and at all times that these and similar obligations are not left to the arbitrary discretion of individuals and communities but are matters which are necessary and binding; in other words, these obligations 'should' be met and discharged and 'should not' be side-stepped or violated.

Such are, in rough outline, some of the main facts which reveal the conviction of mankind that a moral order should and actually does prevail. One could multiply individual instances by the thousands, but this brief enumeration of facts will suffice to show that certain human acts are affected by morality. *Morality* is that quality or property of human acts in virtue of which they are termed 'right' or

‘wrong,’ ‘good’ or ‘bad.’ It is evident from the attitude of people toward certain acts, that they consider these acts to possess this quality or property of morality.

At present we are merely concerned with the general *fact of the conviction* of men that morality exists and with particular sets of facts which manifest this conviction. These facts cannot be denied, and they form the material for the study of ethics as a science. Whether this conviction is justified or not, is precisely the issue which will have to be settled in the course of ethical study.

Postulates

All sciences rest upon certain postulates. A postulate is not an unwarranted assumption or hypothesis. A scientific *postulate* is a proposition which is either self-evident, or which is taken over without proof by one science from another science because it has been proved by this other science. Hence, such a postulate need not be proved or it already has been proved. For example, the astronomer presupposes the validity and truth of mathematics in his own science of astronomy and feels no need first to prove the principles of mathematics before he applies them to the movements of the stars; the principles of mathematics thus become postulates of the science of astronomy.

ETHICS ALSO HAS ITS POSTULATES.

If the scientific inquiry of ethics is to have a start at all, we must begin by assuming the trustworthiness of human

reason. This assumption is not arbitrary and gratuitous, but is based on the undeniable and self-evident ground that without it no science of ethics is possible. Consequently, we must accept the postulate: *Human reason is a reliable and trustworthy source and instrument of true and certain knowledge.*

Theodicy is that department of philosophy which treats of the existence, nature, attributes, and government of God. It is not within the province of ethics to prove the existence of God as the Creator and Supreme Ruler of all things. The moral philosopher is justified in *assuming*, without explicit proof on his part, that God exists, that He is a Person and the Supreme Being, infinitely intelligent and powerful and good and just, regulating all things through His benign Providence. Whoever wishes to assure himself of these truths should consult a textbook on theodicy.

The ethicist thus assumes the postulate: *God exists and is infinitely intelligent, good, and just.* God, as postulated here, is not the impersonal god of the pantheists, in a constant process of development in and with and through nature. Nor is He the god of the deists, who consider Him to be so transcendent that He takes no interest in human affairs and in men as individuals. We accept God as the Supreme Being who is indeed extramundane (i.e., who exists beyond the visible universe as its Creator), but who is an infinitely intelligent Person with an interest in all things pertaining to man and his conduct.

Man is man, and as such he is superior to the plant and brute, because he has a rational soul. The rational soul possesses two supreme powers, *intellect* and *will*. By means

of his intellect man forms abstract ideas, judgments, and logical inferences. By means of his will man is capable of striving for every type of good, because his intellect can propose every type of good, material and spiritual.

The *freedom of the will* is man's greatest prerogative, but also his greatest hazard. Psychology proves the freedom of man's will. Our own conscious experience is witness to it. 'Freedom' here means the absence of intrinsic necessity or determination in the performance of an act.

The psychological postulate can be formulated as follows: Man is a rational organism composed of matter and a spiritual soul united into a unitary nature, endowed with intellect and free will. This postulate is extremely important, particularly the item of man's free will. Without free will there can be no responsibility for our acts, no obligation to do good and avoid evil, no meaning to approval or disapproval of conduct, guilt or righteousness, reward or punishment, virtue or vice. We accept this postulate. In doing so, we are not making an unwarranted assumption, because the postulate is founded on the positive findings of sound psychology. The ethicist is entitled to accept these fundamental truths as a postulate, because he cannot be expected to incorporate the entire science of psychology into the science of ethics.

Sources and Method

The main source for ethical knowledge is the body of definite and certain *principles of reason* which man finds, upon reflection and analysis, to be self-evidently true.

The child, after reaching the age of discretion, soon perceives the existence of certain *moral principles* as governing conduct. A child has an acute consciousness of 'mine' and 'thine,' of guilt and innocence, of justice and injustice, of fairness and unfairness in treatment. A child, for example, resents being punished for something it did not do, because it realizes it does not deserve the punishment. The understanding of such fundamental moral principles becomes clear to the child early in life and remains with it for the rest of its days.

All normal people, whether civilized or uncivilized, develop the same mental processes of moral judgment, because all are endowed with the same nature and powers. The fundamental principles of morality are common to all persons. It is upon them that all moral conduct rests. Moral philosophy must take these and similar concepts, judgments, and principles, as given by human reason, and examine their ultimate validity.

Besides the principles of reason, *experience* and *history* are important secondary sources for ethical study. It is obvious that the ethicist often must consult his own experience and the experience of others in moral problems, because it is in his own conduct and in the conduct of others that morality manifests itself. Without the data of experience the study of ethics would lack concreteness and actuality, and the ethicist would run the serious risk of building up a science of imaginary events. The history of morals is also important as a source of information regarding the principles and codes of conduct prevalent among individuals and nations. Such a history reveals the

crystallized judgments of people concerning what is right and wrong in human conduct.

As regards the *method* to be employed by ethics in its investigation of moral phenomena, it must utilize both the data of *experience* and the *principles of reason*. Experience furnishes the facts of human conduct and most of the moral problems which perplex the human mind. Without these facts and problems of human conduct the ethician would have no subject matter to investigate and analyze. Hence, the method of ethics is to a great extent 'empirical.' Facts and problems alone, however, do not constitute a science. These facts and problems must be investigated in the light of certain, primary, and irrefutable principles of reason, so that the science of ethics will rest upon a solid foundation. Only through the application of rational principles to the specific cases of human conduct will it be possible to deduce laws and norms which must govern human conduct in general. And only in this manner can the ethician arrive at truths which can be arranged into the complete system which is 'science.' Hence, the method of ethics is also 'speculative' or 'rational.' It would be fatal to ethics to overemphasize or underemphasize either experience or the principles of reason. A proper balance between these two phases of the method of ethics will lead to sound conclusions.

Ethics and the Supernatural

Ethics, being a department of philosophy, must seek its solutions to moral problems through the aid of human

reason. This procedure is characteristic of philosophy as a science, and the ethicist must abide by it. As a consequence, divine revelation is excluded as a source of information for the moral philosopher. The ethicist must arrive at his conclusions through the application of rational principles to moral phenomena, without the explicit aid of revelation, by basing his deductions on the essential constitution and the natural powers of man as a human being.

However, divine revelation actually occurred, and the Christian philosopher accepts its teachings. These doctrines inform us that man has never been in a purely natural state. Man was created as a *super-naturalized* being, having been placed on a supernatural plane from the very beginning. Man has a super-natural destiny, and the Creator has given him supernatural aids (namely, grace) to realize this destiny. The fall of man from grace and the restitution of man to grace through the Redemption are tremendous facts which perforce alter our outlook on moral problems. There are many duties incumbent on man because of his supernatural state and destiny.

The science of ethics is a 'natural' science and thus is definitely *restricted* in its scope and purpose. The Christian philosopher leaves out of consideration ('prescinds from') the entire field of revealed truths that pertain to the supernatural moral order, though he accepts them on the grounds of faith. As a result of this limitation, philosophical ethics cannot possibly solve all moral problems. However, the supernatural presupposes the natural. The conclusions of ethics on the basis of man's nature will, therefore, be

legitimate, even though not complete. The student of moral problems must never forget, in the course of the subsequent discussions, that moral philosophy is a restricted science which cannot lay claim to being able to solve all the moral problems of life, particularly those in the field of the supernatural; the teachings of revelation also must be consulted, so that conduct will be ordered rightly in every respect. *Indirectly*, revelation will and should be a guide for the moral philosopher in the solution of ethical problems.

Division of Ethics

It is traditional to divide ethics into two main parts: *general* and *special*. 'General ethics' treats of the moral concepts, judgments, and principles which are basic to the entire moral order. These concepts, judgments, and principles must first be clarified and validated, so that a general doctrine of right conduct can be formulated. 'Special ethics' applies this general doctrine with its established principles to man in so far as his conduct is affected by the special duties which fall to his lot in the course of life.

Human life is a concrete reality, and its moral problems are not 'general' or 'special.' The ethicist, however, must treat the entire matter of morals in a gradual and methodical fashion. The division of ethics into 'general' and 'special' ethics is, therefore, merely a methodological device necessary for the orderly progress of investigation; otherwise there would be nothing but confusion of thought.

Summary of Chapter I

The notion and scope of ethics.

1. *The Meaning of Ethics.* Ethics is related to 'custom,' but must not be identified with it, because some customs are merely social in character. Ethics is considered by all to be a science which deals with human conduct from the standpoint of 'good' or 'bad,' 'right' or wrong.

2. *Ethics — a Philosophical Science.* Ethics is a department of philosophy, and philosophy is the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone. Ethics, therefore, is philosophy applied to human conduct; it is 'moral philosophy.' Ethics is a *practical* science since it investigates conduct from the standpoint of 'rightness' and 'wrongness' and searches for the rules and norms which must regulate this conduct in practical life.

Ethics is defined as *the philosophical science of human conduct in so far as human conduct is viewed as good or bad, right or wrong.* Its 'material' object is the conduct of man, the acts controlled by the will. Its 'formal' object is the 'rightness' and 'wrongness,' the 'goodness' and 'badness,' of human conduct.

3. *The Scope of Ethics.* It is the general scope of ethics to outline the main facts of moral conduct, investigate their implications, examine the grounds of the 'oughtness,' or necessity, which underlie them, and expound the rules and norms to which conduct must conform in order that it may

be designated 'right' and 'good.' Ethics is *not* a mere *history* of morals, nor is it the *art* of right conduct.

4. *Facts*. Ethics begins by accepting the unquestionable facts of *moral convictions* prevalent in mankind, as evidenced by experience and history.

5. *Postulates*. A 'postulate' is a proposition which is either self-evident, or which is taken over without proof by one science from another, because it has been proved by this other science. Ethics, like all sciences, rests upon certain postulates.

The *epistemological postulate* of ethics reads: Human reason is a reliable and trustworthy source and instrument of true and certain knowledge.

The *theodicean postulate* reads: God exists and is infinitely intelligent, good, and just.

The *psychological postulate* reads: Man is a rational organism composed of matter and a spiritual soul united into a unitary nature, endowed with intellect and free will.

6. *Sources and Method*. The main source for ethics is the body of definite and certain *principles of reason* which man finds to be self-evidently true. Secondary sources are 'experience' and 'history.'

In its method ethics must utilize both the data of experience and the principles of reason; that is to say, ethical method must be both 'empirical' and 'speculative (rational).'

7. *Ethics and the Supernatural.* Ethics, being a philosophical science, must seek its solutions to moral problems through the aid of *human reason*. Divine revelation is, therefore, excluded as a source of information in ethics. Revelation, however, actually has occurred. Man leads a super-naturalized existence, and there are many duties incumbent on man because of his supernatural state and destiny. Since ethics is a natural science, it is *restricted* in its scope and purpose and cannot be expected to solve all moral problems of human life.

8. *Division.* *General* ethics treats of the moral concepts, judgments, and principles which are basic to the entire moral order. *Special* ethics applies this general doctrine with its established principles to man in his special duties.

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Chapter 2

THE HUMAN ACT

WE KNOW A THING BY WHAT IT DOES. ACTION FOLLOWS THE nature of a thing. The nature gives rise to various powers, and the powers determine the acts. We do not perceive the inner nature of things, but we do perceive their acts. From the acts we conclude to the powers which perform the acts; and from the powers we conclude to the underlying nature. If the acts of a being are entirely and exclusively on a material plane, then we are justified in concluding that the powers are material powers, and the being's nature is a material nature; but if the acts are spiritual, then the powers must be spiritual, and we rightly conclude that the being's nature is also spiritual.

Since ethics is the normative science of human acts, an examination of the acts of the will is required. Thereby we will discover the nature of the *human act*.

The Will as Rational Appetency

Man is a rational animal and as such belongs to the genus 'animal.' As an animal the life of man is characterized by two phases: knowledge and appetency.

In sensory knowledge, physical objects act upon the senses, and the senses, in conjunction with the brain, react with sensations and perceptions. Thereby the properties of these objects, and through these properties the objects themselves, become known in a concrete sensory manner. Sense knowledge is one phase of the life of the animal organism. There is another phase, and it is equally important; it is *sensuous appetency*.

In its most general meaning, *appetency*, or appetite, is *the tendency of one thing toward another*. The term 'appetency' is a Latin derivative (*ad* and *petere*) meaning 'to strive for,' 'to seek for,' 'to tend toward,' something. The appetency present in the animal organism is a conscious appetency. It is termed 'conscious,' because the animal is aware of the object for which it strives; a dog, for instance, sees and smells a piece of meat and then seeks to make off with it and eat it. This conscious apprehension of the object is a deciding factor in the animal's striving for the object. The appetency of animals is the result of a spontaneous inclination following conscious apprehension. Knowledge and appetency always go together; knowledge comes first, and appetitive striving follows.

Man, being an animal organism, possesses sensuous appetency and strives for sensory objects. But man is also a *rational* animal. Over and above his senses he is endowed with a rational principle of knowledge, the intellect. Due to the higher nature of the intellect, man knows super-sensory objects, such as science, virtue, loyalty, honor, happiness, law, morality, duty, God. These are objects which do not and cannot affect the sense organs; hence, they are outside the

purview of sense knowledge and sense appetency, and for this reason brute animals do not and cannot desire them. Man, however, knows them through his intellectual apprehension and actually, at least in many instances, strives for them. And since we know a thing by what it does, man must also possess a rational appetency. Just as sensuous appetency follows sensory knowledge, so rational appetency follows the rational knowledge of the intellect. Man, therefore, possesses two kinds of knowledge and two kinds of appetency: sensory and intellectual knowledge, sensuous and *rational appetency*. Similar to sensuous appetency, man's rational appetency is the result of a spontaneous inclination following conscious intellectual apprehension.

Man's rational appetency is designated by a special name. It is called the will. The exercise of the will is termed 'volition.'

The Will and the Good

Whatever the type of appetency, whether sensuous or rational, that which moves it to action and is the object of its striving is the *good*. Something is said to be 'good' for a being when it is *suitable* in some manner for it. A being strives for an object because it satisfies some need, some demand, some exigency, some natural aptitude; such an object helps the striving being in some way or completes it in some fashion or gives it pleasure in some form or actualizes some potentiality of its nature or has the capacity to realize some end and purpose in it. In a word, a being

strives for something because it is an object apprehended as being 'suitable' or 'befitting' and in so far 'good' for it. The *well-being* of the striving subject itself is the all-embracing goal of its appetitive activities, because nothing is so basically good and suitable for an individual as its own nature.

Since an appetency seeks only what is 'suitable' and 'good,' no being ever seeks what it apprehends as harmful to itself. Every being *avoids what is harmful to its nature*, because it is unsuitable for the satisfaction of its needs and its well-being. If something harmful confronts the appetency, the being possessing this appetency either avoids it or fights it; no being ever consciously seeks it and strives for it.

Appetency, then, has *two phases*: the 'positive' phase, in which it consciously and actively seeks to attain what is suitable (good) to the nature of the striving subject; and the 'negative' phase, in which it consciously and actively seeks to avoid what is harmful (evil) to this nature.

In general, therefore, an appetency can be defined as a power in virtue of which a being tends toward a consciously apprehended good and away from a consciously apprehended evil. If this appetency is confined exclusively to the good as apprehended by the senses, it is a 'sensuous appetency'; but if it is directed toward the good which is apprehended by the rational power of the intellect, it is a 'rational appetency' or 'will.' Hence, the *will* is defined as *rational appetency or the power to strive for an intellectually perceived good and to shun an intellectually perceived evil*. Man, of course, has both types of appetency;

he has a sensuous appetency which follows the apprehension of his senses and a rational appetency (will) which follows the apprehension of his intellect.

By directing its attention to the images present in the senses, the intellect, through a process of abstraction,¹ acquires a knowledge of the physical world and its objects and passes judgment on these material objects as being 'good' or 'evil.' The intellect also acquires a knowledge of immaterial things, such as virtue, duty, blasphemy, and passes judgment on them as being 'good' or 'evil.' In consequence of this fact, the will can strive for goods of both the material and immaterial order, depending upon the judgment of the intellect as to their 'goodness.'

Whatever the will desires it must desire under the aspect of a 'good.' Only the good is desirable, and it is desirable only because it is suitable in some manner toward satisfying a need of the individual person who strives for it.

The Will and Evil

Evil is the antithesis of 'good.' *Evil* is the *unsuitability of something for a natural tendency or appetency*. It is not a positive thing, but it is not a mere absence of being. Sightlessness, for example, in a stone is not an evil, because a stone is not supposed to have sight. But sightlessness in man is an evil, and is called 'blindness,' because man is supposed to have sight. An evil, therefore, is the absence of a reality which ought to be present; it is a defect, a privation of reality — *the privation of a required good*.

The will cannot desire an *evil precisely as an evil*. The will is an appetency, and it is the essence of an appetency to strive for a thing so as to bring about a union between the striving person and the desired object; the purpose of this union is to benefit the person in some way. Now, if it were possible for the will to strive for the evil as such, it would by its very nature seek the harm and eventual destruction of the person. An appetency of this kind would be a useless, contradictory, and destructive tendency, existing in man as an integral part of his constitution; the creation of such a being, however, would be contrary to the wisdom of the Creator. As a matter of fact, every being tends to preserve and increase its own perfection and well-being; not to diminish or destroy it. The will naturally shuns the evil, just as it naturally desires the good.

The student may voice an objection to these statements and point to facts which seem to show plainly that man actually wills evil. Do not people willingly undergo painful operations? Are not many persons guilty of theft and robbery, although they know that such acts are morally evil? Is not suicide, the willful destruction of one's own life, a great evil, and is it not all too frequently committed? No one will deny these facts. However, just what do these persons strive for when committing such acts? Whoever undergoes an operation does not submit to the surgeon's knife in order to experience the sensation of severe pain; what such a person really wills is the good of restored general health which follows the operation. He who steals or robs hopes to acquire money or valuables which, in his estimation, are goods more worth while than the

observance of the law. Even the suicide strives only for the good, because he judges that death is the escape from misery or sickness or poverty or disgrace; he, too, desires to avoid a greater evil by choosing what is, in his opinion, a lesser evil, and thereby he really wills a relative good. Cases like these, therefore, actually prove the truth of the statement that the will always seeks what is good and shuns what is evil. *Directly*, the will desires only the good; *indirectly*, the will may desire an evil, namely, as a means toward acquiring a good of greater value.

No earthly beings are good in every respect for every other being under all circumstances. Something, for instance, may be a *physical* good for a being, but a *moral* evil. The intellect may concentrate its attention upon the physical good and minimize its aspect as a moral evil; it 'knows' that an act is morally evil, but judges the physical good to be preferable. Again, man's intellect is not infallible. It may mistake an *apparent* good for a *real* good. The will depends upon the judgment of the intellect. Although the will can command the intellect to give better attention to a problem and make a deeper study of the value of things, in all too many instances it follows the hurried judgment of the intellect, with the result that the will is liable to strive for the physical rather than the moral good, for the apparent rather than the real good.²

Acts of Man and Human Acts

Man possesses the spiritual powers of intellect and will. These powers are distinctly human properties.

Now, morality affects acts in so far as they are *controlled by the free will* of man. Only under that supposition can the will be held responsible for them, because only then can they be said to proceed from the will as from their cause.

It is obvious, however, that not all acts occurring in the human organism are under the control of the will. Innumerable chemical reactions take place in the human body; the intellect is unaware of them, and the will cannot control them. Man's body is subject to the common physical forces, as when a paratrooper jumps from a plane and immediately falls according to the law of gravity; his jump is under the control of the will, but the will can exert no influence in altering or nullifying the law of gravity upon the fall of his body once the jump is made. In man's vegetative life, the entire process of cell division, digestion, and growth is beyond the control of the will. Many acts of sensory life are not subject to the will; for instance, if a gun is fired in close proximity to the ear, the ear, provided one is not totally deaf, must register the sound of the shot. It may even happen that acts which are normally subject to the will are performed in such a manner that they are not attributable to the will; for example, a student, while totally absorbed in his work, may stroke his chin, run his fingers through his hair, bite the end of his pencil, cross his knees, and be altogether unaware of having performed such acts. Similarly, acts performed while unconscious or asleep, acts performed by children before they arrive at the age of discretion, acts performed during insanity or advanced senility — all such acts lie beyond the control and causality of the free will. They are grouped together under the

common name *acts of man*, but they are not what ethicists call 'human acts' in the strict sense of the term.

In the language of moral philosophy, a *human act* is an act which is performed by man precisely as man (*homo quâ homo*) and is defined as *an act proceeding from the deliberate free will of man*. That which distinguishes man from every other creature of the visible universe, that which makes him specifically 'human,' is his intellect and free will, because these powers belong to him and him alone and not to chemicals, plants, or brutes. Hence, only those acts are properly styled 'human acts' which proceed with the advertence and knowledge of the intellect and from the decision of the free will. Any other act will be merely an 'act of man.'

In order that an act be attributed to the will and the will be responsible for it, it must owe its being to the will as its *cause*; in other words, the will must *will it* as an effect. Since, however, the will is an appetitive power and not a faculty of knowledge, it can will only that which the intellect grasps and proposes to it for volition. Consequently, every act must be ascribed to the will as its cause which proceeds from the free will after due enlightenment by the intellect. Both the advertence of the intellect and the free decision of the will are necessary to make a truly 'human act.' That is why it is stated in the definition of the human act that it is 'an act proceeding from the *deliberate free* will of man.' If the act were not 'deliberate,' or if it were not 'free,' it would fall under the category of 'acts of man.'

While an 'act of man' (*actus hominis*) and a 'human act' (*actus humanus*) are, when viewed from the standpoint of

ethics, mutually exclusive, it should be fairly obvious that some 'acts of man' may become 'human acts,' and *vice versa*. As was mentioned above, a student may, in a condition of absent-mindedness, bite the end of his pencil; that is an act of man. He may, however, perform the same act with full knowledge and consent, so that he deliberately bites the end of his pencil; that is then a human act. The reverse is also true. A person may suffer from a rash and deliberately scratch the skin, so as to remove the itch; here the act of scratching is a human act because it proceeds from the deliberate free will. The same person, however, may perform the act of scratching while asleep; then the act is an act of man. It also should be obvious, though, that some acts can never be anything other than 'acts of man.' Such are, for instance, the acts performed in infancy and the operation of the organs in digestion; they are outside the control of the free will entirely and always. Other acts always must be 'human acts,' because they can never be performed except by the deliberate free will. Such are, for instance, the acts of choosing and the other internal acts which depend directly on the will.

Classification of Human Acts

There are *two main classes* of human acts, i.e., of acts which proceed from the deliberate free will as from their cause.

First, the rational will is the cause of *elicited* acts. Elicited acts are produced directly by the will itself, so that they are *begun* and *completed in the will* as their sole

agent. The acts of love and hate are such. This does not mean that love and hate cannot find expression in external acts of the body; they can and usually do. But love and hate themselves are internal acts which reside in the will as in their proper subject and are begun and completed in the will as their sole agent. For the same reason, a desire, considered purely as such, is an elicited act of the will.

Second, the rational will is the cause of *commanded* or *imperate* acts. These are acts which are begun in the will, but they are *completed through the medium of other powers or faculties* under the command and control of the will. In the case of commanded or imperate acts, the will is the main cause of the action, but it uses these other powers as instrumental causes in order to bring the action to completion. Some of these powers are 'internal,' such as intellect, memory, imagination; others 'external,' such as those of bodily members. An example. I 'intend' to deliver an address; this intention is an elicited act. In carrying out this intention, my will influences the intellect, memory, and imagination to collect and arrange the material of the address, and then I deliver the address by means of speech and gestures; both the internal and external powers of my organism acted under the command and control of my deliberate free will as their main cause of action.

In every series of actions of this nature, when executed externally, a number of elicited and commanded acts are involved, forming a set or unit. In such a series it is comparatively easy to distinguish between 'internal' and 'external' commanded acts; but beyond this no reasonable classification of commanded acts is possible, because they

are too manifold and diversified. The *elicited* acts of such a series, however, have a certain arrangement or sequence, so that they constitute what may be called the *psychological structure* of the will-act. The number and sequence of these elicited acts of the will are as follows:

First in order is the *wish* or *liking* (*velle*). Love is the basic tendency of the will; it underlies all the activities of the will as a rational appetency. After the intellect has approved something as good and proposed it as such to the will, the will experiences an inclination toward this good as something suitable and desirable. By 'wish' or 'liking' we understand this simple 'inclination toward' a recognized good. Oftentimes the will does not go beyond this simple stage, as when we say to ourselves: 'I wish the winter were over.

Next in order is the *intention* (*intentio*). The intention implies much more than a mere wish. Besides the mere 'love of,' and 'inclination toward,' a recognized good, the will by means of the intention does something about putting this recognized good within reach. In other words, the will definitely 'tends toward' the good. The wish now becomes an active striving of the will for the attainment of this particular good. The difference between 'wish' and 'intention' can be seen by comparing the statement, 'I wish I were South,' with the statement, 'I intend to go South.' The latter statement implies an active and effective desire to make the wish become an actuality.

Once the intention is present, the will proceeds to *consent* (*consensus*). By 'consent' is meant the decision of the will to use the means necessary for bringing the

intention into execution. If a variety of means are at hand, 'consent' implies that the will must be ready to use one or the other of the possible means which will produce the intended result. Thus, if I consent to go on a trip, I must also will to travel either by plane, train, automobile, boat, or by some other method suitable for the purpose. The reason is clear: he who wills an end, must also will the means to this end.

After consent comes *choice* (*electio*). Just what means are or are not available is a matter of knowledge, and knowledge pertains to the intellect. Hence, the will must consult the intellect concerning the proper means to carry the intention into effect. The intellect responds by making a comparison of the various means which might possibly be used and then 'counsels' the will as to what means are available. Thereupon the will makes its 'choice' of the means. If the intellect informs the will that but a single means can bring about the intended result, then 'consent' and 'choice' are one and the same. If, however, two or more possibilities are open, so that the intended result can be effected by more than a single means, then it is left to the 'choice' of the will to select one of the various means. Thus, if I discover that the only way to reach a certain place is by going on foot, then my choice must be to travel there by walking; but if I can reach the place either on foot or on horseback, and in no other manner, then I must make a definite choice between these two methods of travel. Here, too, the reason is clear: he who wills a definite end, must also choose a definite means to attain that end.

The choice of the means having been made, the will proceeds to the *use* (*usus*) of the chosen means. Since the will cannot achieve the end except through the means suitable for the purpose, it is obvious that the will must command and direct whatever powers of mind and body and whatever other things are necessary in order to bring about the desired result. The 'use' of the means is nothing more than the practical execution of the 'choice' of the means. If, for example, I have made the decision to travel to a certain place on foot, then I must begin walking; otherwise I will not reach the place.

The last in the series of elicited acts is *delight* or *enjoyment* (*fruitio*). The attainment of the end means the possession of the good intended from the beginning, and the possession of the good aimed at and striven for naturally produces in the will delight and enjoyment. The will has now realized its intention and comes to rest, filled with satisfaction in its final achievement. When the destination is reached, the traveling ceases, and one enjoys the end of the trip.

Of the six elicited acts here enumerated, wish, intention, and fruition pertain to the good which is the object of the will, while consent, choice, and use pertain to the means employed in the attainment of the good.³

Commanded Acts

That the will is responsible for its own elicited acts is evident from the fact that elicited acts are produced by the will as by their sole cause. With regard to *commanded acts*,

acts performed by powers other than the will, such acts must also be ascribed to the causality of the will in so far as they are performed under the 'command,' direction, and control of the will.

Wherein does the *command* of the will consist and *how* far does it reach?

When I command someone to do something, I intimate or declare to him that it is the decision of my will that he do it and should do it. Essentially, a command, being an intimation or declaration, is an act of the intellect; but this act of the intellect derives its whole force from an act of the will. Hence, from a practical standpoint, it is the will which issues the command, and the intellect makes the command known. We can issue a command to someone else, as when the professor says to his class: "Study this lesson!" We can also issue a command to ourselves, as when a student says to himself: "Get busy and study this lesson!"

There can be no question that the will has command over many powers of the human organism, *but not over all powers nor in the same degree.*

Over the vegetative powers the will exerts only an 'indirect' command. For example, the will can control digestion only by controlling the quantity and quality of the food to be consumed. Once the food is consumed, control ceases.

The will exerts a 'direct' command over the other powers of the organism, but even here the command differs. The movements of the *powers of locomotion* are under the 'despotic' control of the will; that is to say, they obey the will without opposition. The muscles controlling locomotion are

completely at our disposal, and we can use our limbs as we please. The *external senses* are also subject to this sort of control, so far as their movements are concerned. I can, for example, control the movements of my eyes at will. However, once the stimuli have affected the nerve terminals of a sense organ, I cannot control the resultant sensation.

The *interior senses* and *sensuous appetency* are not ruled 'despotically,' as the slave is ruled by his master, but 'politically,' as a citizen is ruled by his regent. These expressions of Aristotle⁴ are descriptively apt. These powers are not under the absolute control of the will. The will can stimulate them into activity and direct their activity along certain channels, but they can get out of control and lead to results contrary to the will's original intention. For example. A person may intend to take just one or two highballs; then the craving gets the best of him, and he ends up by becoming drunk.

As for the *intellect*, the will can control the intellect both directly and indirectly. The will can command the intellect to turn its attention to a certain object or to desist from thinking about it. The will cannot command the intellect to see something as false which the intellect recognizes as true, nor something as true which the intellect recognizes as false; but where full clarity is absent, the will can induce the intellect to give greater consideration to the opposing arguments and thus influence it indirectly. And in case of doubt, the will can influence the intellect to form an 'opinion' favoring one side of the question. Everyone is aware of the fact that prejudices and passions, used by the will, can influence intellectual judgment. Shakespeare

expressed this when he stated that “the wish is father to the thought.” Bias unduly influences the judgment of the intellect, especially in industrial, political, and religious matters. Even scientists, who are usually the protagonists of objective judgment, may be so ensnared by their desire and eagerness to prove a pet hypothesis that they often overlook facts and fail to draw conclusions militating against their favored hypothesis. Obviously, then, the intellect also stands, to a greater or lesser degree, under the command of the will.

The distinction between ‘acts of man’ and ‘human acts’ is vital to the study of conduct, because conduct is ethical only under the aspect of ‘human acts.’ This truth follows from the fact that actions are morally good or morally bad only for the reason that they proceed from the free will and as such are imputable to the will. This distinction will enable us to pass a proper judgment on the *voluntariness* of human acts.

Summary of Chapter II

This chapter treats of the human act and its characteristic features.

1. *The Will as Rational Appetency.* Man, like every other animal, possesses knowledge and appetency. In general, an appetency is a 'tendency of one thing toward another.' In animals it is the result of a spontaneous inclination following conscious apprehension: sensuous appetency. Besides sensuous appetency, based on sensory knowledge, man possesses a rational appetency, based on intellectual knowledge. Rational appetency is called the *will*.

2. *The Will and the Good.* That which moves an appetency to action and is the object of its striving is the *good*, and the 'good' is anything that is 'suitable' in some way for the striving subject. Appetency has *two phases*: the 'positive' phase, in which it consciously and actively seeks to attain what is suitable (good); and the 'negative' phase, in which it consciously and actively seeks to avoid what is harmful (evil).

Hence, the *will* is *defined* as 'rational appetency,' or 'the power to strive for an intellectually perceived good and to shun an intellectually perceived evil.'

3. *The Will and Evil.* 'Evil' is the unsuitability of something for a natural tendency or appetency. It is the privation of a required good.

The will can never desire an evil precisely as an evil. *Directly*, the will desires only the good; *indirectly*, the will may desire an evil, namely, as a means toward acquiring a

good of greater value. It may choose a 'physical' rather than a 'moral' good, or an 'apparent' rather than a 'real' good; but whatever it chooses, it chooses under the aspect of a 'good.'

4. *Acts of Man and Human Acts.* Morality affects acts in so far as they are controlled by the free will of man. A human act is an act performed by man precisely as man; it is *an act proceeding from the deliberate free will of man.*

Man is distinctively 'human' because he has a rational intellect and will. The will cannot exercise its power of causality unless previously enlightened by the intellect. Hence, both the advertence of the intellect and the free decision of the will are necessary to make a truly 'human act.' Consequently, all acts which escape the knowledge of the intellect or the free control of the will are not 'human acts,' but *acts of man*. Some acts are always 'acts of man,' others are always 'human acts'; some acts may be 'human acts' at one time and 'acts of man' at another.

5. *Classification of Human Acts.* There are *two main classes* of human acts: *elicited* acts, those that are produced directly by the will itself, so that they are begun and completed in the will as their sole agent; and *commanded* or *imperate acts*, those that are begun by the will, but are completed through the medium of other powers or faculties under the command and control of the will.

In every series of actions, when executed externally, a number of elicited and commanded acts are involved, forming a set or unit. In such a series, the elicited acts constitute what may be called the *psychological structure* of

the will-act. The number and sequence of these elicited acts are: wish, intention, consent, choice, use, and fruition.

6. *Commanded Acts*. Commanded acts must be ascribed to the causality of the will in so far as they are performed under the command, direction, and control of the will. The influence of this 'command' varies with the different powers; it does not extend over all powers nor in the same degree.

Over the vegetative powers the will exerts only an indirect command. The movements of the *powers of locomotion* and of the *external senses* are under the 'despotic' control of the will. The *interior senses* and *sensuous appetency* are ruled 'politically' by the will. Over the intellect the will exercises both direct and indirect control.

READINGS

Cronin, Michael, *The Science of Ethics*, Vol. I, Ch. II. — Brosnahan, T.J., *Prolegomena to Ethics*, Ch. IV. — St. Thomas Aquinas, *Contra Gentiles*, Bk. III, Ch. 3-14; *Summa theol.*, Ia 2ae, q. 11-16.—Leibell, J.F., *Readings in Ethics*, No. 20.—Higgins, Thomas J., *Man as Man*, Ch. III, IV.

¹ *Nicomachean Ethics*, Bk. II, Ch. i

² For a further discussion on sensuous and rational appetency, see the author's *The Whole Man*, Ch. 11, 15

³ Concerning these elicited acts, see St. Thomas Aquinas, *Summa theol.*, Ia 2ae, q. 11-16

⁴ *Politics*, Bk. I, Ch. 5' 1254 b

Chapter 3

VOLUNTARINESS

A 'HUMAN ACT' PROCEEDS FROM THE 'DELIBERATE FREE WILL' of man. Cronin¹ lists three essential qualities of the human act: (1) knowledge — the intellect must be conscious of the act; (2) voluntariness — the act must have the will as its cause; (3) freedom — it must lie within the self-determining power of the will to bring the act into being or not to bring it into being.

As will be noted, a distinction is made here between 'voluntary' and 'free' acts. Strictly speaking the distinction is justified and correct. Any act which proceeds from the will is 'willful' or 'voluntary' (Lat.: *voluntas*, will), whether the act be free or necessary. Man's will, for example, by its very nature necessarily loves and seeks happiness; it is not free in this act, though the act is 'voluntary.' However, outside this one act, all other voluntary human acts of the will are 'free' acts, issuing from the choice of the will as a free agent. Therefore, for all practical purposes of ethics, 'voluntary' acts are identical with 'free' acts. Because of this fact, moral philosophers, as a rule, ignore the distinction between 'voluntariness' and 'freedom' and treat all human acts simply as voluntary.

Voluntariness is the basis of man's *moral responsibility*, for man is responsible for all acts which have his free will as their cause. We must, therefore, investigate when and *in how far* acts can be said to be voluntary or involuntary.

Classes of Voluntary Acts

Since a human act is one which proceeds with knowledge from the free will as from its cause, the voluntariness or involuntariness of a particular act will depend upon complete or partial presence or absence of this knowledge and freedom and upon the extent of the causality of the will. We therefore distinguish between the following *classes* of voluntary acts. In making these distinctions and classifications, the consent of the will is presupposed, because without this consent the act would not be voluntary.

1. The *perfectly* and *imperfectly* voluntary act (*voluntarium perfectum et imperfectum*). An act is 'perfectly voluntary,' or, in other words, there is 'perfect voluntariness' in an act, when the preceding knowledge of the object and its circumstances is complete, so that the act is performed with full knowledge and full consent. When, however, the advertence of the mind is incomplete and only partially present, the consent of the will is also imperfect, and such an act is said to be 'imperfectly voluntary.'

It may happen, for example, that someone performs an act which is morally bad, in a condition of semi-intoxication or semi-wakefulness, or in a fit of violent passion, where the judgment of the mind is clouded and full advertence to the

gravity of the act is impeded to a great extent; such an act would be only 'imperfectly voluntary,' provided it were not clearly foreseen and consented to beforehand. The distinction receives a practical application in the question of murder and manslaughter and of many other acts. In all such cases the problem revolves around the fact whether full knowledge, and therefore also full consent, was present or not.

2. The *directly* and *indirectly* voluntary act (*voluntarium directum et indirectum*). It is also called an act voluntary *in itself* (*in se*) and an act voluntary *in its cause* (*in causa*). Here it is a question of the mode or manner in which something is willed. An act is said to be 'directly voluntary' or willed 'in itself,' if it is the *immediate* object of the will's striving and as such is immediately caused by the will. That, however, which is the *effect* of such an object immediately willed, is 'voluntary in its cause' or 'indirectly voluntary,' because that which is immediately willed is the cause of this effect. This effect is truly willed by the very fact that its cause is willed, provided it is foreseen that this effect will follow out of the cause. If I deliberately kill a man, what I will directly and in itself is his death; however, in as much as I foresee that his family will be deprived of income by his death, this injury to his family is willed in its cause and is indirectly voluntary on my part by causing his death.

It is well to remember that something may be willed 'in itself' even if it is only a means to an end, and not the end itself. A physician, for example, who kills an unborn child in order to save the mother's life, wills the death of the foetus

directly and in itself, but only as a means to save the mother's life.

There are many instances in which the effect is not willed at all but merely 'allowed to happen.' This is a particularly knotty problem which will be treated specially a little later.

3. The *expressly* and *tacitly* voluntary act (*voluntarium expressum et taciturn*). An act is 'expressly voluntary' when the consent is manifested externally by some word or sign. It is 'tacitly voluntary' when the consent is not manifested externally in any way, but is indicated by some fact or the omission of some fact which entitles one to conclude that the consent is present; the principle is embodied in the phrase:

'Silence means consent.'

A student, for example, asks permission from the professor to absent himself from class; the professor nods his head, thereby expressly manifesting his consent. A student has a package of cigarettes on his desk. His roommate walks over and helps himself to a cigarette. The owner sees the act but says nothing; he tacitly reveals his consent.

Silence, in itself, signifies neither consent nor dissent. The circumstances must determine what sort of interpretation can or must be placed upon the silence of a person. If a robber holds up a storekeeper at the point of a gun and takes his money, the storekeeper may maintain silence; but his silence does not imply consent. If the disciplinarian sees a student loitering in the corridor instead of studying his lessons, and if he says nothing to the

student, although as disciplinarian he should correct the student, then his silence may be construed by the student as tacit consent.

4. The *positively* and *negatively* voluntary act (*voluntarium positivum et negativum*). An act is 'positively voluntary' when it consists of an act actually willed and performed. An act is 'negatively voluntary' when the person deliberately decides not to perform a particular act but to omit it.

It is a positively voluntary act when a thief breaks into a house and steals the silverware; or when a man gives a beggar a coin to relieve his hunger. On the other hand, it is a negatively voluntary act when a man refuses to take an oath in court; or when a martyr refuses to deny his faith in the face of torture and death.

In all cases of negatively voluntary acts, the decision of the will is a positively voluntary elicited act in itself; but the decision refers to the 'omission' of some other act, and it is the omission of this other act which is designated a negatively voluntary act, because it is this *omission* which is the object of the will and its decision. In positively voluntary acts, on the other hand, it is the *performance* of an act that is the object of decision.

5. The *pure* and the *mixed* voluntary act (*voluntarium urum et mixtum*). The 'pure voluntary' act is one in which the object willed is pleasing in all its qualities and is therefore willed with full consent and without any repugnance. The 'mixed voluntary' act has reference to an object which pleases in some qualities but displeases in other qualities; with regard to these displeasing qualities or

circumstances, the will would rather withhold consent. As a result, there is a mixture of desire and repugnance, of voluntariness and involuntariness; hence, such an act is said to be a 'mixed voluntary' act, consisting of a mixture of *simple* voluntariness (*voluntarium simpliciter*) and *conditional* voluntariness (*voluntarium secundum quid*). The act as such, so far as the total outcome of willing is concerned, actually is willed and performed; that is why it is said to possess 'simple' voluntariness. The object of the will's consent has certain qualities which are displeasing, and the will *would* reject the object *if* it were possible to apply its consent or dissent to the displeasing qualities alone. It being impossible, however, to dissociate the pleasing and displeasing qualities in the total object under consideration, the will gives its consent to the total object as it is (simple voluntariness), but with an ineffectual dissent regarding that part of the total object which is displeasing (conditional voluntariness or involuntariness). The final outcome of the deliberation is a will-act of 'mixed' voluntariness, one aspect of the will-act containing 'simple' voluntariness and the other aspect containing a 'conditional' (but ineffectual) involuntariness.

Cases of 'pure' voluntariness are frequent. When one is hungry and the time arrives for the banquet one sits down at the table with pure voluntariness. The soldier who has served overseas for a long time gladly obeys the order to board the ship which will take him home, because everything about the prospect is pleasing.

Cases of 'mixed' voluntariness are not difficult to find. The classic example, used by Aristotle, St. Thomas, and

many ethicists, is that of a ship's captain who jettisons his cargo in a heavy storm in order to escape shipwreck and consequent loss of life. He deliberately throws the cargo overboard, with full knowledge and consent; his act, therefore, is 'simply' voluntary. He does it, however, with repugnance, and he would not do it, if there were no storm; hence, his act is 'conditionally' involuntary or, to look at it from the positive side, it is only conditionally' voluntary. In other words, his decision of relinquishing his valuable cargo possesses a 'mixed' voluntariness.

6. The *actually, virtually, habitually, and interpretatively* voluntary act (*voluntarium actuale, virtuale, habituale, et inter pretativum*). These qualifications really affect the 'intention' of the act; however, since the will-act is determined by the intention, the voluntariness of the will-act also is affected by them. By 'intention' is meant the tendency of the will to obtain a definite end through appropriate means.

An actual intention is one which is present here and now, effectively influences the act, and is consciously before the mind while performing the act. A person, for instance, has the intention to say a prayer and, while thinking of it, really says a prayer. Such acts are 'actually' voluntary.

A *virtual* intention is one which was elicited at some former time, is present here and now, and influences the act to be performed, although the intention is not adverted to consciously during the performance itself. The term 'virtual' comes from the Latin *virtus*, power, and indicates that the 'power' of the intention still persists and produces its effect, even though the intention itself is no longer actually

present in the mind at the moment the act is performed. Such acts are quite common, especially when the end to be obtained lies somewhat in the future and a number of separate actions are required in order to obtain the end. A student, for example, intends to be present at the next class and must go to another building for the purpose; he walks along the street toward the building, but enters into a conversation on the way, so that he no longer is conscious of his intention, and so reaches the building and attends class. A goodly portion of his walking was done without consciousness of his original intention, but the 'power' of his intention still was present and influenced his act of 'walking to the building.'

A *habitual* intention is one which was made at some former time and never retracted, but whose power of causality does not exist here and now, so that the present act can no longer be considered to be influenced by it; at best, the present act can be said to be *in conformity with* the intention previously made and never actually retracted.

An example. Two boys get into a quarrel, in the course of which the younger expresses his intention of 'beating up the big bully.' Nothing happens for years, and both have forgotten the boyhood incident. Then one day they quarrel again, and the younger man actually thrashes the older. One cannot say that the intention of years past has survived in efficacious force; however, since the original intention actually has not been revoked and the present thrashing is in harmony with the original intention, this intention is a 'habitual' intention and the thrashing is 'habitually' voluntary.

An *interpretative* intention is one which was never present and cannot have an influence upon an act; but the character of the person is such that one prudently judges an actual intention would be present, if the person had a proper understanding of the situation.

A child, for example, is born in a hospital and is at the point of death. The nurse baptizes it on the grounds of an interpretative intention; she judges that the child, if it had the use of reason and understood the value of baptism, would certainly have the actual intention of being baptized. As things stand, the child is judged to consent to baptism with an 'interpretative' voluntariness.

Imputability

Human acts, viewed from the standpoint of their goodness and badness, are 'moral' acts. By the *imputability* of moral acts we understand that property of moral acts in virtue of which these acts are attributed to a person as his own, because he is their author and cause. Now, it is obvious that moral acts, since they proceed from the deliberate free will of a person, come into existence through the action of the deliberate free will of this person. Such a person, therefore, is the author and cause of moral acts. Hence, moral acts must be 'imputed' to such a person and are said to possess the attribute of 'imputability.'

The *ground* and *basis* of the imputability of moral acts rests in the *free will* of man. It is through his free will that man is the author of his human and moral acts and the master of his conduct. And since moral acts are either

‘good’ or ‘bad,’ their goodness or badness must be attributed (imputed) to man, so that he deserves commendation for their goodness and condemnation for their badness. The moral acts themselves are said to be ‘praiseworthy’ or ‘blameworthy,’ but in reality it is the person performing the moral acts who is praiseworthy or blameworthy.

Since human acts depend upon the deliberate free will for their morality and consequent imputability, certain *general conditions for imputability* are required on the part of the intellect and on the part of the will:

1. In order that complete imputability of a moral act be present, the *knowledge* of the act on the part of the intellect must be *perfect*; there must be no impediment or obstacle to the natural activity of the intellect, so that the person truly can be said to have the full use of his reason. Whatever hinders the natural activity of the intellect in its knowledge of the act, diminishes imputability.

Furthermore, the intellect must have at least a *general* or *confused* knowledge of the *morality* of the act. This knowledge of the morality of the act will refer either to the plain fact that the act is good or bad, or to the specific character of the act (for example, whether it be murder or mere homicide), or to the gravity of the act (for example, whether the theft be a slight or serious matter).

2. In order that complete imputability be present, the consent of the will must be perfect; otherwise the act would not be perfectly human. Ordinarily, perfect knowledge of the intellect implies perfect consent of the will. Anything, however, which impedes the natural activity of the will in its

consent, also diminishes imputability. The modifiers of voluntariness and imputability will be treated later.

In order that a morally *good* act be imputed to the will, its moral goodness must be intended by the person performing the act, because the will cannot be judged to be 'good' except through the 'goodness' of the object which it intends. Hence, the moral good which results from the writing of a book will not be imputed to the writer, if he writes merely for profit and does not intend the morally good results. In order that a morally *evil* act be imputed to the will, it suffices that the will strive for an object which it knows to be bad. The reason is this. The will cannot strive for the evil as such, since an appetency can only strive for a good; hence, the will cannot be judged to be 'bad' except through the 'badness' connected with some object, and it is this 'badness' which the will must seek to avoid. Consequently, if a person knows that certain morally bad effects will result from his act, he is, absolutely speaking, bound to avoid this act, or the act will be 'morally bad.' A writer, for instance, may write a book, merely intending to make a profit from its sale; but if he knows that the book will work moral harm in its readers, this morally bad effect must be imputed to him, even though he may not intend them: he may not only not *intend* evil, but must, when possible, *avoid* evil.

The principle just stated applies to all morally good and evil acts, whether they be voluntary in themselves or in their cause. However, when *evil* is voluntary in its *cause*, a special problem of strict imputability arises.

Imputability of Evils in Cause

The problem revolves around the fact that in many cases *mixed effects*, both *good* and *evil*, result from a certain act deliberately willed and performed. Oftentimes, a person intends an act which is in itself either good or indifferent, but some evil effect is connected with the act as willed and performed. This evil effect is, let us presume, not directly willed; the will is displeased with it and rather wishes that it were not present at all. The evil effect, however, is foreseen as following from the act as intended. Here we have again an instance of a 'mixed voluntary' act, where the morally good or indifferent object is willed with 'simple voluntariness' and the morally evil effect is willed with 'conditional involuntariness.'

THE *FIRST QUESTION*: CAN OR MUST THE WILL BE CONSIDERED THE *cause* of such evil effects?

Generally speaking, the answer is *affirmative*. This answer is based on the universally recognized principle: *causa causae est causa causati*: that is to say, who is responsible (or is the cause) for setting a particular cause in motion, is also responsible (or is the cause) of the effects which this particular cause produces. It makes no difference whether these evil effects are displeasing to the will. They are the effects of the cause directly intended by the will and are included in the efficiency of that directly intended cause; hence, they are caused indirectly by the

will, and the will, since it foresees these evil effects, must be held accountable for their production.

Hence the conclusion: Every evil effect, even if only voluntary in cause, which flows *from the nature of the cause directly and necessarily*, so that no other effect is possible, must be imputed to the will which sets the cause in motion.

THE *SECOND QUESTION*: MUST EVERY EVIL EFFECT BE AVOIDED BY the very fact that it flows from a good cause freely and deliberately set into motion by the will? Or, to put it in a different way, is it *ever permissible* to allow an evil effect, voluntary in cause, to occur, provided certain conditions are fulfilled?

The answer to the first part is negative and to the second part *affirmative*. The general reason is this: If every evil effect would have to be avoided under all conditions, and if it were never permissible to allow an evil effect, only voluntary in cause, to occur, so that one would be obligated to omit a directly willed good or indifferent act on that account, then life would become an insupportable burden. There exists hardly a single good act which might not have some evil effect connected with it in some form, no matter how remotely. Hence, one cannot expect a person to omit a good or indifferent act under all circumstances and conditions, simply because some evil effect is foreseen to occur with this act. It is always presupposed, of course, that the person does not directly intend the evil effect itself. The *obligation*, therefore, to omit an act because of some evil

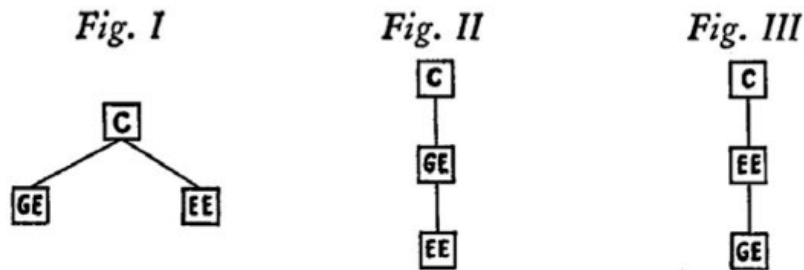
effect, foreseen but not directly intended, is *relative*; that is to say, under certain conditions a person may perform a directly intended good act, and there is no obligation to omit it because of a foreseen but not directly intended evil effect, provided one has a sufficient reason to perform the good and permit the evil effect connected with it to occur. This is the case of the so-called *double effect*, one good and one evil; the good effect is 'intended' with direct voluntariness, and the evil effect is 'permitted' with conditional involuntariness.

THE *THIRD QUESTION*: WHAT ARE THE *PRECISE CONDITIONS* UNDER which a certain act is allowed, from which both a good and an evil effect is foreseen to follow?

There are *four conditions* which must always be present *simultaneously*, in order that a person may permit the double effect to occur. These are:

- 1. The action directly intended must be good in itself or at least morally indifferent.
- 2. The good effect must follow from the action at least as immediately as the evil effect; or the evil effect may follow from the good effect. It is never morally right for the good effect to be produced through the evil effect, because the evil would be intended as the means to bring about the good effect, and in that case the (good) end would justify the (evil) means. One may not do evil in order to accomplish good.

The following diagram will illustrate the principles of this second condition. The letter C represents the 'cause'; the letters GE represent the 'good effect'; and the letters EE represent the 'evil effect.'



In Figure I it will be seen that both the good effect and the evil effect follow with equal immediacy from the cause; the action, generally speaking, may be performed. In Figure II the good effect is produced directly by the cause, and the evil effect follows from the good effect; the action, generally speaking, may be performed. In Figure III the evil effect is produced directly by the cause, and the good effect follows from the evil effect; the action may not be performed, because the evil effect here is the means used to accomplish the good effect.

- 3. The foreseen evil effect may not be intended or approved, but merely 'permitted' to occur. If the evil effect were intended or, when it occurred, approved, then the will itself thereby would become evil in its inclination, and the action would be morally wrong.

- 4. There must be a proportionate and sufficient reason for permitting the evil effect to occur while performing the good action. Obviously, the production of a minor good effect would not be a proportionate and sufficient reason for permitting the production of a very great evil.

With regard to this fourth condition, it will at times be rather difficult to judge what reasons may be regarded 'proportionate and sufficient' in particular instances. The following considerations should help in passing a proper judgment on this important matter. The greater the evil effect, the greater must be the reason for permitting it. A lesser reason is required if the evil effect would probably happen through some other cause; and a greater reason, if the omission of the good action would effectively and definitely hinder the evil effect. The closer the relation between the cause and the evil effect, the greater must be the reason for setting the cause into motion. If the evil effect is only probable, the reason need not be as great as when its occurrence is certain. A greater reason is required to permit an evil effect, if the person responsible for the cause has the official duty to hinder the effect; but if the person is not obligated in virtue of his official position to hinder the evil effect, the reason may be proportionately less.

Cases of Double Effect

In order that an action with a double effect, one good and one evil, be morally right and justified, all four conditions just enumerated must be present simultaneously; if one or more of these four conditions be absent, the action is morally wrong and unjustified. The best way to illustrate these principles is by use of concrete cases.

Cases in which the action is '*morally right*.'

The college authorities schedule a football game with a rival college, foreseeing that in all probability some drunkenness, anger, and foul language will occur. A football game is a morally indifferent matter (condition 1). The prestige of the school is intended (good effect), but not drunkenness, anger, and foul language (evil effect); the prestige of the school is caused, not by the evil effect of drunkenness, etc., but by the playing and winning of the game; the evil effect is merely a concomitant phenomenon (condition 2). The authorities neither intend nor approve drunkenness, etc. (condition 3). The prestige of the school and the innocent enjoyment of the bulk of the spectators outweighs the relatively few instances of drunkenness, etc., particularly since the cause of the evil effect lies, not in the authorities, but in the misbehaving spectators themselves (condition 4). See Figure I.

Another case. A large hotel is on fire. All means of escape being cut off, with the fire already raging in their rooms, a number of people jump from the windows, with the practical certainty that they will be killed in the fall to the pavement below. Even aside from the fact that panic may rob them of proper judgment, the act is justifiable on the following grounds. These people do not seek death through

the fall; they merely intend to avoid the horrible torture and death which threatens them here and now, so as to prolong their life so long as possible, and the prolongation of life is something good (condition 1). Jumping from the window means attempting to escape death by fire (good effect); death does not occur through the jumping from the window, but occurs in striking the pavement (evil effect) sometime later (condition 2). These people do not want to be dashed to pieces, nor do they approve of death in this form (condition 3). Death might happen either by fire or by being dashed to pieces; but death by fire would be certain, While some fortunate circumstance might intervene which would hinder them from being killed through the fall onto the pavement (condition 4). See Figure II.

Again. A pregnant woman suffers from serious ailment which directly threatens her life. This ailment is not caused by the pregnancy, though it may be aggravated by it. The physician knows of only one medicine which will cure her ailment and avert her death, but it will cause the death of her unborn child. He may administer the medicine. The effect directly intended is the cure of the serious ailment of the woman, and that is a good in itself (condition 1). The good effect (averting the death of the mother) does not follow from the death of the foetus (evil effect), but follows from the use of the medicine; the death of the foetus is a concomitant effect which also follows with equal immediacy from the use of the medicine (condition 2). The death of the child is not intended or approved, but permitted to happen; if this death could be avoided by the use of some other medicine, the physician would use this other medicine

(condition 3). The saving of the mother's life under the circumstances is sufficient reason to permit the unavoidable death of the child (condition 4). See Figure I.

And again. The officer flying a torpedo plane, through an opening in the clouds, sees an enemy aircraft carrier on its way to attack the fleet. His position is such that he cannot effectively launch his torpedo against the carrier. He deliberately dives out of the clouds and rams the carrier, with the intention of putting it out of commission and perhaps sinking it, thereby inflicting heavy damage on the enemy. He succeeds in hitting the side of the carrier, the torpedo explodes, and he himself is killed. Is this suicide? Or is his action morally justifiable? If the flyer was fighting a just war, his action under the circumstances cannot be condemned. He intends to protect his own fleet and comrades by putting the enemy carrier out of action; that, in itself, is a good act in time of war (condition 1). The damage to the carrier (good effect) and his death (evil effect) result with equal immediacy from the same action; the blowing up of the carrier does not result from his own death, but his own death (evil effect) results from, or at least as a separate effect together with, the explosion of the torpedo against the enemy carrier (condition 2). He does not really want to die, but would be only too happy to survive, if that were possible (condition 3). The reason for his action is sufficiently and proportionately grave, because he not only ruins the enemy's carrier with its planes and personnel, but saves his own fleet from possible destruction and many of his comrades from probable death (condition 4). See Figure I.

And another case. A cruiser is torpedoed through enemy action. Water is rushing into some compartments and threatens to sink the ship. The commander orders the bulkheads in that part of the cruiser secured, although he foresees that a number of his crew thereby will be drowned. His intention is to keep the ship afloat and in action, thereby saving both the ship and the lives of as many of the crew as possible; this is good in itself (condition 1). The men in the torpedoed section are not killed by securing the bulkheads, and the death of the men (evil effect) does not save the ship (good effect); rather, by securing the bulkheads and thereby saving the ship and the crew (good effect), the death of the trapped men (evil effect) will eventually follow as an indirect result (condition 2). The commander regrets that he is forced to this drastic action and would, if possible, first rescue the men; but he cannot save the men and the ship at the same time, so he reluctantly gives the command (condition 3). In order not to have the cruiser sink with all its personnel, he endeavors to save what he can, hoping at the same time that many or even all of the trapped men will somehow survive. In any case, though some must perhaps die, the majority will have a reasonable chance of coming out alive (condition 4). See Figure II.

A final case. The crew of a bomber squadron receives orders to demolish a railroad and industrial center of considerable importance to the enemy. The general issuing the orders realizes that children and non-combatants will thereby be killed. He may issue his orders to bomb the city. His direct intention is to reduce the enemy's war potential

by demolishing a military objective; that in itself is good (condition 1). The death of civilians is, though unavoidable, a concomitant result and is not the cause of reducing the enemy's war potential; the death of civilians (evil effect) occurs simultaneously with the destruction of the military objective (good effect), because they were not evacuated (condition 2). The death of these non-combatants is not intended or desired, but merely permitted (condition 3). The general has a sufficient and proportionate reason to permit their death to occur (though their death is by no means certain), because he aims at defeating the enemy, winning the war, and thereby putting an end to the killing of his own men and of people in general (condition 4). See Figure I.

Cases in which the action is 'morally wrong.

First case. John is employed by the city as a lifeguard to protect the bathers of the municipal bathing beach. It being a warm afternoon, he decides to take a nap while on duty. One of the bathers gets into trouble and shouts for help. By the time John is awakened, the bather is drowning. John rushes into the water, but is too late to save the drowning person. He excuses himself on the grounds that the bather went of his own accord beyond the safety ropes. John's excuse is invalid, because it was his duty in virtue of his official position to watch over the bathers. Taking a nap was an indifferent act in itself, but his duty demanded that he stay awake and protect the bathers. He violated condition 4, in as much as he did not have a sufficient reason to run the serious risk of someone drowning (evil effect) while he

sought the benefit of a rest (good effect). John is guilty of a serious dereliction of duty.

Another case. The teller in a bank has a tubercular wife who should reside for a while in a dry southern climate. Not having the money for her prolonged sojourn in the South, he embezzles some bank funds, with the firm purpose of refunding the money at the earliest opportunity. The good effect (his wife's health) is sought through the evil means of embezzlement of someone else's money (evil effect). See Figure III. He violates condition 2.

Again. An unmarried woman becomes pregnant. In order to avoid the disgrace of giving birth to an illegitimate child, she takes medicine to bring on abortion. The death of the child (evil effect) is intended directly as the means to save her own reputation (good effect). See Figure III. She violates condition 2.

And again. A flier piloting a pursuit plane sees a train moving in enemy territory. Upon approaching it, he sees the Red Cross insignia painted on every coach, informing him that this is a hospital train. He machine-guns the train, killing a number of wounded enemy soldiers and also a few nurses and physicians. Since belligerents are obligated by international law not to fire on hospitals and hospital trains which are plainly marked as such, he violates condition 4 and is guilty of murder.

Another case. A submarine commander has just torpedoed an enemy passenger-freight ship. While the civilian passengers are in the lifeboats, he orders his gunners to shell the lifeboats. Most of the civilians are killed or wounded. He is guilty of murder and wanton cruelty,

because the wounding and killing of non-combatants is directly willed and intended. He violates condition 1.

While it is a simple matter in most instances to decide whether an act is performed with voluntariness or involuntariness, the complication of circumstances attending indirect voluntariness often makes a decision rather difficult. It is of vital importance, therefore, that the student be familiar with the various kinds of voluntariness and the principles which govern them.

Summary of Chapter III

This chapter treats of *voluntariness* as a specific attribute of human acts and their morality. For all practical purposes, 'voluntary' acts are identical with 'free' acts of the will.

1. *Classes of Voluntary Acts.* (1) The perfectly and imperfectly voluntary act. (2) The directly and indirectly voluntary act. (3) The expressly and tacitly voluntary act. (4) The positively and negatively voluntary act. (5) The pure and mixed voluntary act. The mixed voluntary act is a mixture of simple voluntariness and conditional voluntariness (or conditional involuntariness). (6) The actually, virtually, habitually, and interpretatively voluntary act.

2. *Imputability.* By 'imputability' is meant that property of moral acts in virtue of which these acts are attributed to a person as his own, because he is their author and cause. The ground and basis of imputability rests in the free will of man. The *general conditions* of imputability are as follows: (1) The *knowledge* on the part of the intellect must be 'perfect,' so that the person truly may be said to have the full use of his reason. The intellect must have at least a general or confused knowledge of the 'morality' of the act. (2) The *consent* of the will must be 'perfect.' Ordinarily, it is perfect when the knowledge is perfect.

3. *Imputability of Evils in Cause.* In many cases *mixed effects*, both good and evil, result from a certain act deliberately willed and performed. It is the problem of 'mixed voluntariness,' where the good effect is willed with

'simple' voluntariness and the morally evil effect is willed with 'conditional' involuntariness.

Generally speaking, the will must be considered the cause of the indirect evil effects (evils in cause): *causa causae est causa causati*, i.e., he who is responsible (the cause) for setting a particular cause in motion, is also responsible (the cause) for the effects which this particular cause produces.

Not every evil effect must be avoided simply because it flows from a good cause; evil effects, voluntary in cause, may at times be *permitted* to occur, provided certain conditions are fulfilled.

In order that an act be morally allowed, from which a 'double effect,' one good and one evil, is foreseen to follow, *four conditions* must be present *simultaneously*. These conditions are: (1) The action directly intended must be good in itself or at least morally indifferent. (2) The good effect must follow from the action at least as immediately as the evil effect; or the evil effect may follow from the good effect. The good effect may never be produced through the evil effect, because the (good) end does not justify the (evil) means. (3) The foreseen evil effect may not be intended or approved, but may be merely 'permitted' to occur. (4) There must be a proportionate and sufficient reason for permitting the evil effect to occur while performing the good action.

4. *Cases of Double Effect*. See the text.

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Chapter 4

IMPEDIMENTS TO HUMAN ACTS

VEGETATIVE AND SENSORY FUNCTIONS ARE INTRINSICALLY dependent on bodily organs, and diseases of these organs have abnormal functions as their natural result. Intellect and will, however, reside in the spiritual soul directly and are not intrinsically dependent on bodily organs for their functions. In the strict sense of the term, therefore, there can be *no diseases* of intellect and will and *no abnormal functions* of intellect and will. Since, however, the intellect is 'extrinsically dependent' on the sense powers for the data from which it derives its knowledge, sensory functions, both normal and abnormal, naturally affect the intellect in its operations and, through the intellect, also the will.¹

Disturbances and distortions on the sensory level bring on disturbances and distortions on the intellectual level of man's being. These disturbances and distortions thereby impede the proper action of the free will and as such are *impediments to human acts*. Impediments are those factors which impair perfect knowledge and perfect consent in moral matters. There are two main classes of such impediments: (1) *transitory* and (2) *permanent*.

Transitory Impediments

In order that an act be truly human and moral, it must proceed from the will exercising its freedom, together with proper advertence of the intellect. Certain conditions are required if the will's exercise of its freedom in any particular act is to be *perfect*. For one thing, the intellect must clearly perceive the object to be chosen in its concrete circumstances and the motives which favor or disfavor the choice of this object. Then, too, the attitude of the will must be such that it can expeditiously and readily determine itself, without being unduly swayed in its action by contrary inclinations. If these conditions are not present, the exercise of freedom cannot be said to be 'perfect.'

Whatever, therefore, influences the intellect in such a manner and in such a degree that its judgment about an object and its morality ('rightness' or 'wrongness') is incorrect or downright false, influences the exercise of freedom adversely and constitutes an impediment to the truly human and moral act on the part of the intellect. And whatever influences the will in its proper activity, so that it finds difficulty in choosing the moral good, due to opposing tendencies which attract it toward sensible things and away from the supra-sensible moral good, also influences the exercise of freedom adversely and constitutes an impediment to the truly human and moral act on the part of the will itself. Hence, any influence which prevents or lessens the advertence of the intellect or restricts the will in the exercise of its freedom, is an impediment to the human

and moral act; correspondingly, voluntariness and imputability are lessened or destroyed.

Some impediments merely affect *individual* human acts in a transient or *transitory* manner, thereby lessening or preventing the exercise of freedom in their regard. For this reason these transitory impediments are also termed *actual* impediments. Others, however, lessen or prevent the exercise of freedom more or less permanently and habitually, producing a relatively stable condition of intellect and will; these are *permanent, habitual* impediments.

We will first consider the *transitory, actual* impediments. There are four of them: ignorance, concupiscence or passion, fear, and violence. Every act, to be human and moral, must proceed from the free will with advertence of the intellect.

Ignorance directly affects the advertence of the intellect, in so far as this advertence must precede the act of the will. Violence impedes the act of the will, in so far as the human act must be produced by the will as an internal principle of activity. Concupiscence (passion) and fear affect both intellect and will.

Ignorance

In a wider sense, ignorance means simply the absence of knowledge regarding something, in a being capable of possessing such knowledge. A child of five, for example, may not know the alphabet, although it is capable of knowing it. In a strict sense, however, *ignorance* is the *lack*

of required knowledge. In this strict sense, a person is said to be 'ignorant' of something, if he is supposed to possess this knowledge but actually lacks the required knowledge. Lack of the knowledge of mathematics on the part of an astronomer and lack of the knowledge of court procedure on the part of a lawyer, would be ignorance in the strict sense of the term.

Ignorance differs both from *error* and *inadvertence*. Error always involves a judgment contrary to truth. If I see a man and judge him to be John Jones, while in reality he is Ed Smith, then I am mistaken in the identity of these two persons and I have committed an error. Inadvertence happens, when I really know a thing, but for the moment the thing fails to register upon my mind as something with which I am acquainted. I meet Ed Smith, whom I know well, on the Street; however, being absorbed in thought at the moment, I fail to recognize him and pass him by as if I did not know him.

Ignorance is not an act, but a negative or privative state of mind. In so far as this state of mind influences the judgment concerning the morality of a *particular act*, it is an actual, transitory impediment.

THERE ARE MANY KINDS OF IGNORANCE.

From the standpoint of the *object* of which one is ignorant, we distinguish between ignorance of the 'law' and ignorance of the 'fact.' It is ignorance of the law when one lacks the knowledge of the existence of the law or the content of the law. For example, the principal of the school

has forbidden the students to loiter around the main entrance of the school; John, however, was absent the day the principal made his announcement and so is unaware of the existence of the law prohibiting loitering. Alfred may know that the Church has issued a list of forbidden books and that he is not allowed to read them without special permission; but he is under the impression that only heretical books, not obscene books also, are on this list, and so he is ignorant of something that is contained in the law. If one has knowledge of the law, but is ignorant of the necessary conditions required for the application of the law to a particular situation, so that one is ignorant whether the law actually applies to a specific act, then one is said to be ignorant of the *fact*. Edward, for instance, knows that the principal has forbidden loitering around the main entrance of the school; but he is supposed to meet someone after classes at the main entrance, and he does not know whether he should consider this loitering. Again, he knows about the different types of books which are placed on the forbidden list, but he is ignorant of the fact that a book by David Hume, which he is reading, is on the list.

From the standpoint of the *subject* who is ignorant, we distinguish between 'invincible' and 'vincible' ignorance.

Ignorance is *invincible* when it cannot be removed. Ignorance is *physically* invincible if it cannot be removed at all. Such is the case, if the person has not the slightest inkling that a law exists, or that a certain act falls under the law, or that he has the duty to investigate about the law or the fact. Since no effort can remove this type of ignorance, because such a person under the circumstances has not the

faintest idea of the presence of ignorance in his mind, it is 'physically' impossible for him to pass from ignorance to knowledge. A soldier, for example, borrows one dollar from a comrade and promises to refund the money. The two become separated; years pass, and the soldier has totally forgotten the incident, so that at present his mind is in a state of physically invincible ignorance concerning his debt.

Ignorance is *morally* invincible if it cannot be removed by any reasonable effort which normally would be expended under the circumstances by prudent and conscientious persons. The word 'morally' is used here in opposition to the word 'physically.' Physically invincible ignorance cannot be removed at all; morally invincible ignorance can be removed, but with such difficulty that the normal effort characteristic of prudent and conscientious persons would be insufficient to remove it. What kind of effort is 'reasonable' and must be expended to dispel the ignorance naturally depends on the matter in question; it is relative to the importance and gravity of the contemplated act. In a grave matter, a relatively great effort must be made to remove the ignorance; in a matter of minor importance, a relatively minor effort must be made. A 'supreme' effort need not be made, but only such diligence must be used as is customary among prudent and conscientious persons under the given circumstances in any particular case; if the difficulty still remains and the matter cannot be decided definitely, then ignorance is 'morally' invincible. An example. During World War I, an officer, stationed on an island in the South Pacific, receives orders to lead his men the next morning against the enemy, with the specific

instructions that no quarters' are to be granted. He is not sure about the morality of these instructions. No chaplain is on the island whom he might consult regarding the permissibility of granting 'no quarters' to the enemy in combat. He could radio to the chaplain on another island, but this would give notice to the enemy of the impending attack. After discussing the matter seriously with other prudent and conscientious officers, he still does not know whether such an act is justifiable. Having done what he reasonably could under the circumstances, he carries out his instructions. His ignorance is 'morally' invincible. Absolutely speaking, his ignorance could be removed by sending a radio message to the chaplain; but that would be practically a supreme effort which he is not obliged to make under the circumstances.

Ignorance is *vincible* when it can be dispelled with the diligence and effort customarily applied by prudent and conscientious persons under the given circumstances. A man, for instance, has promised to pay a certain sum of money on a definite date, but he does not remember the exact date on which the payment is due. He does remember, however, that his diary contains the date. All he need do is take the diary out of the safe and read it. His ignorance is, as will be readily seen, *vincible*.

According to the varying *degrees* of vincibility, there are different *kinds* of vincible ignorance. If a person uses some diligence, but not a sufficient amount to remove the existing ignorance, this ignorance is termed *simply* vincible. If a person uses hardly any reasonable diligence, the ignorance is *crass* or *supine*. If a person deliberately fosters the

ignorance, and in consequence does nothing to remove it, it is a studied or affected ignorance. 'Affected' ignorance is willed directly in itself; this happens, for instance, when a person purposely refuses to find out about a law which he suspects to exist, so that he will not know whether his contemplated action is wrong. 'Crass' (or 'supine') ignorance and 'simply vincible' ignorance are voluntary in cause, because the omission of proper diligence is willed; the reason for this omission may be carelessness, laziness, false modesty, indifference, unwillingness to manifest one's ignorance to others, and so forth.

FROM THE STANDPOINT OF THE *ACTION* ITSELF, IGNORANCE MAY BE 'antecedent,' 'concomitant,' or 'consequent.' Two things must be considered here: the causal influence of ignorance on the action, and the causal influence of the will on the ignorance.

With reference to the causal influence of *ignorance on the action*, we distinguish between 'antecedent' and 'concomitant' ignorance. Ignorance is *antecedent*, when it precedes the will's decision and is the (negative) cause of the action. The action is performed *through* ignorance and *on account* of ignorance; it would not be performed if knowledge were present. John and Joe, two intimate friends, go hunting. Upon arriving at the location, each goes in a different direction. John sees something move in the underbrush and thinks it is a deer; in reality, however, it is his friend Joe. John would not, of course, fire at Joe, if he knew the moving object to be his friend; but he is ignorant

of this fact, fires, and kills Joe. Since ignorance was the (negative) cause of his shooting at Joe, the killing was done 'through' ignorance and 'on account of' ignorance. Ignorance is *concomitant* if an action is performed, not through ignorance and on account of ignorance, but *in* and *with* ignorance. In concomitant ignorance the action, though performed in and with ignorance, is such that the agent would have performed it, even if he had full knowledge of the facts of which he is here and now actually ignorant. John, for example, hates Alfred intensely and has long been looking for a favorable opportunity to kill him. John goes hunting, sees something move in the underbrush, and thinks it is a deer; in reality, however, it is his enemy Alfred. John is ignorant of this fact and kills Alfred; but his disposition is such that he would have killed him, even if he had known that it was Alfred. John killed Alfred 'in' and 'with' ignorance; but not 'through' and 'on account of' ignorance, in the sense that his ignorance was the (negative) cause of the shooting, because he would have shot him even if he had known the moving object to be his enemy Alfred. Under the circumstances, ignorance exerted no causal influence on the action. This is 'concomitant' ignorance, since it merely accompanies the action. With reference to the causal influence of *the will on ignorance*, we distinguish between 'antecedent' and 'consequent' ignorance. It is *antecedent* if it precedes the decision of the will and is independent of the decision of the will. Antecedent ignorance, in this sense, is non-voluntary and invincible. It is *consequent*, if it follows from the decision of the will and is dependent on the decision of the will.

Consequent ignorance, therefore, is either willed 'directly,' and then it is 'affected' ignorance; or it is willed 'in cause,' and then it is crass (supine) or simple ignorance. Since consequent ignorance is always willed in a greater or lesser degree, it is voluntary and vincible. The examples of invincible and vincible ignorance, given above, apply here as instances of 'antecedent' and 'consequent' ignorance.

IN HOW FAR IS *IGNORANCE IMPUTABLE*?

The following *principles* show how ignorance modifies the voluntariness of human acts.

1. All actions performed in invincible *ignorance* are *involuntary*; therefore, both the actions and their effects are not *imputable*. The reason is obvious. The will can strive only for that which the intellect knows and proposes. If the intellect is ignorant of the wrongness of a certain action, this wrongness is simply, unknown to the intellect, and the will cannot strive for it; hence, such a wrong action cannot be said to be willed 'directly.' Nor can it be said to be willed 'indirectly' or in cause.' Indirect volition could only occur if the ignorance were in some manner freely willed and in so far voluntary. That, however, is impossible, because the type of ignorance involved here is 'invincible.' If the ignorance is 'physically' invincible, the performer of the action is totally unaware that a moral law is being violated. A child, for instance, may perform a sexually immoral act, but has no idea that the act is wrong. If the ignorance is 'morally' invincible then the performer of the act exerted every reasonable effort, in proportion to the gravity of the matter,

to remove the ignorance, but was unsuccessful; ignorance still remains invincible. Hence, morally invincible ignorance is, under the circumstances, willed neither directly nor in cause; it is involuntary. The requisite knowledge is simply lacking through no fault of the person. For instance, if a physician, notwithstanding a reasonably thorough investigation of a patient's condition, makes a wrong diagnosis, his ignorance and subsequent erroneous treatment of the patient cannot be considered voluntary and imputable. Even the man who kills his enemy in concomitant ignorance (as John killed Alfred in the hunting episode mentioned above) kills him by accident and is not guilty of murder; at the most, he is guilty of malicious joy at the thought of having accidentally killed his enemy, but that immoral act occurs after the killing is over and is due to a separate act of the will.

2. *Vincible* ignorance does *not destroy* voluntariness, but lessens it.

A person with vincible ignorance is aware of his lack of required knowledge, but refuses or neglects to exert a reasonable effort to dispel his ignorance. Because of this willful refusal or neglect, his ignorance is 'voluntary in cause.' Hence, voluntariness is *not destroyed* in actions performed with vincible ignorance; and this applies to every type of vincible ignorance, whether it be simple, crass (supine), or affected, because the omission of the requisite diligence needed to dispel ignorance is due to the will's own decision. When, therefore, a physician, through neglect of study and reasonable examination, makes a wrong diagnosis, his ignorance is vincible and voluntary in cause.

However, vincible ignorance *lessens* voluntariness to a greater or lesser degree, depending upon the circumstances. Voluntariness depends on the preceding knowledge of the intellect, and the knowledge of one who acts in ignorance, even though this ignorance be vincible, is less than the knowledge of one who is fully cognizant of the action in all the particulars of its morality. Hence, a person acting in vincible ignorance, which he fails to remove through negligence, etc., wills the act 'in cause,' but the voluntariness is lessened to some degree. Crass ignorance is more voluntary than simple ignorance, and affected ignorance more voluntary than crass; their imputability corresponds to their voluntariness.

Concupiscence or Passion

Another transitory impediment to the human act is 'concupiscence' or 'passion.'

We must first of all know the meaning of 'concupiscence' and 'passion' in the context of ethical study. Many persons are acquainted with the idea of 'concupiscence' only in its theological sense, meaning the tendency of man toward evil as a consequence of original sin; and they think of 'passion' only as the excitement attending the emotion of love or the function of sex. As used by moralists, both terms have a broader significance. In ethics we use the term *concupiscence* to mean the natural tendency or inclination of sensuous appetency toward a consciously perceived sensuous good and away from a consciously perceived sensuous evil. Passion is the emotional excitement which

normally accompanies the sensuous appetency in its activity of striving for a sensuous good and of avoiding a sensuous evil. While 'concupiscence' and 'passion' are not identical in meaning, they usually go together in actual experience.²

Since man is an animal organism, concupiscence and passion, as just defined, are *natural* tendencies flowing from his very constitution; they are part and parcel of his organic being, endowments of his nature given by the Creator for the preservation of the individual and of the race. Concupiscence and passion, as used in this connection, are terms which represent all the various driving forces and impulses which work in man toward change, growth, development, and improvement in the field of his animal life. Without them man could not live. Every appetitive power strives instinctively toward the attainment of its own proper object, and the normal activity of such powers is also accompanied by pleasure, so that man has the natural desire to exercise them. In the presence of a consciously perceived good or evil, the sense appetites go into action *with necessity*.

Just as the vegetative powers and their functions in man are subservient to the sensory powers, so the sensory powers and their functions are intended by the Creator to be subservient to the rational powers of intellect and will. Unfortunately, the good of the sense appetency does not always coincide with the good of the intellect and will, and this gives rise to a conflict between the sensory and rational appetencies. The sensory appetency should be controlled by intellect and will, but this control is by no means complete (at least not since the Fall). Concupiscence and passion

often present a sensuous good in such attractive colors that the judgment of the intellect is clouded and the free decision of the will is adversely influenced. Because of this fact, concupiscence and passion are *an impediment to complete voluntariness*.

There are two kinds of concupiscence (and passion): 'antecedent' and 'consequent,' both taken in reference to the free decision of the will regarding them.

Concupiscence, in reference to the act of the will, is *antecedent* when it occurs *prior* to any act of the free will in its regard. In practical experience, the situation is as follows. An object is presented to the sensory consciousness, and it is perceived to be a sensuous good. Since sensuous appetency acts with necessity and not with free choice, this appetency spontaneously goes into action, desiring this good. Such a desire may be vehement and cause considerable organic excitement (passion): concupiscence is already present before the intellect adverts to it properly and before the will has made any choice of its own. In such a situation, concupiscence and passion evidently are 'antecedent' to the act of the will in its exercise of freedom. Concupiscence and passion are natural functions of natural powers, acting from necessity and not from choice, and as such are neither morally good nor morally bad. 'Morality' enters into the situation when the intellect sees that the action prompted by concupiscence is contrary to the rational nature of man and therefore immoral.' The intellect prompts the will to reject the desired action, because the will in its freedom has it in its power to decide for or against the action. If the will decides

against the desired action, its own act of decision is 'morally good'; but if it decides for the desired action, its own act of decision is 'morally evil.'

In most instances, especially if a person has trained the will to select what the intellect has perceived to be morally good, the will is capable of checking concupiscence and passion. But not always. In rare cases, concupiscence and passion may rise with such force and fury as to go into action before the intellect has a chance to consider the situation properly and before the will has a chance to make a decision. In the course of a conversation, for example, James is gravely insulted. He 'sees red' and, without premeditation, goes immediately into such a paroxysm of anger that he fells his opponent with a cane and kills him; the act was done spontaneously and without proper advertence, and his anger occurred 'antecedently' to any free decision of his will.

Concupiscence is *consequent* when it occurs *after* an act of the free will in its regard. Concupiscence may follow and be consequent upon the act of the free will in a *threefold* way. First, the initial movement of concupiscence arises spontaneously; the intellect adverts to its presence immediately, or at least before it makes appreciable headway, and the will freely consents to it and fosters the movement to its natural completion. James, for example, has been told that John has been talking detrimentally about him. James sees John on the street the next day. He feels anger rise up in his heart against John, deliberately consents to the anger, and excites it to a higher pitch. Second, concupiscence, not present at the moment, is

deliberately aroused. James, let us say, has been insulted. The next day, while reading the newspaper, he happens to think of the insult; so he puts the paper aside, relives the episode in thought and imagination, with the intention of arousing his anger and working himself into an emotion of revenge. Third, without concupiscence itself being actually intended, the free act of the will may be so vehement that concupiscence naturally and spontaneously arises as an after-effect of the vehement will-act. To take James again as an example, he may deliberately entertain a desire for revenge on an intellectual level, but the desire is so vehement that the emotions of hate and anger arise as a natural consequence.

IN HOW FAR IS *CONCUPISCENCE (PASSION) IMPUTABLE?*

The question must be answered through a consideration of the influence which concupiscence (passion) exerts on voluntariness. This influence is radically different in the two types of concupiscence.

1. *Antecedent* concupiscence *lessens* voluntariness and at times *destroys* it completely.

Antecedent concupiscence *lessens* voluntariness. Complete voluntariness is present only when intellect and free will are not impeded in any manner in their natural activity. When reason is impeded in its advertence and deliberation, and when the will is impeded in its exercise through the attraction of an outside influence, then voluntariness is not complete. Now, that is precisely what happens when concupiscence (passion) precedes the act of

intellect and will. The movements of concupiscence are usually vivid in the imagination and strong in the sensuous appetency; as such they distract the intellect in its deliberations and confuse it in its judgment. What appeals to the senses will appeal also to the intellect and will, because man is a composite organism, a unitary nature. Hence, when antecedent concupiscence is present, intellect and will are disturbed in their own proper function, and this disturbance, being an impediment to their activity, influences the free choice of the will adversely and thus lessens voluntariness.

Antecedent concupiscence at times *destroys* voluntariness completely. This happens when concupiscence (passion) is so violent that deliberation is impossible and the morality of the act can no longer be perceived. Where there is no possibility of deliberation and no perception of morality, there is no voluntariness on the part of the will. Experience proves that some people, while in a storm of excessive emotion, commit acts which plainly indicate that they are practically bereft of reason at the time; they are then said to be 'temporarily insane.' Such acts are 'acts of man' rather than 'human acts.' A man, for instance, convinced of the infidelity of his wife, may be so emotionally upset through jealousy that he kills her in a fit of rage and then commits suicide. A mother may be so overcome by grief over the death of her child that she takes her own life in despair and despondency, never giving a thought to the morality of her act. A sex-crazed individual, totally blinded by passion, may commit rape and not realize the enormity

of his act. Antecedent passion of this sort destroys voluntariness in a person.

2. *Consequent* concupiscence (passion) is always *voluntary*, because it is caused by the free decision of the will. In the first and second type, consequent concupiscence is willed 'directly'; in the third type, it is willed 'in cause.' Voluntariness in consequent concupiscence is without impediment, because the activities of intellect and free will are complete and perfect before concupiscence (passion) sets in to disturb them.

SO FAR AS *IMPUTABILITY* IS CONCERNED, WE MUST DRAW THE following conclusions.

Consequent concupiscence, since it is consented to with complete voluntariness, is always imputable. Antecedent concupiscence, when it is of such a nature that it destroys voluntariness, cannot be imputed to the will.

Antecedent concupiscence, when it lessens voluntariness, is imputable in proportion to the degree of voluntariness. This voluntariness differs, and each case must be judged on its own merits. In many cases it will be next to impossible to state in how far intellect and will are affected by the impediment of concupiscence and passion.

Fear

Fear is also a transitory impediment of the human act. *Fear* is an affective state of the mind in virtue of which a person shrinks from an impending evil considered to be difficult or

impossible to avoid. The impending evil may belong either to the sensible or spiritual order of things. Correspondingly, the faculty, in which fear resides, will be either the sensuous appetency or the will; oftentimes, both faculties are involved.

Someone is said to act *out of* fear if fear is the real cause of the action. In such a case, fear is *antecedent* to the action, because a cause is always prior to the effect which it produces.

Thus a thief, seeing himself closely pursued by the police, discards his booty so as not to be caught with it on his person; he fears that the presence of the booty on his person will definitely mark him as the thief and bring about his conviction. Someone is said to act with fear when fear merely accompanies the action, but the action itself is produced by a different cause. A soldier, for example, goes into battle with fear for his life; but he really goes into battle out of a sense of duty to his country. Such fear is *concomitant*, not antecedent. When we speak of fear as an impediment to the human act, we mean 'antecedent' fear; only actions which occur 'out of' fear are considered here, because only in such actions will fear impair proper deliberation and free choice.

There are various *kinds* of fear.

1. From the standpoint of the *quantity* of fear, fear is either *grave*, or *slight*, depending upon whether the evil is grave or slight. In order that fear be 'grave,' two conditions are required. The impending evil must be grave in itself, such as death, severe illness, considerable loss of valuable goods, and imprisonment; and this evil must be difficult to

avoid. If a grave evil can easily be avoided, or if the impending evil is of minor importance, then the fear is 'slight.' Grave fear is 'absolutely grave' if the impending evil is actually grave in itself. It is 'relatively grave' if the impending evil is only slight but produces grave fear because of the timid disposition of the fearing person. Something, for instance, may cause relatively grave fear in a child, woman, or elderly person, while it would cause only slight fear in a stouthearted, well-disciplined soldier.

2. From the standpoint of the *cause* which produces fear, fear is either *from within* or *from without*. Fear is from within if a person, because of the imminence of the evil, decides on a certain action himself; otherwise he would not so decide. The captain of a ship, for example, decides of his own accord to cast his cargo overboard, because he fears that the weight of the cargo threatens to wreck his ship in the heavy storm. Fear is from without if the fear which induces one to act is caused by another person who threatens one with evil unless the action is performed. Thus, when a man gives up his valuables to a robber who threatens to take his life, his fear is caused 'from without.' Fear from without may have a just cause, as when a mother threatens punishment to her daughter if she does not behave; or it may have an unjust cause, as when a robber demands one's valuables at the point of a gun. Fear from without is a *reverential* fear if one commits or omits an action because one fears to offend a person whom one reveres or to whom one owes reverence. A boy, for instance, may refrain from raiding the pantry because he fears he will hurt his mother's feelings; or, he may steal a neighbor's

tools, because his father demands it and would punish him if he did not do it.

IN HOW FAR IS AN ACT, PROMPTED BY FEAR, *IMPUTABLE*?

It all depends on the adverse influence which fear has on the activities of the intellect and of the free will.

It happens in rare cases that *uncontrollable* fear arises with such suddenness as to engulf reason and free will completely. In such a situation the person acts in a frenzy of panic, without thought of the morality of the act, simply intent on avoiding the imminent grave danger. An example. Fire rages in a hotel. Escape is impossible. A man is trapped in his flaming room. The torturing death by fire stares him in the face. Frenzy seizes him; he is gripped by uncontrollable fear. In a moment of extreme anguish he takes a revolver and ends his life. Under the circumstances as narrated, it is very easily possible that he momentarily lost the use of reason entirely. Such an act lacks the proper conditions of a 'human act' and becomes a mere 'act of man.' His suicide is not imputable.

In ordinary cases of fear, even of grave fear, voluntariness is not destroyed but merely *diminished* to a greater or lesser degree. Fear brings in a 'mixed' voluntariness, so that the total act is freely willed, but with a certain amount of 'conditional' involuntariness. Absolutely speaking, therefore, acts committed out of fear, unless they rob a person of the use of reason, are *imputable*. Since, however, grave fear will disturb the intellect in its impartial judgment by unduly directing its attention to the impending

evil, it interferes also with perfect free choice, and thus imputability is also *lessened*. In such cases, the degree of imputability depends on the degree of interference caused by fear, and that will naturally depend on the gravity of the evil and the disposition of the individual person.

Violence

Violence is the fourth of the transitory impediments to the human act.

Violence is physical force applied to a resisting person by an external agent. Two factors must be present in order that an act can be designated 'forced': the violence must issue from an outside principle or agency; the act must be contrary to the will, and the will must truly resist this imposition of force.

It should be obvious that the *elicited* acts of the will can never be subject to violence. He who suffers violence does something against his will. To maintain that the elicited acts of the will could be forced, would be the same as to maintain that the will could be made to will something which it does not will; that is a contradiction in terms. Hence, *only external or internal commanded acts* (see Chapter 2) can be subjected to violence. A person, for example, may be dragged into a pagan temple, and his head may be grasped by his assailants' hands and forced to bow before an idol; but his will cannot be compelled to make an act of internal adoration. A girl may be coerced to submit to a sexual act committed on her body; but her will cannot be compelled to consent to the act.

When a person is subjected to violence in the true sense of the term, the person suffering duress must not only *withhold consent*, but must, so far as possible, *actively resist* the force applied. If consent is given to the forced act, then the act is voluntarily permitted, though not originally intended. A girl, for instance, may have no intention of committing a sexually immoral act; but if undue familiarity is forced upon her, and she then gives her consent, she consents to the act itself. If active resistance, when possible, is omitted, then the omission of resistance is willed, and the act itself thereby becomes indirectly voluntary, even though direct consent be withheld. If the girl in question does not repel her assailant's immodest advances, although she could do so, she cannot be said to be altogether unwilling.

IN HOW FAR ARE FORCED ACTS *IMPUTABLE*?

Coerced external and internal commanded acts, effected through force upon an unwilling and resisting person, are completely involuntary and therefore *not imputable*.

Coerced acts, to which consent is given during performance, are simply voluntary; if no resistance is offered to them, although they could and should be resisted, they are indirectly voluntary: such acts, therefore, are *imputable*. However, since these acts would not have been performed under ordinary conditions by the person suffering violence, one may judge that there is some interference with the normal activities of intellect and free will, so that voluntariness is to some extent diminished; hence, there is a *lessened imputability* in such coerced acts.

Obviously, however, in matters of grave moral importance, imputability, though lessened in some degree, is still grave and serious.

Having concluded the discussion on the four major transitory impediments to human acts, we must now turn our attention to the permanent impediments.

Permanent Impediments

A *permanent impediment* is an impediment to the human act which lessens or prevents the advertence of the intellect and the exercise of freedom in the will in such a manner that a *more or less stable condition of involuntariness* results in a person. This permanence or stability may be absolute, so that the person is always incapable of perfect voluntariness or ,of any kind of voluntariness; or it may be relative, so that voluntariness is lessened or destroyed only for a time. But whether 'absolute' or 'relative,' the result of a permanent impediment is always a more or less 'stable condition' involving *entire series of actions*. Therein lies the difference between a 'transitory' and a 'permanent' impediment, because a transitory impediment affects only the voluntariness of 'individual' acts, not of entire series of acts.

The main *general kinds* of permanent impediments are divided into *three classes*: (1) infancy, idiocy, moronism; (2) propensities and habits; (3) mental diseases. They will be treated in this order.

Infancy, Idiocy, Moronism

This class of impediments to the human act is *constitutional*, in as much as the cause which gives rise to them is the undeveloped constitution of the human person. Man being an organism, the full use of his rational powers of intellect and will depends on the proper development of his bodily and sensory powers. If the latter are undeveloped, either totally or partially, it is evident that intellect and will cannot function properly, and voluntariness is thereby affected.

Infancy. Infancy is that period in the life of the individual human person which extends from conception to the age of reason and discretion. The brain and nervous system are in a process of development, but during this formative period the development of the senses has not become perfected enough for reason to distinguish between moral good and moral evil. Hence, *voluntariness is absent* in infancy, and all acts are neither morally good nor morally evil; they are simply 'acts of man.' The infant, of course, should be trained to do what is good and avoid what is evil, for the sake of its future moral Welfare, but the acts themselves lie outside the sphere of the Freedom of the will and as such are *not imputable*.

After the *age of discretion* has been reached, the child is able to distinguish to some extent between the morally good and morally evil, but this knowledge is very imperfect at first. It becomes more perfect as the child grows older, but it still remains relatively imperfect over a period of many years. Childhood, therefore, represents an *incomplete voluntariness* in many respects. For this reason it is

customary to speak of 'juvenile delinquency' rather than of 'juvenile crime,' and the courts take the moral inadequacy of childhood into consideration when judging the imputability of a child's act.

Idiocy. Idiocy is extreme deficiency of intelligence, commonly due to an undeveloped or abnormally developed brain. The condition may be congenital, or it may be the result of injury or illness in infancy. An idiot or imbecile, though he may have reached physical adulthood, never passes mentally beyond the stage of infancy. He is, therefore, *incapable of morality*, and his acts are not imputable.

Moronism. Moronism is a state of moderate feeble-mindedness. An adult moron may have the mental age of a child of six or eight or ten, etc. The mental development of morons is arrested. Since the adult moron has the physical instincts and passions of a grownup, coupled with the partially undeveloped mentality of a child of a much lower age, it is natural that the normal activities of intellect and will are impaired to a lesser or greater degree, depending upon the mental age of such a person. Correspondingly, volutariness is lessened, and so is imputability; volutariness, however, is not destroyed entirely.

Propensities and Habits

Propensities are natural dispositions, inclinations, drives, which are rooted in the particular kind of nervous system which the individual has inherited. Propensities are derived from the so-called 'temperaments,' at least to a large

extent. Since propensities naturally incline the person to perform a certain type of action, they often are referred to as 'inchoate habits.' Some persons have a propensity toward meekness and submissiveness, others toward anger and fighting; some toward sensuality, others toward self-discipline; some toward drunkenness, others toward sobriety; and so forth. Such propensities, since they are congenital and natural, are in themselves neither morally good nor morally evil; but they incline a person toward acts which are morally good or morally evil, depending upon the attitude of the free will.

A *habit* is a facility and readiness of acting in a definite manner, acquired by the frequent repetition of a certain kind of act. Habits are not inborn; they are acquired by practice and are superadded to the powers, so that these powers, in consequence of the acquired habit, have a distinct tendency to perform this particular kind of act. After attaining the use of reason, man deliberately forms habits. He may follow the bent of his natural propensities, going along the line of least resistance, and acquire habits which indulge in the pleasures of the passions; or he may go along the line of greatest resistance, by forming habits which run counter to his natural propensities, thereby checking and controlling the passions. The former habits weaken the will, the latter strengthen it. Habits can be made and unmade by repetition of acts. Even if a vicious habit has been active for a long time, the will can resist its promptings and form a counter-habit by frequent repetition of the opposing acts. Some habits are *natural*, when they are contracted without advertence to their moral effects;

others are moral, when they are contracted and retained with advertence to their moral effects. The latter will be 'morally good' or 'morally bad.'

Under the heading of 'habits' should also be included the *permanent mental attitudes* which persons may acquire as the result of indoctrination through a false educational system, such as was fostered in the education of children under the Nazi regime in Germany and is still in vogue in communistic Russia.

SO FAR AS *IMPUTABILITY* IS CONCERNED REGARDING PROPENSITIES and habits, the following considerations will help to clarify the question.

Propensities, simply as such, are organic and natural, and therefore morally indifferent. Consequently, their initial promptings and movements are *involuntary* and *not imputable*. Thus, the urges to immodesty, anger, drunkenness, pity, generosity, etc., arising from a natural propensity, are in themselves neither morally good nor morally bad; they become so, however, as soon as the intellect adverts to them and the free will accepts or rejects them. Then, of course, they become voluntary and are imputable to the will. If such propensities are strong, they interfere with the unrestricted activity of intellect and will and in so far, depending upon their strength, are an impediment to the human act.

Habits are acquired. They are formed through the exercise of the will, unless contracted in early childhood or without adequate knowledge of their moral character. Once

they are formed, habits lead more or less spontaneously to their respective acts. Acts performed through habit usually occur without much advertence on the part of the intellect, and in many instances advertence is absent altogether. Are evil acts performed through force of habit imputable?

The *principles* governing the imputability of *habitual evil acts* can be summarized as follows:

First, an act proceeding from an evil habit, if adverted to and consented to, is directly voluntary and imputable. A man, for example, may have the evil habit of using God's name in vain; if he adverts to the fact that he is here and now using God's name in vain and deliberately does it, the act is voluntary.

Second, if an evil habit has been contracted involuntarily, then an act performed through this habit is also involuntary and not imputable. A child, for example, in his ignorance of sex forms the habit of handling himself immodestly; all acts which are performed in this state of ignorance, or which are performed inadvertently after acquisition of the necessary knowledge, are not voluntary. If the evil habit has been contracted with full knowledge and consent, then the single acts performed inadvertently are not imputable; but the evil habit itself is imputable, when no effort is made to counteract it. For instance. A soldier, in order to appear 'tough,' deliberately forms the habit of using obscene expressions. Once the habit is formed, the single acts of using such expressions, when done without advertence, are not imputable; but the evil habit as a whole is imputable until such time as he makes an effort to break it.

Third, an evil habit, knowingly and freely contracted, is directly voluntary and imputable, as when a boy deliberately gets into the habit of cursing. If an evil habit is already contracted, and no effort is made to check it and get rid of it, it remains voluntary and imputable. If, for example, the boy just mentioned has contracted the evil habit of cursing and does not bother about it in any way, he remains guilty of the evil habit.

Fourth, if an evil habit has been voluntarily contracted, but an effort, proportionate to the gravity of the habit, is made to counteract it and dispose of it, then the habit itself and the single acts inadvertently proceeding from it are not voluntary and are not imputable. If a soldier, for example, after having deliberately formed the habit of using obscene words, realizes his error and endeavors to check himself in the use of such language, neither the habit nor the inadvertent use of obscene words is voluntary any longer.

Mental Diseases

Neither the intellect nor the will, since they are spiritual powers, is subject to any kind of diseases. Only an organism can become diseased. Since man's nervous system and his sensory powers are organic, they are subject to disorder and disease. By *mental diseases*, therefore, we understand disorders and abnormalities of the brain and nervous system, resulting in disturbances in the sensory powers of knowledge and appetency and involving indirectly a consequent disturbance in the proper functions of the intellect and will. Some mental diseases are 'functional' in

character; they are characterized by abnormality in the functioning of organs, though the organs themselves manifest no pathological degeneration or change. Others are 'organic,' in as much as the organs are affected by pathological degeneration or change.

It is not within the province of ethics to give a complete treatise on psychiatry nor to give a complete enumeration of mental diseases. Psychiatrists are by no means in agreement as to the exact number and nature of mental disorders or even of nervous abnormalities. Some disorders are serious and others are of minor importance. Some involve only a slight disturbance of sensory function and others involve the complete disorientation of the person's mental outlook. The term 'mental disease' does not necessarily mean 'insanity' in the popular use of the word; it includes 'insanity,' but it also includes many nervous disorders of a far less serious character. Many of us suffer from nervous disorders of some sort, but we are not on that account insane; we are aware of our disorders and somehow adjust ourselves to their inconveniences and disturbances, leading an otherwise fairly normal life.

Some nervous disorders result in a state of practically *complete mental derangement*. Persons afflicted in this manner are incapable of proper judgment in matters of morality. Whatever acts they perform must be considered 'acts of man, and such acts are devoid of voluntariness and imputability.

Some nervous disorders result in *irrational conduct* only *along certain lines*; in other respects persons subject to such disturbances are capable of rational judgment and

freedom of will. Acts performed because of this particular type of disorder are involuntary; others are voluntary, but voluntariness probably will be diminished.

Any type of mental disorder, if it lessens the unrestricted activity of intellect and will, in so far also lessens voluntariness and imputability.

The summary of this discussion on the impediments to the human act can be made in a few words.

The general principles are few and can be stated clearly. The application of these principles to particular acts frequently is difficult and in many instances next to impossible. Transitory and permanent impediments to voluntariness undoubtedly exist. But only God actually knows the complete case history of every act and its imputability.

Summary of Chapter IV

Impediments to the human act are those factors which impair the perfect knowledge of the intellect and the perfect consent of the will in moral matters. There are two main classes: *transitory* and *permanent*.

1. *Transitory (Actual) Impediments*. These impediments affect individual human acts, thereby preventing or diminishing full freedom of the will in regard to moral acts. There are four transitory impediments: ignorance, concupiscence, fear, violence.

2. *Ignorance*. Ignorance is the lack of required knowledge in moral matters.

There are various *kinds* of ignorance. From the standpoint of the *object*, it is an ignorance either of 'law' or of 'fact.' From the standpoint of the *subject*, ignorance is either 'invincible' (physically or morally), when it cannot be removed; or 'vincible,' when it can be removed with the effort customarily applied by prudent and conscientious persons, and such ignorance is either 'simply' vincible or crass ('supine') or 'affected.' From the standpoint of the *action* itself, ignorance is twofold: with reference to the causal influence of ignorance on the action, it is either 'antecedent' or 'concomitant'; with reference to the causal influence of the will on ignorance, it is either 'antecedent' or 'consequent.'

So far as *imputability* is concerned, the following principles apply. All actions performed in invincible

ignorance are involuntary and not imputable. Vincible ignorance does not destroy voluntariness, but lessens it.

3. *Concupiscence or Passion.* *Concupiscence* is the natural tendency of sensuous appetency toward a consciously perceived sensuous good and away from a consciously perceived sensuous evil. *Passion* is the emotional excitement which normally accompanies the sensuous appetency in its activity of striving for a sensuous good and of avoiding a sensuous evil. Concupiscence and passion are 'natural' tendencies acting with necessity.

There are two *kinds* of concupiscence and passion: 'antecedent,' when they occur prior to any act of the free will in their regard; 'consequent,' when they occur after an act of the free will in their regard.

Imputability. 'Antecedent' concupiscence lessens voluntariness and at times destroys it. 'Consequent' concupiscence is always voluntary, either directly or in cause.

4. *Fear.* Fear is an affective state of the mind in virtue of which a person shrinks from an impending evil considered to be difficult or impossible to avoid. When fear is the 'cause' of an action, it is 'antecedent'; if it merely 'accompanies' an action, it is 'concomitant.'

There are various kinds of fear. From the standpoint of *quantity*, it is either 'grave' or 'slight.' From the standpoint of the cause, fear originates either 'from without' or 'from within.'

Concerning the *imputability* of actions performed through fear, if uncontrollable fear robs a person of the use of reason, the action is involuntary and not imputable;

otherwise, actions are imputable, but voluntariness is lessened.

5. *Violence*. Violence is physical force applied to a resisting person by an external agent. The 'elicited' acts of the will are not subject to violence; only 'external' or 'internal' commanded acts can be coerced. The person suffering duress must withhold consent and, so far as possible, actively resist the force applied.

Coerced external and internal commanded acts are involuntary and *not imputable*, provided the person withholds consent and resists. If consent is given, or no resistance (where possible) is offered, acts are *imputable*; but in such cases, voluntariness is lessened.

6. *Permanent Impediments*. Besides 'transitory' impediments, there are 'permanent' impediments. A *permanent* impediment is one which lessens or prevents the advertence of the intellect and the exercise of the freedom of the will in such a manner that a more or less *stable condition* of involuntariness results. There are three classes: infancy, idiocy, moronism; propensities and habits; mental diseases.

7. *Infancy, Idiocy, Moronism*. In the actions of *infants* voluntariness is absent. Even childhood represents an incomplete voluntariness in many respects. *Idiots* are incapable of morality. *Morons* suffer from an arrested mental development. Though voluntariness in morons is not destroyed entirely, voluntariness is lessened considerably.

8. *Propensities and Habits*. *Propensities* are natural dispositions rooted in the particular kind of nervous system which the individual has inherited. A *habit* is a facility and

readiness of acting in a definite manner, acquired by the frequent repetition of a certain kind of act.

So far as imputability is concerned, the initial promptings and movements of propensities are *involuntary*, because natural; but as soon as the intellect adverts to them and the free will accepts or rejects them, they become voluntary and imputable.

The following *principles* govern the imputability of acts performed through force of *habit*.

First, such an act, if adverted to and consented to, is voluntary and imputable. *Second*, if an evil habit has been contracted involuntarily, an act performed through habit is involuntary; if the habit has been contracted voluntarily, the single acts performed inadvertently are not imputable, but the habit itself is imputable, when no effort is made to counteract it. *Third*, an evil habit, knowingly and freely contracted, is directly voluntary and imputable. *Fourth*, if an evil habit has been contracted voluntarily, but a proportionate effort is made to counteract it, then the habit itself and the single acts inadvertently proceeding from it are not voluntary and are not imputable.

9. *Mental Diseases*. By *mental diseases* we understand disorders and abnormalities of the brain and nervous system, resulting in disturbances in the sensory powers of knowledge and appetency and involving indirectly a consequent disturbance in the proper functions of intellect and will.

If nervous disorders result in *complete mental derangement*, acts performed in such a condition are devoid of voluntariness. If nervous disorders result in

irrational conduct only *along certain lines*, acts performed in such a condition along these lines are involuntary; other acts are voluntary, but voluntariness probably will be diminished.

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1 For a detailed discussion of these facts and principles, see the author's *The Whole Man*, Ch. 20

2 See the author's *The Whole Man*, Ch. 11, for a discussion on feelings and emotions (passions).

Chapter 5

ENDS OF THE HUMAN ACT

AN ACT, TO BE TRULY HUMAN AND MORAL, MUST BE PERFORMED by man with advertence on the part of his intellect and with free choice on the part of his will. Whatever destroys or diminishes the proper activity of the intellect and will, also destroys or diminishes voluntariness and thereby the morality of the act thus influenced.

We now come to the consideration of the *end of the human act*. The morality of a human act receives a definite character from the end on account of which it is performed; that is to say, the rightness or wrongness of a human act is determined to a great extent by the end or goal toward which the act tends.

From the ethical standpoint, an *end* is *that for the sake of which an advertent intellect and a free will act*; or, to put it in different words, an 'end' (purpose) is that which an advertent intellect and a free will intend in their action; or, to simplify matters still more, an 'end' (purpose) is that which man intends when he acts intelligently and freely.

Kinds of Ends

Since the end or purpose plays such an important part in the human act, an understanding of the various *kinds of ends* is necessary.

The End Which and the End for Which (Whom). The *end which* is intended is the *good itself* which is striven for as the end to be realized by the efficient cause (the 'agent') through the action. When a man builds a house, the house itself is the 'end which' he has in view as the final result of his action of building. The *end for which (or whom)* is the *thing* or *person* that is to benefit by the acquisition or realization of the 'end which' is acquired or realized. When a man builds a house, he may build it as a home for his family or he may build it to sell it at a profit; either purpose would be the 'end for which' he built the house.

Proximate End, Remote End, intermediate End, Ultimate End. So far as this division and classification is concerned, two or more ends are always presupposed, with a relation between them of nearness or remoteness regarding the final result intended. An end is *proximate*, if it is referred to some ulterior end, but has no other end referred to itself. When a man builds a house, the proximate end is the completed house itself. An end is *remote*, if one or more ends are referred to it. And this remote end will be either an 'intermediate' or an 'ultimate' end. The remote end is *intermediate*, if some other end is referred to it and it is itself referred to some ulterior end. A man builds a house (which is his proximate end), in order to have a comfortable home for his family (intermediate end), so that his family may enjoy earthly happiness (ulterior end). A remote end will be *ultimate*, if it has one or more ends referred to itself,

while it is not itself referred to any other end. This ultimate end will again be either 'relatively' or 'absolutely' ultimate. It is *relatively ultimate* when it is the last end in a particular series of ends. In the example just given, the 'ulterior' end mentioned may be the relatively ultimate end of that particular series of proximate and intermediate ends. If that be the case, then for the builder it is the earthly happiness of his family. An end is *absolutely ultimate* when it is the last end of all proximate and intermediate ends in every series, so that no further ulterior end or purpose can be conceived for which to tend. Subjectively, the builder, in his private estimation, may consider the relatively ultimate end just mentioned as the final goal of all his aspirations; in that case, his relatively ultimate end, as given, would coincide with his absolutely ultimate goal. Objectively, however, his absolutely ultimate end actually would be his eternal happiness and the glory of God.

Primary and Secondary End. An end is the *primary* or principal end, when it is the main one among two or more which actuate an agent (efficient cause) and is sufficient of itself to make the agent act. It is secondary or accessory, when it is intended together with a primary end, without however exerting the same potent influence on the action of the agent. Thus, the primary end of a man building a house may be the comfort of his family, and the secondary end may be the enjoyment of the scenic surroundings in which the house is situated.

End of the Act (finis operis) and End of the Agent (finis operantis). The 'end of the act' is that particular end which is present in the act itself and which the act as such tends

to realize because it is this particular kind of act. For instance, the 'end of the act' of building a house is the actual building of the house. The 'end of the agent' is the end or purpose which induces the agent as a motive to perform this particular kind of act. For instance the 'end of the agent' for the builder of a house may be the motive of an investment or the happiness of his family. Ordinarily, the 'end of the act' is simply called the *object* of the action.

Objective End and Subjective End. We understand by the 'objective end' the 'object' or 'thing' itself which is striven for and realized as the result of purposive action. For the builder of the house the objective end is the completed house. We understand by the '*subjective* end' the 'possession' of the objective end and the personal satisfaction or happiness which accompanies this possession. For the builder of a house the subjective end is the possession of the completed house and the satisfaction he experiences in having it.

Natural End and Supernatural End. An end is said to be natural, if it lies within the tendencies and powers of the nature of the agent to strive for this end and realize it. The builder constructing a house has a 'natural end' in view, because he is capable of realizing his purpose by using the tendencies and powers of his nature as a rational being. An end is *supernatural* if it lies beyond the tendencies and powers of the nature of an agent to strive for this end and to realize it. The builder would have a 'supernatural end' in view, if' he performed his respective activities for the purpose of working out his eternal salvation and attaining the happiness of the Beatific Vision. He could not realize

such an end through the tendencies and powers of his nature; for this he requires the special guidance of faith and the special assistance of divine grace. A supernatural end presupposes the supernatural order. Since ethics is restricted in its knowledge to facts of the 'natural' order, nothing further will be said in this connection about the supernatural end.

All Actions Are for Ends

To state that all actions are for ends is equivalent to saying that every agent, when it acts, *always intends an end*. And this end is a *definite* end.

Every agent, when it acts, is in *movement*, either quantitatively or qualitatively. Quantitative movement is local motion'; qualitative movement is 'change' of some sort. In both cases, movement presupposes the passage in action from a starting-point (*terminus a quo*) to a stopping-point (*terminus ad quem*). Starting-point, stopping-point, and the passage between the two points, are the essential elements of every movement; if any one of these elements were missing, there would be no true movement.

St. Thomas Aquinas, with his usual clarity of thought,¹ formulates the general argument in this manner: "The movement of every agent tends to something determinate, since it is not from any force that any action proceeds, but heating proceeds from heat, and cooling from cold; and therefore actions are different by their active principles. Action sometimes terminates in something made, as for instance building terminates in a house, and healing in

health; while sometimes it does not so terminate, as for instance in the case of understanding and sensation. And if action terminates in something made, the movement of the agent tends by that action toward the thing made; while if it does not terminate in something made, the movement of the agent tends to the action itself. It follows therefore that every agent intends an end while acting, which end is sometimes the action itself, sometimes a thing made by the action." A little farther on in his text St. Thomas puts the argument this way: "Were an agent not to act for a definite effect, all effects would be indifferent to it. Now that which is indifferent to many effects does not produce one rather than another. Therefore, from that which is indifferent to either of two effects, no effect results, unless it be determined by something to one of them. Hence it would be impossible for it to act. Therefore every agent tends to some definite effect, which is called the end."

Human acts are simply a special kind of action. And if all actions must tend toward a definite effect as an end, then the human act must also tend toward a definite end. An analysis of the human act makes this evident. Every human act presupposes the advertence of the intellect to the contemplated action, otherwise it would not be a 'human' act. Since the intellect must be aware of the contemplated action, it must also be aware of what is supposed to be effected by the action, because no action can be without a definite effect. Consequently, when the intellect knows of the contemplated action and the will freely decides to perform the action, the will must also intend the definite effect which the action by its nature produces. This effect,

however, is the 'end' of the action. Hence, every human act has a definite end. For example. I point a loaded revolver at a person standing close by. I know that the revolver is loaded and I also know that, if I fire the weapon under such circumstances, the bullet will cause considerable injury to the person at whom the revolver is aimed. The contemplated action is the firing of the weapon; the *injury* is foreseen as the definite effect of the action. Knowing all this, if I decide to fire the revolver, I must also intend the effect which the firing will produce, namely, the injury of the person whom the bullet will hit, because this injury is the natural and inevitable result of the contemplated action. Since I will this definite action, I also will this definite end (effect) of the action. And thus it is with all human acts; they must have a definite end. The reason is clear: man, acting with and through the knowledge of his intellect, *knows beforehand* what the effect (end) of his action will be and thereby freely decides to produce this definite effect (end) of his action.

Every agent, therefore, and especially man in his human act, acts for an end.

There is an important truth in this principle. The end or purpose is not something extraneous and foreign to the action, not something super-imposed upon it and added to it; *the end is an integral and essential part of the very action itself* and can no more be separated from it than the curved line can be separated from a circle. Take away the end from an action, especially from a 'human act,' and there can be no action; given the action, the end (purpose) is also given. The end is simply *the term* of the action; it is the

point of realization of the action in its final completeness; it is the stopping-point which brings the movement of the action to a state of rest, because the intended goal has been reached.

Object, Circumstance, End

There are *three elements or determinants* which contribute to the morality of a human act; that is to say, there are three factors which determine the 'rightness' or 'wrongness' of a concrete individual human act. They are: the *object*, the *circumstances*, and the *end of the agent*.

THE OBJECT

The *object* of the moral act is that which the will intends *directly and primarily*. This object may be a thing, such as money; or an external act, such as going to a show; or an elicited (internal) act, such as the will to love God. The circumstances and the end are also intended but not so directly and primarily as the object.

Human acts receive their morality *essentially from the object* which is intended by the will, so that human acts receive their specific moral character principally from the object willed. The reason for this lies in the fact that the faculties of man are moved to action primarily and specifically by the object, rather than by the circumstances of the act or the end of the agent. A man, for instance, who steals money in order to get drunk, simply commits an act of theft, because the object (taking money belonging to

another), and not the end or purpose (to get drunk), is the primary element in the act of stealing.

Some objects are *intrinsically* and by *nature* good or evil, others are so *incidentally* and by reason of a *precept*. The former, therefore, are always and under all conditions good or evil; the latter are not always, or at least they need not always be, good or evil. The former, if good, are prescribed because they are good in themselves, or forbidden, if evil, because they are evil in themselves; the latter are good because prescribed, or evil because forbidden. To love God, for instance, is intrinsically and by nature good; to perjure oneself is intrinsically and by nature evil. Doing a chore around the house is morally good if done because commanded by one's parent; going to a show is morally evil if forbidden by one's parent while one is still under the authority of the parent.

Again, some evil objects are *absolutely evil*, so that not even God can make them right and good. This sort of evil is intrinsically and by nature evil, independent of any condition, such as perjury and blasphemy, because God cannot countenance a direct insult to his person. Some evil objects are *conditionally evil*; if the condition is removed they are no longer evil. Some acts against human beings are ordinarily evil, such as killing and taking another's property against his will, because these acts violate God's supreme dominion over creatures; if God, however, removes this condition of dominion, then the acts would not be wrong. In a case of extreme necessity, for instance in facing death through starvation, the ordinary right to private property no longer holds and the starving person

may take surplus goods from another in order to avoid death by starvation. Similarly, dominion over human life rests in God, and this condition obtains as a general rule binding all people; this condition is lifted, however, in the case of unjust aggression, and it is therefore right to kill a person who unjustly attempts to take another's life, and it is right for a soldier in a just war to kill the enemy.

Finally, we distinguish between the *material* and the *formal* object of the will. The 'material' object is the object itself, considered merely in itself, as intended by the will. If I desire or take another's property, then this 'property,' considered in itself, is the 'material' object of my will-act. The 'formal' object is the material object in so far as it is intended with full knowledge of its moral character as right or wrong. I see for example, a fine overcoat in a restaurant which belongs to someone else; if I take the overcoat, with full knowledge that I am stealing, then the overcoat is the 'formal' object of my will-act. This distinction is important. If I take another's property while under the impression that it belongs to me, I commit a 'material' theft, but not a 'formal' theft, and my act is not immoral and blameworthy. Contrariwise, if I take my own property while under the impression that it belongs to someone else, I commit a 'formal' theft, because of my evil intention to steal, and my act is immoral and blameworthy, even though I am actually taking what rightfully belongs to me.

THE CIRCUMSTANCES

Circumstances are conditions superadded to the essence or nature of the moral act and affect its morality. There are seven universally recognized circumstances, expressed in Latin in the well-known hexameter: *Quis, quid, ubi, quibus auxiliis, cur, quomodo, quando*.

Any one of these various circumstances may make a difference in the morality of an act.

Quis? Who? This circumstance indicates any special quality of the person involved in the moral act. It is worse, for instance, to strike one's parent than to strike a neighbor.

Quid? What? This circumstance indicates the quantity or quality of a moral object. It makes a difference, for instance, if I steal five cents or five thousand dollars.

Ubi? Where? The place is denoted where the act occurs. Because of scandal, for instance, it is worse to use foul language in a public gathering than in a small group; similarly, it makes a difference, whether I commit a crime in a church or in a tavern.

Quibus auxiliis? By what means? Here we consider the means used in the act. If I desire to get drunk, that is bad enough; but if I steal the liquor in order to have the means to get drunk, that makes matters much worse.

Cur? Why? The 'end' or 'purpose' here is considered as a circumstance affecting the morality of the action. The 'end' however, is an integral part of every moral act and as such will be treated separately.

Quomodo? How? This circumstance denotes the manner in which the action is performed. For instance, the moral act will be influenced considerably if performed advertently

or inadvertently, in good or in bad faith, impulsively or with premeditation, with fervor or with reluctance, intensely or remissly, etc.

Quando? When? This refers to the time involved in the action, both as to the quantity and the quality of the time element. It makes a difference, for example, to the sentiment of hatred whether it is entertained for a few minutes or for years; whether it is entertained during divine services or otherwise.

Circumstances contribute to the morality of an act in a *fourfold* way: An 'indifferent' act may become morally good or evil through the attending circumstances. To go to a tavern is, in itself, an indifferent act; but if I go there to hinder a friend from becoming intoxicated, it is a good act. On the other hand, if I go to a tavern, knowing that I will drink intemperately, the act of going to the tavern becomes wrong.

An 'objectively good' act may become morally evil. To attend divine services, for example, is an objectively good act; but if I do so contrary to a conscientious physician's strict orders, it becomes evil.

An act whose object is 'morally good' may receive an added goodness because of some circumstance, and an act whose object is 'morally wrong' may receive an added wrongness because of some circumstance. For instance, to practice total abstinence is a morally good act of temperance; to practice total abstinence because I have made a vow to do so is an act of temperance and of religion. Reversely, to become drunk is a morally evil act against temperance; to become drunk, although I have vowed to

observe total abstinence, is a sin against both temperance and religion.

Circumstances may make an 'objectively good' act more good or less good and an 'objectively evil' act more evil or less evil. If I give an alms with great charity of heart, my almsgiving becomes more good; and if I give an alms somewhat grudgingly, my almsgiving is less good. If I use God's name profanely because I want to shock someone's pious susceptibilities, the evil act becomes more evil; but if I do so under the stress of great provocation, the evil act becomes less evil.

THE END OR PURPOSE

In this connection we take the term 'end' or 'purpose' in the sense of the *end of the agent* which prompts the person to act. That the 'end' or 'purpose' affects the morality of an act in its very essence, is clear. All human acts, whether internal or external, are manifestations of the will, and the 'end' or 'purpose' is an expression of the attitude of the will. The attitude of the will may be good or evil, and this attitude will show itself in the 'end' or 'purpose' with which the will intends the act. If this 'end' or 'purpose' corresponds to the right order, the will is right and good; if it deviates from the right order, the will is wrong and evil.

The end contributes to the morality of the act in a *number of ways*:

An 'objectively indifferent' act will become good through a good intention (end, purpose) and evil through an evil intention. To visit a sick friend is, in itself, an objectively

indifferent act. To visit this person in order to give him cheer and comfort is an act of mercy and a good act; but to visit him in order to aggravate his condition is an act of cruelty and an evil act.

An 'objectively good' act receives added goodness from a good intention (end, purpose). To give an alms to a needy person is an act of charity; to do this with the intention of also pleasing God increases the moral goodness of the act.

An 'objectively good' act, if done with an evil intention, becomes either totally or partially evil, depending on whether the evil intention is the total or only the partial cause why the agent acts. If the evil intention of the agent is the total and sole cause of the act, so that the act would not otherwise be performed, then the entire act is vitiated and becomes evil; the reason is that in such a case the will is actuated solely by an evil intention and intends primarily nothing but evil. For a young man, for instance, to offer himself as an escort to a girl, to see that she arrives home safely, is in itself an objectively good act; but if his total intention is to seduce her, his evil intention makes his act evil. If the evil intention is only the partial cause of the act and only slightly evil, the act is essentially good but partially evil. For example, if I give alms to a destitute person with the intention of relieving his distress, but also with the vainglorious intention of having him praise my generosity, my act is partly good and partly evil. Of course, if the evil intention, which is the partial cause of the act, is seriously evil, the total act is seriously evil and the objectively good act becomes totally vitiated. For example, if a man give alms to a destitute girl with the genuine intention of relieving her

poverty, but also with the intention of inducing her to become his mistress, his partial intention is seriously evil, and even his act of generosity becomes seriously evil; such an act cannot please God, when his will has turned completely against God.

An 'objectively evil' act cannot become good through a good intention (end, purpose). The reason is evident. The act is objectively evil in itself and it remains evil. This fact is not changed through a good intention. The will would still intend an evil, even though the objective evil is chosen as a means to realize a good end. The act would not, of course, be as evil as an objectively evil act willed with an evil intention, but it remains essentially evil nevertheless. The principle, then, that a good intention justifies an evil means, is a morally vicious principle. It would, for instance, be morally wrong to perjure oneself in order to help a friend out of his difficulties. It is also wrong to tell a 'white lie' in order to avoid unpleasantness. And a man may not embezzle funds for the laudable purpose of procuring a good education.

For an act to be truly morally good, therefore, it must be good in all its elements: object, circumstances, end. All three elements contribute their respective share to the morality of the human act. The defect of any of these three elements makes an act morally wrong. But since an act is human and moral only because it proceeds from the deliberately free will, morality resides formally in the will. In the will it is the 'end' (purpose, intention) which moves the will to action. "Consequently," as St. Thomas² argues, "the species of a human act is considered formally with

regard to the end, but materially with regard to the object of the external action.” Hence the vital importance of the ‘end’ as the determining factor in the morality of the human act, viewing the act as the direct product of the will.

The End as a Good

Aristotle begins his *Nicomachean Ethics*³ with the statement: “Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason the good has rightly been declared to be that at which all things aim.

If the good is “that at which all things aim,” it can only be for the reason that such an object is desirable because it is in some manner *suitable* to the being striving for it. It is characteristic of every type of appetency to strive for things under the aspect of a ‘good’ and to shun things under the aspect of an ‘evil.’ To shun an evil is merely the result of every appetency’s inevitable tendency to strive for a good. Now, to say that an appetency strives for a good is the same as to say that an appetency has the good as the ‘aim’ or ‘goal’ or ‘end’ of its striving. Hence, whatever is the ‘end’ of an appetency in its striving must be intended under the aspect of a ‘good.’ Consequently, the ‘end’ of an action is always a ‘good.’

The same principle applies to human acts, but with a qualification. The will can strive only for that which the intellect proposes to it as a ‘good.’ The intellect, however, can be mistaken in its judgment and propose something to the will which is an *apparent* good rather than a *real* good.

That is why it is possible for the will to strive for a morally evil object. Even a morally evil object may be viewed by the intellect as a good under a certain aspect of its being; for instance, although the intellect recognizes the object as morally evil, it recognizes it also as a physical good and as such proposes it to the will as an 'end' for its action, considering the immorality of the object to be of less importance than its physical goodness. Emotion and passion contribute toward the false estimation of the intellect and sway the will to decide in favor of the morally evil object. But whether the 'end' of the will's action be a morally good or evil object, the 'end' of the will's action is a 'good,' either real or apparent. The will, as an appetency, cannot strive for anything except as a good' in some form. Hence, the 'end' of the will's action is a good (real or apparent).

No Infinite Number of Ends

In the manifold series of human acts, must there be some good which is the 'absolutely ultimate end' to which all other ends in the series are subordinated? Or, is it possible that all ends of human acts are 'intermediate ends' leading interminably toward other ends, without being directed toward some 'absolutely ultimate end'?

Such a theory of 'intermediate ends without an absolutely ultimate end' implies an *infinite number of intermediate ends*. If a 'last end' were reached, the series would stop, and the number of intermediate ends would be terminated; if there were no 'last end' to reach, the series would continue, and the number of intermediate ends

would go on increasing. Hence, if there were a 'last end,' the number of intermediate ends would be finite and could be counted out; but if there were no 'last end,' the number of intermediate ends would of necessity not be finite but infinite. It follows, then, that a theory of 'intermediate ends without an absolutely ultimate end' implies an infinite number of intermediate ends.

The problem, therefore, is this: *is an infinite number of ends in a series possible?*

An end is that *for the sake of which* something is done or effected. Every action is for an end, and every end is a good. If the end is missing,, no action can occur; and if there be no 'good' for the sake of which the action occurs, there is no end to strive for by means of the action.

Every series of intermediate ends must be directed toward a *determinate good* 'for the sake of which' they operate as means, so as to bring about its realization. No matter how long such a series of ends may be, even if it were supposedly infinite, no intermediate end can operate as a means toward the realization of *something that cannot be realized*. Now, in an infinite series of intermediate ends there is no ultimate end to be realized. Consequently, since all the ends of an infinite series would be only intermediate ends acting as means, there is nothing for them to realize; they cannot operate, and there is no reason for their existence. But if there is no reason for their existence, they cannot exist. In order to exist, therefore, *there must be an ultimate end* for them to realize. An ultimate end, however, implies a stopping-point in the entire series of ends, beyond which these ends do not go; and such a series is not infinite,

but finite. Hence, a series of intermediate ends, in order to exist at all, must be a finite series with an ultimate end toward which they all tend.

It follows, therefore, that an *infinite series* of intermediate ends is *impossible*. And since we are concerned here with all ends of all human acts, it also follows that it is impossible for them to be intermediate ends leading interminably toward other ends, without being directed toward some absolutely ultimate end. Now, the last end of all proximate and intermediate ends in every series, so that no further ulterior end can be conceived for which to tend, is the 'absolutely ultimate end.' It follows, therefore, that there must be *an absolutely ultimate end of all ends of all human acts*.

Man's Basic End

Man is a complex being. A composite of body and soul, he is endowed with manifold powers. Some of these powers are vegetative, some sensory, and some rational. Some are cognoscitive, others are appetitive. All strive in their own fashion for their respective good; the ends of all differ in many respects. Yet man is a unitary substance, and the various powers conspire toward the general well-being of the individual.

Individuals strive for many things — wealth, pleasure, honor, leisure, work, knowledge, virtue, power, and a host of other things. From morning until night, year in and year out, from youth until old age. man is always seeking to acquire or achieve something. Why this ceaseless striving?

What does man really want? Is there some fundamental objective, some basic end, to all these uninterrupted activities and tendencies?

Since all men possess the same essence and nature, notwithstanding their individual differences in activities and tendencies, it appears to be a foregone conclusion that all men have some basic end which is the key to all their striving. It is not difficult to designate this all-embracing end:

the fundamental objective of all man's endeavors, the *basic end* of all his activities and tendencies, is *happiness*.

The ancients recognized this fact. Aristotle⁴ has summed up the argument for happiness as the basic end of man tersely and clearly.

"Since there are evidently more than one end, and we choose some of these (e.g., wealth, flutes, and in general instruments) for the sake of something else, clearly not all ends are final ends; but the chief good is evidently something final. Therefore, if there is only one final end, this will be what we are seeking, and if there are more than one, the most final of these will be what we are seeking. Now we call that which is in itself worthy of pursuit more final than that which is worthy of pursuit for the sake of something else, and that which is never desirable for the sake of something else more final than the things that are desirable both in themselves and for the sake of that other thing, and therefore we call final without qualification that which is always desirable in itself and never for the sake of something else.

“Now such a thing happiness, above all else, is held to be; for this we choose always for itself and never for the sake of something else, but honor, pleasure, reason, and every virtue we choose indeed for themselves (for if nothing resulted from them we should still choose each of them), but we choose them also for the sake of happiness, judging that by means of them we shall be happy. Happiness, on the other hand, no one chooses for the sake of these, nor, in general, for anything other than itself.”

Though ‘happiness’ is rightly considered to be the basic end of man’s striving, there still remains a big problem to solve. Wherein does ‘happiness’ really consist? Can it be acquired? And if so, how and when and where? Can it be acquired by itself or only through and with something else? The solution of this problem is naturally of vital importance to man, because upon it depends the total ethical direction of all man’s activities and tendencies. The problem of the *absolutely ultimate end of man* will be the subject next to be considered.

Summary of Chapter V

The morality of the human act receives a definite character from the end. From an ethical standpoint, an 'end' is 'that for the sake of which an advertent intellect and a free will act.'

1. *Kinds of Ends.* We distinguish between various kinds of ends: the 'end which' and the 'end for which (whom)'; proximate, remote, intermediate, ultimate end, and the ultimate end is either 'relatively' or 'absolutely' ultimate; primary and secondary end; the 'end of the act (*finis operis*)' and the 'end of the agent (*finis operantis*)'; objective and subjective end; natural and supernatural end.

2. *All Actions Are for Ends.* In human acts, since the intellect must be aware of the contemplated action, it must also be aware of the effect of the action, because no action can be without a definite effect. Hence, the will, in willing the action, also must will the definite effect of the action. This effect is the 'end' of the action. Hence, every human act has a *definite end*, and this end is an *integral part of the action itself*.

3. *Object, Circumstance, End.* These are the *three elements or determinants*, which affect the morality of the concrete individual act.

The Object. It is that which the will intends directly and primarily.

The Circumstances. They are conditions superadded to the essence of the moral act and affect its

morality. Such circumstances are: Who? What?
Where? By what means? Why? How? When?

The End or Purpose. Here we take 'end' in the sense of the end of the agent. It affects morality in a number of important ways.

For an act to be morally good, the object, the circumstances, and the end must all be good; the defect of one of these elements makes the act morally evil.

4. *The End as a Good.* The good is that at which all things aim, because it is suitable to the being striving for it. That an appetency strives for a good means that the good is the 'aim' or 'end' of its striving. Hence, the 'end' of an action is always a 'good,' either real or apparent. Even when the will strives for something objectively evil, it strives for it under the aspect of a 'good.'

5. *No Infinite Number of Ends.* Is it possible that all ends of human acts are 'intermediate ends' leading interminably toward other ends, without being directed toward some 'absolutely ultimate end'? Such a theory implies an *infinite number* of intermediate ends. But an infinite number of intermediate ends is *impossible*.

An end is that 'for the sake of which' something is done or effected. An intermediate end is a *means* to realize the next end in the series. Every series of intermediate ends must be directed toward a determinate good 'for the sake of which' they operate as 'means,' so as to bring about its realization; they cannot operate toward the realization of *something that cannot be realized*, because they would then have no reason for their existence. But in an infinite

series of intermediate ends there is no ultimate end and therefore nothing to realize. Hence, these intermediate ends cannot operate. In order to exist and operate, there must be an ultimate end of this supposedly infinite series. It follows, therefore, that there must be an *absolutely ultimate end* of all ends of all human acts.

6. *Man's Basic End*. Man is a complex being, endowed with manifold powers, activities, and tendencies. The 'basic end' of all human activity is happiness.

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Chapter 6

MAN'S ULTIMATE END

THERE MUST BE AN *ABSOLUTELY ULTIMATE END* TOWARD WHICH the single human acts, taken individually and collectively, tend; and, since every end is a good, there must be an *absolutely ultimate good* which serves as the absolutely ultimate end toward which all human acts tend. The basic end of man being happiness, this happiness depends on the absolutely ultimately good toward which all human acts tend. Now a good can be viewed both objectively and subjectively.

The absolutely ultimate *objective* good is that supreme good through the acquisition and possession of which man obtains his supreme happiness. The absolutely ultimate *subjective* good is man's supreme happiness itself which man obtains through the acquisition and possession of the supreme objective good. This part of ethics which treats of the supreme happiness of man is called *eudaemonology* (Gr., *εὐδαιμονία*, happiness, and *λόγος*, treatise, doctrine).

That the striving for happiness is the basic end of all human acts, already has been pointed out. Men, however, are very vague and hazy in their idea of what constitutes true happiness. The problem, therefore, remains to be

solved: Wherein does the supreme happiness of man consist? And what is the nature of the supreme good or absolutely ultimate end which, through its possession, will furnish supreme happiness to man?

The Meaning of Happiness

In order to approach the problem of man's ultimate end in a logical fashion, we must first of all have a clear idea as to the exact meaning of the word 'happiness.'

Just what is *happiness*? Aristotle¹ says in this connection: "Verbally there is very general agreement; for both the general run of men and people of superior refinement identify living well and doing well with being happy; but with regard to what happiness is they differ, and the many do not give the same account as the wise." As ethicists we are, of course, interested only in *perfect happiness*, or *beatitude*, as the absolutely ultimate end of all man's strivings.

Cicero² defines the happy person as follows: "When we call someone 'happy,' we mean by the word the sum-total of all goods, together with the exclusion of all evils." St. Augustine³ calls happiness "the plenitude of all things to be desired." The definition of Boethius⁴ is famous: Happiness is a state made perfect by the aggregation of all good things." St. Thomas Aquinas⁵ gives this definition: "For nothing else is meant by the term 'beatitude' than the perfect good of an intellectual creature capable of knowing that it has a plenitude of the good it possesses." More briefly St. Thomas⁶ defines beatitude as "the perfect good

of an intellectual nature. As will be noticed, all these definitions of 'beatitude' or 'perfect happiness' are in substantial agreement. The one most commonly accepted is that of Boethius.

So far as man is concerned, 'happiness' or 'beatitude' signifies the *possession of all good* consonant with man's nature. Herein consists the *positive* element of beatitude. To lack any good which man as man should or could possess would be an evil; and to be afflicted with an evil would make 'perfect happiness' impossible, because man would be happier if he also possessed the good which he lacks. Hence, *all evil must be excluded* if man is to enjoy true beatitude. The exclusion of all evil is the *negative* element of beatitude. Furthermore, the possession of all good and the exclusion of all evil must be *everlasting*. The very possibility of losing the actual possession of all good is itself an evil and contradicts the concept of beatitude. Consequently, three things are essential for the beatitude of man: (1) actual possession of all good consonant with his nature; (2) exclusion of all evil; (3) eternal duration of the state of beatitude, and certainty of this eternal duration.

Beatitude may be considered abstractly and concretely. The definitions given above consider beatitude *abstractly*. In this sense beatitude is the everlasting possession of all good consonant with man's nature, together with the exclusion of all evil. Considered *concretely*, beatitude signifies the possession of that specific good or of those specific goods which man must possess in order to enjoy perfect happiness. To define beatitude 'abstractly' is not difficult. The crux of the problem of beatitude consists in

determining 'concretely' the good or goods through whose possession man will obtain supreme happiness.

The Possibility of Beatitude

All men seek happiness, at least in a limited degree. Beatitude, or perfect happiness, however, in the strict sense of the term is the everlasting possession of all good with the exclusion of all evil. Taken in this sense, is beatitude possible? The answer is:

BEATITUDE IS POSSIBLE AND ATTAINABLE.

Man has a craving for perfect happiness. The average person may not be able to give an adequate definition of 'happiness,' but everyone, as a mere matter of fact, seeks to avoid every type of evil and to possess every kind of good, so far as he can. Without perhaps realizing it, all men implicitly strive for perfect happiness. This craving is universal and irresistible.

The craving for perfect happiness is *universal*. It is the root of all man's striving; it underlies all the tendencies and urges of sensuous and rational appetency. It is at the bottom of his desire for power, for wealth, for honor, for pleasure, for comfort, for achievement, for sex love, for health, for security, for all the efforts expended in domestic and civil society. Art and science, industry and commerce, international rivalry and treaties, war and peace, morality and religion — all are inextricably tied up with man's insatiable craving for happiness. It begins with the infant's

cry for food, endures through the years of youth and mature age, and flickers in the centenarian's feeble clutch at the thinning thread of life. Wherever man goes and whatever he does, everything in his being is an expression of this craving. Man does not only strive, like the brute, for this or that particular concrete good. He has an immaterial intellect which grasps the meaning of the good-as-such, universal good, good without limit as to time or place or range or content, whatever that may be, because it is coextensive with being in general.

And this craving for happiness is *irresistible*. It is not a matter of free choice on the part of man's will. The will must desire what is proposed by the intellect as a 'perfect good,' and perfect happiness is such a good. To strive for the realization of perfect happiness is simply the dictate of the *nature* of rational appetency. No human person can rid himself of this craving, any more than a hungry person can rid himself of the craving for food or a thirsty person of the craving for drink. It is only with a good of limited value that man has freedom of choice; in its striving for perfect happiness the will is determined by the law of inexorable necessity. Even materialists, evolutionists, and pessimists recognize this fact as undeniable.

The universality and irresistibility of man's craving for perfect happiness, like every other urge of appetency, cannot be the result of mere chance but must have its source in the very *nature* of man.

Such a *natural* craving, universal and irresistible in character, demands that the perfect happiness toward which it is directed *exist and be attainable*; and this

happiness must be of *endless* duration. Here are some reasons.

This world is not a world of irrational chance, but a rational, *purposive* world of *law* and *order*. Law and order rule supreme throughout. Even the atoms and elements are miniature systems of orderly arrangement. The biological sciences, in particular, disclose more and more the marvelous reciprocal relationship which exists between organic structure and function and between the organism and its environment. When a biologist discovers an organ in a living being of any kind, it is a foregone conclusion that this organ has a definite function to perform in the cycle of the organism's life. He is so certain of this fact that he sets himself the task to find out the purpose and object of this function and the conditions under which it operates.

Applying this principle of universal purposiveness to man's craving for perfect happiness, it is clear that man must be *able to attain perfect happiness*. Should man, the highest and noblest creature in the universe, alone be frustrated in his nature? Man's irresistible craving for happiness is as much a natural function of his rational nature as is the function of any of his bodily organs with respect to its proper object. If the digestive apparatus has the natural function of assimilating food and actually does assimilate it; and if the sensory nervous system has the natural function of receiving sense impressions and actually does receive them; and if the sensuous appetency has the natural function of obtaining the sensuous good and actually does obtain it: then the human soul, since it has the natural function to crave and strive for perfect happiness,

must be capable of actually attaining perfect happiness. Otherwise the constitution of his nature would be frustrated in its very foundation, and the natural tendencies of his innermost being would be purposeless. *It is contrary to reason* to suppose that the universal purposiveness of the world would reach its highest peak in man and then suddenly stop and end in a contradiction. Such a supposition would run counter to the basic principles of sound philosophy and cannot be admitted.

Again. God is the Creator of all beings. He gave to each being its specific nature with all its powers and tendencies. Since God is infinitely *wise*, He would not have given man a soul with an irresistible craving for perfect happiness if He never intended to place this perfect happiness within his grasp. God is also infinitely *just*; but it does not seem consonant with infinite justice to give man a rational nature which is filled with an unquenchable desire for perfect happiness and then make it impossible for man to attain it. Similarly, God is infinitely *good*; it would, however, be irreconcilable with infinite goodness, if God imposed a natural tendency upon man which can never accomplish its purpose. The craving for happiness was placed in man, without his asking, through the goodness of a kind Creator, and it would be an unmerited torture to labor under an irresistible craving without the possibility of ever having it receive its normal satisfaction, because this craving flows from man's constitution with natural necessity. Man's condition would be worse than that of the brute, because the brute is able to find the realization of its tendencies and cravings in its immediate environment and is not endowed

with an insight capable of envisioning future possibilities of happiness. Man, therefore, must be capable of attaining perfect happiness.

Finally. The very concept of perfect happiness, which man craves unceasingly and irresistibly with every fiber of his being, demands *endless duration*. If happiness were not endless, one of *three possibilities* would occur of necessity. Man would either be aware of the eventual termination of his happiness; or he would be unaware of its termination, in such a manner that his ignorance would be invincible; or his ignorance would not be invincible, so that he could arrive at a knowledge of the actual or probable termination of his happiness. In the first case, there could be no perfect happiness; the mere fact of being aware of its ultimate termination would haunt man during every moment of his existence, and so his happiness would never be perfect, because of the knowledge of its eventual loss. In the second case, this invincible ignorance would itself be an evil precluding perfect happiness; besides, such an ignorance could only prevail under the unthinkable supposition that God would deliberately blind man as to his real condition and permanently deceive him. In the third case, knowledge or doubt as to the actual or possible termination of happiness would, as in the first case, destroy perfect happiness from the very beginning of his knowledge or doubt. Hence, man's happiness, in order to be perfect, must be endless in duration, or there is no possibility of perfect happiness at all. And yet, as we have shown, perfect happiness must not only be possible but actual. Consequently, perfect happiness must be endless in

duration, and man must be able to enjoy it endlessly, knowing that it is endless.

Immanuel Kant (1724—1804), the eminent German philosopher, places great stress on the moral law and its supremacy. He admits that man is actuated by the natural craving for perfect happiness. However, absolute happiness is inseparably connected with absolute holiness, and both together constitute the supreme good and end of man. Now, absolute holiness is of such a character that man can never, either in this life or in the next, attain it; as a consequence, absolute happiness is also actually unattainable. According to Kant, then, man is destined to a *perpetual progress* in holiness and happiness, but without any hope of ever reaching the goal. Hobbes defended a similar theory of endless progress toward moral perfection.

From what has been said, it is obvious that *such a theory is false*. All actions would be intermediate ends leading interminably on to further ends, without the possibility of ever reaching a final end. Strictly speaking, there is no 'final end' at all in which the entire series of intermediate ends could come to rest, because an end that cannot be reached ceases to be an end. Man's natural craving for perfect happiness, therefore, is doomed to eternal frustration, and this frustration is an evil which must inevitably lead to eternal torture of the mind. Such being the case, why should man observe the moral law and strive for a holiness and happiness that must forever elude his grasp? The theory would engender nothing but despair in the human heart.

The Object of Perfect Happiness

Perfect happiness, or beatitude, is man's subjective ultimate end and as such attainable. Now, an end is always a good. Therefore, there must be a perfect good or a number of perfect goods as the *object which confers perfect happiness*, when obtained, on man. We now consider beatitude, not in the abstract, but in the *concrete*. The problem, therefore, before us is this: What precisely is the *objective good* which is capable of making man perfectly happy? Can any creatural, finite goods give perfect happiness? Or, must this objective good be an uncreated, infinite good? The answer to these questions is obviously of the utmost importance to man for his entire personal life. The answer is given in the following propositions: (1) creatural, finite goods are incapable of conferring perfect happiness; (2) God alone is the objective good capable of conferring perfect happiness.

Finite Goods Not This Object

Creatural, finite goods are incapable of conferring perfect happiness on man.

Creatural, finite goods, which might come under consideration in this connection, are of various kinds. Some are external' goods, in the sense that they are found outside the person of man. Others are 'internal' goods, residing in the person of man. Among these 'internal' goods, some pertain to man's body, while others pertain to his soul.

In order that any type of good be capable of making man perfectly happy, a number of conditions are required. Such a good must be 'desirable for its own sake'; if it were desirable for the sake of some other good, it would be only a means toward a higher good and insufficient in itself to confer happiness. Such a good must 'satisfy man's rational nature,' because man's rational nature is the source of his striving for perfect happiness. Such a good must 'contain no evil nor lead to evil'; otherwise there would be no perfect happiness. Such a good must be 'imperishable and capable of endless possession perfect happiness implies endless duration. Such a good must be 'accessible to all men'; all men have the same nature and irresistible craving for perfect happiness, and therefore all men must be able to attain this happiness. If any of these conditions is absent, the good in question is not the objective good that is capable of conferring perfect happiness, or beatitude, on man. All these conditions are not verified in the case of *creatural, finite goods*.

EXTERNAL GOODS. AMONG THE EXTERNAL GOODS WHICH MEN desire are money, property, physical conveniences, honors, etc. Such goods, whether taken singly or collectively, cannot be the objective good which could serve as the ultimate end of man's striving for perfect happiness.

Goods of this sort are never ends in themselves, but only *means* toward some other good or goods, for instance, pleasure or esteem. Their acquisition, possession, and use is often accompanied by many *evils* of body and soul; for

example, wealthy people are frequently ill and miserable, unable to enjoy the fruits of their wealth. These goods *are not stable*, nor do they last forever. Finally, they are not accessible to all men, nor can all men possess all of them all the time. External goods, though desirable in many respects, are too limited in extent and too low in value to be capable of giving rational man perfect happiness.

Bodily Goods. Health, beauty, strength, pleasure, etc. — such are the goods which many consider to be the end and goal of all living. In general, the bodily members and the sense organs, together with their proper functioning, are not desired for their own sake, but because they either provide sense pleasure or because they are required for physical well-being or mental development. Particularly, it is *sense pleasure* which is desired *for its own sake* by all too many people, and they are of the opinion that happiness is found therein. Bodily goods, however, including sense pleasure, cannot give perfect happiness.

For one thing, man possesses a rational nature which stands on a plane much higher than his bodily being. The good of the body, therefore, does not of necessity coincide with the good of the spiritual soul. Bodily goods, being of a lower order, cannot satisfy the demands and desires of rationality. On the contrary, the body, being the material part of man's composite nature, must be subservient to the interests of the rational soul. Man has his physical being in common with the brute; and if man seeks happiness in the pleasures of sense, he places himself on the level of the brute. But man is not a brute. He has a rational appetency which far surpasses the sensuous appetency of the brute,

and this *rational appetency* strives for rational goods which lie beyond the powers of sense. Hence, bodily goods, since they satisfy only a part of man's nature, and the lower part at that, cannot be the supreme good capable of giving man perfect happiness.

Again. Pleasure accompanies the normal activity of every healthy bodily member and organ. Sense activity is dependent on the nervous system and consumes nerve energy. Now, the amount of nerve energy is limited in its supply. When nerve activity is prolonged or intense, this supply of energy becomes depleted; from this point on, the continued activity produces fatigue, pain, and eventually illness. It is a biological law, therefore, that all sense pleasure, be it of sight, hearing, taste, smell, sex, or of whatever kind, is *necessarily limited in duration*; and the more intense the pleasure, the shorter is its duration. Constant pleasure is simply an impossibility, because the human system cannot sustain it. Every attempt to actively produce constant pleasure inevitably leads to nerve deterioration and consequent *disorder and pain*. Hence, sense pleasure cannot be the supreme good which results in perfect happiness.

Finally. The bodily goods, in order to qualify as man's supreme good, must be within the grasp of all human beings. Evidently, however, they are *not accessible to all*. Many persons have congenital defects; some acquire serious abnormalities in the course of their life through illness or accidents; many are doomed to suffering and pain for months and even years. All persons, as they advance in age, experience the gradual breakdown of their bodily

system and the steady impairment of their capacity for pleasure. The final stage is extreme weakness and misery. No wonder, then, that King Solomon called the pursuit of pleasure 'vanity of vanities' and a 'vexation of spirit.' If the goods of the body were the supreme and ultimate object upon which man's perfect happiness depended, then life were indeed an illusion and a mockery.

Goods of the Soul. These goods may be either of an intellectual or a moral character. Among the intellectual goods must be reckoned science and art; among the moral goods, the virtues. Neither class is sufficient of itself to produce perfect happiness.

With regard to the *intellectual goods*, there can be no question that science and art afford great enjoyment to the rational nature of man. Nevertheless, this enjoyment must always fall short of perfect happiness. Science and art can be acquired only through much study and practice, and that is by no means always pleasurable. No one can become proficient in all the sciences and arts within the span of a lifetime, even if he expended a maximum of effort without ceasing. Besides, progress in the sciences and arts is slow and laborious, and what one actually knows is infinitesimal in comparison to the amount of things one could learn but never does. So long as humanity exists, this general fund of knowledge will increase as the centuries roll on, but complete knowledge always will be impossible for the individual. There are, of course, individual persons who are great scientists and great artists, but the average person has neither the opportunity nor the time nor the capability of dedicating his life to the sciences and arts; and yet, if

intellectual accomplishment were the supreme good resulting in perfect happiness, all men would, by their very nature, of necessity have to be in a position to acquire complete possession of science and art. The intellectual goods, therefore, are not the object of perfect happiness for man.

Neither are the *moral virtues* this object. Among the many finite goods which man could desire, one might feel inclined to think that the moral virtues are best suited to be the supreme object able to furnish perfect happiness to man. That, however, is not the case. The moral virtues, for instance, prudence, justice, temperance, and fortitude, are *not desired for their own sake*. Their function consists in governing and curbing the movements of sensuous appetency or in giving proper direction to actions in conformity with the norm of morality. Hence, the moral virtues are desired for an end outside themselves. Since they are not sought for their own sake, but for the sake of something else, they are *not self-sufficient* and cannot confer perfect happiness on man. Furthermore, the practice of the moral virtues entails *self-abnegation* in many ways, especially with regard to the restraint which they impose on the passions and sensuous inclinations; and that involves unpleasantness and pain. The moral virtues also assist man in bearing up patiently and bravely under the evils and adverse conditions which are the common lot of men, but they do not remove these evils and adverse conditions themselves; rather, they presuppose their existence. Hence, the practice of moral virtues does not constitute perfect happiness. The *Stoics*, therefore, were

mistaken when they made moral virtue an end-in-itself and man's supreme good.

No class of finite goods, taken singly, can be the ultimate objective good of man. Nor can all classes of creatural, finite goods, taken *collectively*, be this ultimate objective good which, as a totality, would make man perfectly happy. It is utterly impossible for all men to possess all classes of finite goods at once, together with the exclusion of all bodily and mental evils.

God Is Man's Ultimate Good

Since no finite good, taken singly, nor all finite goods, taken collectively, constitute the supreme good of man, capable of conferring upon him beatitude in the true sense of the word, what then, specifically and concretely, is man's ultimate objective good? It is God. God is the necessary and adequate objective good for man's beatitude.

GOD IS THE 'NECESSARY' OBJECTIVE GOOD OF MAN'S BEATITUDE OR perfect happiness.

Beatitude, or perfect happiness, is attainable by man; this was proved. Creatural, finite goods are not the perfect good or object which, singly or collectively, is capable of making man perfectly happy; this was also proved. Yet, there must be an ultimate objective good for man, or perfect happiness would not be attainable. Consequently, only an *uncreated, infinite good* is the object which, as man's ultimate end, is capable of making man perfectly

happy. There is, however, only one uncreated, infinite good, and that is God. God, therefore, is necessarily the objective good of man's beatitude, and that is equivalent to stating that God is the 'necessary objective good of man's beatitude.'

Another point. The reason why man craves for perfect happiness lies in his *rational nature*, in his intellect and will. His intellect grasps the concept of beatitude, and his will necessarily tends toward it. The sensory powers, rooted in matter, are incapable of conceiving beatitude or of striving for it. Now man is specifically 'man' because he has intellect and will. Hence, intellect and will, primarily and more than any other powers, are the subject in which beatitude must reside, because they must of necessity strive for that perfection which is proper to them and for that object which can give them perfection. What is the proper object of the intellect and the proper object of the will?

The proper object of the *intellect is truth*; whatever is 'true' is the proper object of man's intellectual insight. Now, all being can be known and as such possesses truth-value; truth, therefore, extends to all being, to *being-as-such*, without qualification and distinction. The tendency of the intellect thus embraces all being and all truth in so far as the capacity of the intellect reaches. Finite beings do not exhaust truth. Hence, the intellect, in its natural and necessary tendency to embrace all truth, must go beyond finite beings to the infinite, in order to find its adequate object. Only God, however, contains all being and all truth, because He is essential, infinite being and truth. Consequently, only God, the infinite source and ground of

all being and truth, can be the ultimate objective end of the intellect.

The proper object of the will is the *good*. Since the intellect apprehends good simply as 'good,' the *good-as-such* without qualification and distinction, the will strives for it accordingly. The will, therefore, can never be completely satisfied in striving for 'this or that good' in particular. It strives for 'perfect happiness,' and no particular, finite goods can give beatitude. Consequently, only God, the infinite source and ground of all good, can be the ultimate objective end of the will.

Although man's intellect and will are finite in their capacity, man, in having as his *object* God who is the infinite truth and good, will find perfect happiness, because the total natural capacity of his intellect and will thereby is filled.

GOD IS THE 'ADEQUATE' OBJECTIVE GOOD OF MAN'S BEATITUDE OR perfect happiness.

Man must be able to attain beatitude, and he cannot attain it except through the possession of God through his intellect and will: God is the 'necessary' objective good which is the ultimate end for all man's striving. Now we must show that God *suffices* for man's beatitude, because He is the 'adequate' objective good which gives man beatitude.

That God is the *adequate* ultimate objective good, capable of conferring perfect happiness on man, should be evident. It is man's *rational* nature which demands

beatitude, because *man precisely as man* has the rational powers of intellect and will, and through intellect and will he knows what perfect happiness is and strives for it. God, however, since He is the infinite truth and the infinite good, is obviously 'adequate' for the complete satisfaction of all the tendencies of the intellect for the acquisition of 'truth' and of all the desires of the will for the possession of 'good.' Hence, if man's intellect and will are adequately and completely satisfied, man as man has perfect happiness.

The question, however, arises: How about man's *body* and *bodily tendencies*? Must these not also receive complete satisfaction if man is to enjoy perfect happiness? The body, it is true, is an essential part of man's composite nature, not a mere adjunct to the soul. However, the body is *subordinated* to the rational soul in all its powers and activities; its purpose is more that of a vital instrument in the service of the intellect and the will. Hence, the interests of the body must be subservient to the interests of the rational soul, and the ultimate end of the soul is also the ultimate end of the body in every respect. The body as such, being material, is incapable of perfect happiness; it fulfills its purpose in assisting the rational soul to acquire perfect happiness. More light will be thrown on this perplexing problem when we bear in mind that perfect happiness cannot be obtained in this life on earth.

Eternity Necessary for Beatitude

Man is destined for perfect happiness, and this happiness is attainable. When we consider the requirements of perfect

happiness, as outlined in the previous discussion, it is evident that our *earthly life is incapable of giving beatitude* to man.

The earth is not a paradise; and no man here is perfectly happy. While he lives on earth, man is subject to many *evils* — ignorance, error, sin, passion, illness, accidents, and all the vicissitudes that human flesh is heir to. At any rate, there is always the possibility and probability that sundry evils will overtake us. The *goods* which this earthly life has to offer are too meager and limited and superficial to satisfy completely man's hunger for perfect happiness. *Life* itself is entirely too short for true beatitude, because beatitude demands endless duration. *God*, the supreme good, in whom alone man can find perfect happiness, can indeed be known and loved; but man's knowledge of God in this life is extremely inadequate and not at all sufficient, as we know from personal experience, to give us the perfect happiness we so ardently desire.

The conclusion is therefore inevitable that man has not been destined to find beatitude in his earthly existence. There must be a life beyond the present, and it must be an *immortal life*, because a perfect happiness which is not endless in duration is a contradiction in terms. Only in this immortal life after death can the soul be so intimately united with God as the infinite truth and the infinite good, that all the natural tendencies of man's intellect and will can be satisfied to capacity and God actually become for man the one and only good that brings perfect happiness with its possession. Hence the necessity of an immortal, eternal life for beatitude. Given this eternity and

immortality in existence, we can readily see that *all men* without exception can attain the perfect happiness which they desire with a natural, irresistible craving implanted in their very constitution by the Creator Himself.

We are now in a better position to answer the question:

What about the *body* and its *tendencies*? At death, body and soul are separated; the body returns to the earth, but the soul passes over into immortal life. The body fulfills its natural purpose during man's earthly life; the soul, with its rational powers of intellect and will, no longer needs a body in the superior type of life which it leads in eternity. Speaking from a purely *philosophical* standpoint, therefore, man would be able to enjoy perfect happiness in possession of his supreme good without a body. Philosophy, through the aid of human reason alone, is unable to show that resurrection of the body is even probable. That would depend entirely on God. If there should be a resurrection (Revelation assures us there will be, but philosophy must prescind from this supernatural fact), then it is evident that the human body would be completely different from what it is now; if it were the same, perfect happiness, even in eternity, would not be possible. Granted the resurrection of the body, the body would of necessity be completely *subservient to the soul*, so as not to be a hindrance to the union of the soul with God. Under such a supposition, the body would *participate indirectly* in the beatitude of the soul, because it is in the soul that beatitude ultimately resides. A more complete answer philosophy cannot give, due to the limitations of its method of research.

A Controversy

The view expounded in the preceding sections has been current among scholastic philosophers during the past three centuries. Prominent among modern authors defending this view are Joseph Rickaby, Victor Gathrein, Michael Gronin, Thomas Zigliara, Jacques Maritain, Henry Grenier, and Joseph Gredt. They maintain that God is the object of perfect happiness for man even in the natural order, so that man, if he had not received as his supernatural destiny the intuitive beatific vision of God's essence, could attain perfect *natural beatitude* in God, at least in the life after death.

During recent years this view has been seriously questioned by a group of scholastics. Henry de Lubac,⁷ for example, defends the position that God could not keep an intellectual creature, including man, in a purely natural status and that every intellectual creature can have but a single ultimate end, namely, Beatific Vision. Joseph Buckley,⁸ on the other hand, maintains that man could exist, absolutely speaking, in a purely natural status, if God so ordained; but God would not be his determinate, concrete, ultimate end in the natural order. He claims that the view expounded by the authors mentioned above is based on an invalid confusion of the metaphysical order and the psychological or moral order.

In the *metaphysical* order, God is the last end of all created things, including man, because He created them for the sake of His own goodness and they are thus ordained (entitatively, metaphysically) to God. In the *psychological*

order man intends in all his acts simply his own perfection. The will follows the good as presented by the intellect. Man's intellect, however, embraces 'truth-in-general'; and since the 'true' is also the 'good,' the will strives for the 'good-in-general.' However, the 'good-in-general' is merely 'indeterminate good' and as such is by no means identical with the determinate 'infinite good' which is God Himself. Man, therefore, is moved by nature toward the 'good-in-general' as the supreme object of his will and toward 'beatitude-in-general' as the last end of his will. Since the proper object of man's intellect is the essences of sensible things, his intellect is restricted to creatural things. For this reason man can know God, not as He is in Himself as absolute and infinite, but only as He is causally related to the creatures participating in His goodness, namely, after the manner of a participated and partial good. Because the will can only strive for an object as perceived by the intellect, the proper object of man's will is restricted by the limitations of his intellect, so that the proper object of man's will is partial, participated good. Now, in the natural order there exists no concrete good or group of goods which would exhaust the comprehension and extension of 'good-in-general,' so that any one or all of them could completely satisfy man's nature as an intellectual and volitional being. Hence, man can have no concrete last end in the natural order and, as a consequence, no complete beatitude. Man simply cannot obtain full happiness all at once'; he can obtain happiness only piecemeal —progressively and cumulatively, in a series of incomplete and successive actualizations.

To assert that man in the natural order (a possibility which must be accepted in view of the gratuitous character of man's supernatural destiny) can have no concrete, determinate, objective ultimate end as the object of his natural striving, is indeed a startling doctrine. It is true, of course, that perfect happiness for man is impossible in his earthly existence. But conditions in the immortal life of eternity may be so radically different from those of man's sense-dependent earthly existence, that it seems strange to deny that man's full beatitude as a rational being could ever be realized in a natural order. Is there a limit to God's wisdom and power? Progressive and cumulative perfection, never reaching full beatitude, is nothing more than an interminable series of intermediate ends unable to realize a final end. "An end without end" and "a last end that is open," as Buckley⁹ calls it, is no final end at all. In this view, man in the natural order, if God created him such, would be destined to an eternal frustration.

Man's Purpose on Earth

Since man's ultimate subjective end or good is perfect happiness in eternity, and since his ultimate objective end or good is God, what is *man's supreme purpose* during his sojourn on earth? All men possess the same fundamental nature and have as their ultimate end the acquisition of perfect happiness. Hence, all men, by the very fact that they are human beings, must have a common end or purpose to which all their human acts, while they live on earth, must be directed. Manifestly, the common purpose of all men on

earth is the purpose God had in view in giving them an earthly existence. What is it?

The *common purpose* of all men in their earthly existence consists in *the preparation for eternal happiness*.

The common nature of all men demands a common purpose for all men while they live on earth. The various activities of man have an immediate or proximate end, and there are as many such ends as there are activities. The only way in which there can be unity among these various ends is to have a common end' to which all diversified ends are *subordinated as intermediate ends*. Intermediate ends, however, depend for their existence on the final end to which they are directed, because they are the 'means' to achieve the final end. Now, the final, supreme end of man is perfect happiness in eternity. Consequently, the common end of all the activities of man and of man's earthly existence itself must be to achieve man's ultimate end of perfect happiness in eternity. It follows, therefore, that all the activities of man and of man's earthly existence must be directed as means to achieve this eternal happiness. That, however, is tantamount to stating that man's entire existence on earth must be lived as a *preparation* for the realization of his perfect happiness in eternity. If man fails to live his life in this manner, he fails in his destiny.

Furthermore, the preparation for perfect happiness consists in *the observance of the moral law*.

All nations without exception make the distinction between the 'morally good' and the 'morally evil,' between 'virtue' and 'vice,' and recognize the necessity of leading a life in conformity with moral law. The application of the

general principles to concrete moral problems may be faulty or even erroneous, but the application is at least attempted and made. It is a common practice, too, to make a division of all people into those who are 'virtuous' and those who are 'criminal,' and it is the conviction of all men that virtue leads to happiness and crime to unhappiness. Since virtue, however, does not lead to perfect happiness in this life nor crime to unhappiness, the religions of the world express a belief in a life after death in which the good are rewarded and the evil punished. The only logical explanation for such a universal conviction can be *human nature* and its *rational insight*. Reason, therefore, leads inevitably to the conclusion that man must seek his eternal happiness through the observance of the moral law in his earthly existence.

This conclusion is justified. Through what other means could man hope to obtain perfect happiness? Certainly not through wealth, honor, power, beauty, science, art, talent, or any other natural endowment or achievement. These things are not within the reach of all men. According to God's purpose and intention, *all human beings are*, absolutely speaking, destined for this happiness, so that it must be within the power of all, whether rich or poor, healthy or sick, learned or unlearned, young or old, strong or weak, powerful or helpless, ruling or subjugated, to achieve beatitude in the life to come. Now, there is but a single thing in the power of the free will of all men without exception: love of God and the practice of virtue. Hence, this must be the road which man must follow on earth in order to prepare himself for eternal happiness. Reversely,

whoever does not love God and does not practice virtue forfeits the right to beatitude.

A consideration of the *nature of God* leads to the same conclusion. God is *infinite holiness*. He cannot be indifferent to the kind of a life which men embrace during their earthly existence. On the contrary, He must insist that men be in all things like Himself — holy. It is unthinkable that the All-Holy give Himself for all eternity in the most intimate union of perfect happiness to a soul which despised the moral law and the very Lawgiver Himself. Virtue and vice cannot both lead indiscriminately to God and eternal happiness with Him; such a contention would be an insult to the infinite perfection of the All-Holy.

The *purpose of God in creating* all things, including man, sheds further light on this problem. The ultimate end or purpose which actuated God's will to create could not lie in anything outside Himself; otherwise His will would be dependent on this extra-divine reality, and such a dependence would be contrary to His infinity. The ultimate end of creation, therefore, can be only *God Himself*. This end could conceivably be one of two: His benefit or His glory. It cannot be that God created the world and man for His own benefit; God, since He possesses infinite perfection, cannot derive any benefit from His creatures, particularly since they have received all their perfections from Him. Hence, the ultimate end which actuated God's will in the creation of the world and of man cannot be anything but *His own glory*. This glory consists in the manifestation of God's perfections in His creatures. God made all things out of infinite goodness, so that the creatures should share, as

manifestations of His perfections, in various degrees of reality and being.

Irrational creatures manifest God's perfection by the very fact that they exist and carry out God's designs in an orderly world. Man, being rational, must glorify God through the *acknowledgment* of God as the Supreme Creator and Ruler of all things, because man is the only creature in the visible world capable of recognizing the power, wisdom, and goodness of God as manifested in finite things. Hence, man was created to rise above the irrational creatures to God, to proclaim His glory, to love Him, to praise Him, to thank Him, to worship Him, in the name of all creatures.

Furthermore, having alone been endowed with reason and free will, he is made into *the image and likeness of God* and must strive, of his own free will, to cultivate this image and become more like to God day by day throughout his life. He can do this, however, only by striving to imitate the infinite holiness of God and thereby manifest God's glory in his own life. Man, therefore, was created to know and love God by leading a virtuous life on earth; in no other way can he be more 'like to God.' God, therefore, created man for Himself and His glory, the culmination of which purpose will come about in the next life in the union of man with God in perfect happiness through holiness here on earth. And holiness means conformity with the moral order established by God. By the very fact, then, that man on earth leads a life in conformity with the moral law, he promotes the glory of God and obtains perfect happiness for himself in the life to

come. He attains his ultimate subjective end by striving for his ultimate objective end.

Such is the privileged destiny of man.

Summary of Chapter VI

In this chapter we seek to determine man's *ultimate end*. The absolutely ultimate 'subjective' end of man is his supreme happiness. The absolutely ultimate 'objective' end of man is the supreme good which gives happiness.

1. *Meaning of Happiness*. Happiness is a state made perfect by the aggregation of all good things. Three things are essential for man's beatitude or perfect happiness: the actual possession of all good consonant with his nature; the exclusion of all evil; the eternal duration of the state of beatitude and the certainty of this eternal duration.

2. *The Possibility of Beatitude*. Beatitude is possible and attainable. Man has a universal and irresistible craving for perfect happiness; this craving must, therefore, have its source in the very nature of man. Since this is a purposive world of law and order, in which every natural tendency has its definite end and object, man's natural tendency toward perfect happiness must also be capable of realization. The wisdom, justice, and goodness of God demand that, since He gave man an irresistible craving for beatitude, man's natural tendency toward beatitude be not frustrated and in vain. Beatitude, therefore, must exist and be attainable. This beatitude must also be *endless in duration*; the mere probability or possibility of cessation would contradict the very concept of perfect happiness.

3. *The Object of Perfect Happiness*. Beatitude is man's subjective ultimate end. Since an end is a good, there must

be an object or good which is capable of making man perfectly happy.

4. *Finite Goods Not This Object.* Some finite goods are 'external' to man; others are 'internal' and are either goods of the 'body' or goods of the 'soul.' In order that any or all of these finite goods qualify as man's supreme objective good, they must fulfill the following *conditions*: they must be desirable for their own sake; they must satisfy man's rational nature; they must contain no evil nor lead to evil; they must be imperishable and capable of endless duration; and they must be accessible to all men. No finite goods, taken singly or collectively, fulfill all these conditions.

5. *God Is Man's Ultimate Good.* Since perfect happiness is attainable through the possession of some concrete supreme good, and finite goods are not capable of conferring perfect happiness on man, it follows that the infinite good, which is *God*, is alone the ultimate objective good capable of giving beatitude to man. God is the *necessary* and *adequate* object of man's beatitude.

6. *Eternity Necessary for Beatitude.* Man's earthly life does not and cannot give perfect happiness to him. Consequently, there must be an *eternal life* beyond the present earthly life, for man to be able to attain beatitude.

7. *Controversy.* In recent years the view is being defended that man cannot receive full beatitude in the natural order. God is not man's determinate final end, and no creatural good or group of goods can satisfy man.

8. *Man's Purpose on Earth.* Since all men possess the same rational nature with the same natural tendency toward beatitude, all men must have the same *common end*

here on earth to which all the other ends and activities must be subordinated. This common end is the preparation for eternal happiness through the observance of the moral law. God created all things for Himself and His glory, and God is infinitely holy. Hence, His ultimate purpose in creating man must be that man glorify God and be similar to God in *holiness*. Holiness, however, means leading a life in conformity with the moral law.

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2 *Tuscul.* 5, 10: *Neque ulla ulia huic verbo, cum beatum dicimus, subjecta notio est, nisi secretis malis omnibus cumnlata bonorum complexio*

3 *De civitate Dei*, 1. 5, mit.: *plenitudo omnium rerum optandarum*

4 *De Consol. phil.*, 1. 3, pr. 2: *status omnium bonorum congregatione perfectus*

5 *Summa theol.*, a, q. 26, art. a: *nihil aliud sub nomine beatitudinis intellegitur, nisi bonum perfectum intellectualis creaturae, cujus est suam sufficientiam cognoscere in bono quod habet.*

6 *Loc. cit.*, art, 2; *beatitudo significat bonum perfectum intellectualis naturae*

7 *Surnatarel* (Paris: Aubier, 1946).

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9 *Loc. cit.*, p. 231.

Chapter 7

THE NORM OF MORALITY

A HUMAN ACT, BY THE VERY FACT THAT IT IS PERFORMED WITH advertence of the intellect and by the free decision of the will, partakes of the character of 'morality.' Morality is that attribute or property of the human act in virtue of which it is said to be 'morally good' or 'morally evil.' The factors which make an act morally good or morally evil are called the 'moral determinants,' and these are, as we have seen, the object, the circumstances, and the end or purpose of the agent. If all these determinants are morally good, the act itself is morally good; but if any of these determinants is morally evil, the act itself is morally evil.

But how are we to know *whether* and *when* an object or a circumstance or an end is good or evil? These determinants do not appear with labels attached, to indicate that they are good or evil. Nor is their moral character self-evident; that is clear from the divergence of opinion which exists regarding the morality of many acts. How, then, are we to know?

The question leads us to the problem of the *norm and criterion of morality*.

Criterion and Norm

A 'criterion' and a 'norm' have much in common, but their concepts are not identical.

In general, a *criterion* is a *standard of judging*; that is to say, it is a rule or standard by which principles, facts, statements, and conduct are tested, so as to form a correct *judgment* concerning them. A thermometer, for example, is a criterion for judging heat. What a thermometer really shows is the expansion and contraction of a column of mercury in a tube; this action of the mercury, however, is the result of the application of heat and as such an indication of the temperature. Hence, although the mercury reveals no heat precisely as heat, it is for us a criterion by means of which we can test the presence of heat and pass a correct judgment regarding the relative increase or decrease of the heat itself. To be a true criterion, however, the thermometer must be correct in its calibration, and it will be correct only if it agrees with the calibration of some thermometer which serves as the 'standard' for this type of thermometer. Applied to ethics, a *moral criterion* is a rule or test by means of which we are able to discriminate between what is morally good and morally evil and to judge correctly that a particular act is morally good or morally evil. Such a criterion is 'subjective,' not in the sense of being 'arbitrary,' but in the sense that it enables man, the thinking 'subject,' to test and judge the morality of an act. But just as the ordinary thermometer presupposes the existence of an objective 'standard' thermometer with which it must agree in its calibration, in order that it be a

true criterion of temperature, so the moral criterion presupposes the existence of an objective moral 'standard' or 'norm' with which the particular act can be compared, in order that man can test the morality of the act and judge whether it be good or evil.

In general, a norm is an *authoritative standard* which serves as a pattern or model to which things of a similar nature must conform. For example, business concerns manufacturing thermometers have a thermometer in their possession which is exact in all details and which serves as the pattern and model for all the thermometers which they make. If a thermometer measures up to this standard in its essential characteristics, it is put on the market; if not, it is discarded, because it is 'no good' for the purpose intended. Ethics also demands a *norm of morality*, that is to say, an *objective standard or rule or principle* which determines the morality of *an act in itself*. If a particular act conforms to this norm, it is morally good 'in itself'; if it deviates from this norm, it is morally evil 'in itself.'

Such a norm, therefore, is 'objective,' in the sense that it refers to the 'object' of the act, and determines whether a particular act is in itself morally good or morally evil, irrespective of, and prior to, any judgment of man regarding its morality. Our judgment follows the comparison of the act with this standard or norm. If we find that the act conforms to the norm of morality, we judge the act to be good; but if we find that the act deviates from this norm, we judge it to be evil.

If such a norm of morality exists, it is evident that at least some human acts will be *objectively good or evil in*

themselves, depending upon whether they agree or disagree with the objective norm of morality. Such an objective norm would then serve as a 'standard of comparison,' enabling us to test a particular act as to its morality by comparing it with the standard and pass a correct judgment as to whether it is morally good or morally evil. We would then have a 'moral criterion' or standard of judging.

THE NORM OF MORALITY, TO BE EFFECTIVE AS A MORAL CRITERION or standard of judging for man in the thousand and one practical problems of life, must have certain *qualifications*. (1) This norm must be *unchangeable*. If it would change and fluctuate, there would be no fundamental stability to morality; then murder or adultery, for instance, might be morally evil at one time and morally good at another. Such a norm would, therefore, not be a reliable standard, and man would never be certain of the morality of his acts. It is, however, the purpose of a norm to give us certainty in matters for which the norm is the standard. (2) This norm must be *universal*, so that it will apply to all men. All men feel themselves bound to the moral law; hence, the norm of morality must apply to all men. (3) This norm must be *accessible to all*, young and old, learned and unlearned, rich and poor, high and low, at all times and in all places. All men, no matter what their condition of life, must be able to know at least the fundamental principles of morality; otherwise they could not lead a moral life. They can, however, never arrive at a knowledge of these principles,

unless the norm of morality be accessible to all, because all moral principles flow naturally from this norm. (4) This norm must be *applicable to all conditions* of life. The individual must be able to make all his actions conform to the norm of morality, and this is only possible if the norm is within the mental reach of every individual; otherwise such a norm could not serve as a standard for every individual in all his actions. (5) This norm must be a *single standard*. Moral actions are many, but morality is one. All men have the same human nature, and the moral standard for all must be the same. Hence, there cannot be one norm for one set of persons or actions and another norm for a different set of persons or actions.

If the norm of morality is to be a genuine norm and serve as a true criterion, according to which we are to judge whether an act is good or evil, these qualifications are required. So far, of course, we have not proved the existence of a norm of morality nor the necessity of its existence. We know that all people are convinced of the existence of moral goodness and moral evilness in human acts. The question, therefore, arises:

Are acts good or evil because we *judge* them to be so? Or do we judge them to be so because acts are good or evil in *themselves*? In other words: Is the distinction between morally good and evil acts *subjective or objective*? If the distinction depends solely on our judgment, then the distinction is 'subjective'; but if the distinction is based on the acts themselves, then the distinction is 'objective.' Are there acts which are objectively good or evil, independent of our subjective judgment?

Some human acts are good because *commanded* by proper authority, and others are evil because forbidden. Parents, for instance, may command or forbid certain acts in virtue of their parental authority, and such acts become morally good or evil thereby. We are not concerned here with acts of this kind. What we wish to know is: Are any acts morally good or evil independent of any command or prohibition by authority, be this authority human or divine, so that they would be good or evil *in their very nature* and therefore good or evil 'at all times' and 'under all circumstances'? We are here face to face with one of the most fundamental problems of ethics.

Acts Objectively Good or Evil

When we speak of acts which are 'objectively good or evil,' we mean acts which are, as just explained, good or evil in their very nature and not in virtue of a command or prohibition by authority. These acts would be morally good or evil in themselves, prior to, and independent of, any judgment regarding their morality. Our judgment regarding their morality might even be wrong, so that we judge a good act to be evil or an evil act good; but the *intrinsic* goodness or evilness of the act would remain unchanged by our judgment. We claim that *some acts* are 'objectively good or evil' in the sense defined.

The reason why some acts are objectively and intrinsically good or evil lies in the *ultimate end of man* and all creatures. All finite, creatural beings, as we know, were intended by God for the furtherance of His glory. God could

have no other ultimate end in creation than Himself and His glory. Whatever furthers His glory must be desired by God and is therefore good in itself; whatever hinders His glory must be detested by God and is evil in itself. Irrational creatures further the glory of God by simply being what they are and fulfilling their ultimate end through their nature and its proper functions, because they perform all their actions through necessity. Man, on the vegetative and sensory side of his nature, in so far as his nature functions through necessity and not through the control of his free will, furthers the glory of God in the same manner as the irrational creatures, namely, by being what he is and by fulfilling his ultimate end through his nature and its proper functions. Man, however, is also a *rational* creature. Through intellect and free will many of his acts are distinctively 'human' acts, radically different from those which are styled 'acts of man.' Because he is endowed with intellect and free will, man has it within the power of his choice to perform many acts and to omit them. Man can freely decide to perform acts which will promote the glory of God or not promote the glory of God.

Now, some human acts, *by their very nature*, promote the glory of God, while others detract from His glory. It cannot be otherwise. God is infinite perfection. He is good, kind, merciful, just, truthful, faithful; and these and all other attributes are infinite perfections, because they are identical with His infinitely perfect nature. He loves His nature with an infinitely perfect love. The creatures are mirrorings of His nature and perfections. In so far, therefore, as they *imitate His perfections* they promote His

glory and fulfill their ultimate end. Irrational creatures do this of necessity; rational creatures must do this through the exercise of their free will. Since God loves His own nature and perfections, He must also desire that His creatures imitate His perfections, each in its own particular way — irrational creatures through the necessity of their nature and functions, man through the free choice of his will. Man, therefore, not only has the power freely to imitate God's perfections in his human acts, but he *ought to* imitate God's perfections; that he 'ought to' do this, indicates the moral obligation to perform acts which will be in conformity with the perfections of God, but it also indicates that he can refuse to act in accordance with this *moral obligation*. Human acts, then, that are in conformity with God's perfections and nature, are *morally good*, intrinsically, objectively, and by their very nature, independent of, and prior to, any judgment on man's part as to their morality. Human acts, on the other hand, that are in opposition to God's perfections and nature are *morally evil*, intrinsically, objectively, and by their very nature, independent of, and prior to, any judgment on man's part as to their morality. We are speaking here of the acts as such, considered 'objectively.' Obviously, moral acts cannot be imputed to man 'subjectively,' unless he passes judgment on their morality and performs them freely. Some human acts, therefore, are by their very nature in conformity with man's ultimate objective end and as such are objectively and intrinsically good in a moral sense, while other human acts, being in opposition to that end, are, by their very nature, objectively and intrinsically evil.

Beatitude, man's ultimate subjective end, is inextricably bound up with his ultimate objective end, namely, God and His glory. Human acts which tend toward the realization of God's glory also tend toward the realization of man's beatitude.

The *conclusion* is inevitable: those human acts which are in conformity with man's ultimate objective and subjective end are objectively, intrinsically, and by their very nature morally good; those human acts which are in opposition to man's ultimate objective and subjective end are objectively, intrinsically, and by their very nature morally evil.

The Ultimate Norm of Morality

A *norm of morality* is an authoritative standard to which the human acts of man must conform, in order to be morally good. Must there be a norm of morality? And, if so, what is it?

There *must* be a norm of morality. Only under the supposition that such a norm exists, can man have a *criterion* enabling him to pass a discriminatory judgment on the morality of an individual act. Man has the obligation to perform acts which tend to realize his ultimate objective and subjective end and avoid acts which tend to nullify the realization of this end. The former acts are morally good, the latter morally evil. He therefore has the obligation to perform morally good acts and avoid morally evil acts. Without a norm, however, he would have no objective standard of comparison, and his judgment in moral matters would be altogether subjective; he would have no means of

checking the accuracy of his judgment. As a consequence, every person's individual judgment would have the same value, and moral chaos would result.

What *is* the objective norm of morality with which the individual moral act must be compared in order that man can correctly judge whether it is morally good or evil? It is the 'ground' and 'reason' why human acts are morally good or evil. From what has been said in the foregoing section, one might be inclined to state that the norm of morality consists in the ultimate objective and subjective end of man's existence and human acts, namely, God and His glory and man's final beatitude. In a sense this is true. Whatever agrees with this double end is morally good, and whatever disagrees with it is morally evil. However, the matter goes deeper than that. Man's final beatitude (his ultimate subjective end) depends entirely on God and His glory (man's ultimate objective end). And the ground and reason why God's glory is the ultimate end of all creatures, including man and his acts, lies in the infinite perfection of God's attributes and nature. In the final analysis, therefore, we must say that all human acts which agree with God's nature are morally good, and those which disagree with His nature are morally evil. *God's nature*, and through it and with it man's ultimate objective and subjective end, is the ultimate norm or standard of comparison for judging the morality of any human act. Whatever agrees with God's nature and perfections will also tend to realize God's glory and man's final beatitude; for all purposes, therefore, God's nature is the norm or standard of judging moral acts.

However, it should be evident that God's nature, though it is the 'ultimate norm' of morality, does not suffice as the *immediate* norm in the many moral problems which crop up in everyday life. It is too remote, too vague. It is not a practical norm for the average person, because it is *not accessible to all* without exception. Even the most learned philosopher or theologian has at best a very imperfect knowledge of God's nature and attributes. Most people living on the globe have no adequate knowledge of the true God at all. Nevertheless, all peoples and persons consider themselves obligated to observe the moral law. There must, then, be a practical norm accessible to all. This norm cannot be the nature and perfections of God nor the glory of God and the final beatitude of man. If I am in doubt whether an individual concrete act is morally good or evil, how can I settle this doubt by comparing it with the ultimate norm of morality? How am I to judge whether it is in agreement with the infinite perfection of God's nature and attributes? How am I to know whether it will promote God's glory? How can I be certain that it will contribute toward the realization of my final beatitude? The perfect knowledge of God and final beatitude lies in the next life, not in this; hence, my knowledge of the 'ultimate norm' is too imperfect to serve as a practical norm of morality for judging the acts which confront me day after day in all their concrete individuality. Besides the 'ultimate norm,' there must be an immediate, 'proximate norm' which can serve as a standard of comparison and as the connecting link between the individual human act and the ultimate norm.

The Proximate Norm of Morality

Most persons have not the necessary knowledge to use the ultimate norm of morality for practical purposes. Those who have the necessary knowledge seldom use it, because its application is often difficult. Yet everybody makes the distinction between right and wrong, good and evil, many times each day. What norm do they use? What is the *proximate norm of morality* used as a standard with which to compare individual moral acts? Without such a standard they could not pass a judgment on the moral goodness or evilness of the act. We claim that the proximate, immediate norm of morality is *the nature of the whole man*.

Such a norm has all the *qualifications* required by a practical norm. It is 'unchangeable,' because human nature is essentially the same in all persons, at all times, and in all places; it is therefore always reliable. It is 'universal,' because it applies to all men, since all men have the same human nature. It is 'accessible to all,' no matter what their condition in life, because man knows man better than anything else in the world; he has an introspective knowledge of himself and, through the medium of language, a thorough knowledge of other men. It is 'applicable to all conditions,' because each individual has his own human nature and can thus apply the knowledge of human nature as a standard to all conditions which may arise. It is a 'single standard,' because human nature is the same the world over; the standard, therefore, will be one for all types of persons and all sets of actions. The mere fact, however, that the qualifications required in a genuine practical norm

of morality are found to be present in human nature, is as yet no proof that human nature is this norm.

WE MUST NOW SHOW THAT *HUMAN NATURE IS THE PROXIMATE norm of morality.*

All finite beings owe their existence, either directly or indirectly, to God. God is infinitely good. In giving existence to finite beings He manifested His goodness. Since all finite beings are manifestations of God's goodness, they are themselves good in whatever amount of being they possess. Every finite being, therefore, is good in its nature, powers, and functions. Philosophers express this fact by saying that every being is an ontological good, that is to say, is good in its entity or being. Now, all finite beings have an ultimate end or purpose of existence, and this purpose, as we have seen, is the glory of God. They fulfill the purpose of their existence by the very fact that they have being, have a nature, powers, and natural functions. A being has but a single essence or nature, but it may have many powers and many functions. Functions are determined by the powers, and the powers are determined by the nature. Some powers are primary, others secondary; and that applies correspondingly to the functions. There thus exists a natural hierarchy of functions and powers in every being. Each being has its own intrinsic purpose, manifested by its constitution, and all beings have the ultimate purpose of glorifying their Creator. Hence, they glorify God by their very *nature* and by every *natural function*. And they do this

by the *necessity of physical law*, without any choice on their part.

Man, too, is a creature of God and as such an ontological good, i.e., his nature, powers, and functions are good in themselves in the physical order of being. In man, too, there exists a hierarchy of functions and powers: the chemical functions and powers are subordinated to those of the vegetative order; the chemical and vegetative functions and powers are subordinated to those of the sensory order; the chemical, vegetative, and sensory functions and powers are subordinated to those of the rational order. Such was the purpose of God in giving man this particular kind of nature. Now, every power has the *nisus* or tendency to perform its characteristic function when its proper object is presented to it, because it is prompted to do this by the very 'nature' of the being. Hence, all such functions are natural and according to the purpose of the Creator, provided they occur in the proper relationship of the hierarchical order inherent in the nature of the being. In this respect man's nature is no different from the nature of any other being in the universe.

It follows, then, that all functions of man's powers and tendencies, provided they occur in their proper hierarchical order, are intended by God and in so far are ontologically good and natural. These functions carry out the intrinsic purpose of man's nature as given to him by God, and by that very fact they also realize the ultimate end of all finite beings, namely, the furtherance of God's glory. Hence, man, if he acts according to the *dictates of his nature as a human being*, will not only fulfill the intrinsic purpose of his being

but also the ultimate purpose of his being, which is the glory of God in His creatures. In order, however, to act in this manner, he must observe the *hierarchical order* of functions and powers intended by God in giving him this human nature. If man deliberately disturbs this hierarchical order of functions and powers, he disturbs the order intended by the Creator and deviates from the ultimate end of his being; to do that would be contrary to God's perfections.

Many powers of man function strictly according to the inexorable necessity of physical laws, and man has no control over them; they always fulfill their purpose. Man, however, has a free will, and many powers and their functions are subject to the control of his free will. To have a free will, however, does not mean that he has the right to disturb or pervert the hierarchical order of his powers and functions as intended by God. This hierarchical order should be preserved by man by the exercise of his free will, because that is the intrinsic purpose of his nature as God intended it to be. God intended this hierarchical order of man's nature, and man's free will 'ought to' preserve it, in order to fulfill the intrinsic purpose of his nature and thereby the ultimate end of his existence. Man, through his free will, can disturb or pervert this hierarchical order, but he 'ought not' do it; otherwise he will frustrate the intrinsic purpose of his nature and thereby also the ultimate end of his existence.

It is in this connection that 'morality' enters into man's decisions of his free will. The ultimate end of man is God's glory and his own final beatitude; and this ultimate

objective and subjective end of man is based on God's infinite nature and perfection. The immediate or *proximate norm* must be that authoritative standard with which the human acts must immediately conform, in order that they may at the same time conform to the ultimate norm. Now, if man acts, as we have just seen, according to the dictates of his nature as a human being, he will fulfill both the intrinsic purpose of his own being and also his ultimate end. Hence, man's nature is the immediate or *proximate norm of morality*. All human acts, therefore, which are performed by the free will in accordance with the hierarchical order of powers and functions intended by God, will be morally good; and all human acts, which are performed by the free will in opposition to the hierarchical order intended by God, will be morally evil. The former obviously conform to human nature; the latter conflict with human nature.

The nature of the *whole man*, not merely a part of it, must be taken as the standard or norm of morality. In order that the proper hierarchical order be observed and preserved, man's vegetative functions must have precedence over his chemical functions, his sensory functions must have precedence over his vegetative and chemical functions, and his rational functions must have precedence over his sensory, vegetative, and chemical functions. This is the order man must freely choose to follow; otherwise he will deviate from both the proximate and ultimate norm of morality.

Man must do more than preserve the hierarchical order of the powers and functions of his human nature as intended by the Creator. Every power has a *natural*

tendency and function which is *proper* to it according to the nature of the being to which it belongs. Irrational beings automatically use each power according to the requirements of their nature, because they have no freedom of choice but are determined by their very nature to act in a specific manner. Man alone has intellect and free will and can thus command the functions of certain powers over which he has control. He can, therefore, use these powers in a manner which agrees or disagrees with their natural tendencies and functions as intended by the Creator. Again, though, he 'ought to' use them according to their proper tendency and function and 'ought not' use them in opposition to their proper tendency and function; in the former case his action will fulfill their immediate (intrinsic) and ultimate end and be morally good, and in the latter case his action will divert them from their immediate (intrinsic) and ultimate end and be morally evil. The nature of man as a whole will indicate the proper function and tendency of a particular natural power and the place which it is to occupy in the hierarchical order of powers and functions, for so it is intended by the Creator of man. The 'proper use' of a natural power, therefore, is morally good, while its abuse is morally evil. Here, too, the *nature of the whole man* will be the objective *proximate norm of morality*.

IN CONSIDERING HUMAN NATURE AS THE PROXIMATE NORM OF morality, it would be erroneous to view man as a being existing in isolation. Man does not live in a vacuum. He is an

autonomous person, but he lives his life in a *three fold natural relation* to other beings.

1. Man is primarily a *rational being*. As such he stands at the peak of the visible creation. According to the natural hierarchy of beings in the universe, all irrational finite beings must be subordinated to his rational nature. The visible world is man's home, and everything in it should serve as a *means* for the preservation and development of his physical and mental powers, so that he can achieve his ultimate end, the manifestation of God's glory and his own final beatitude. For him, therefore, to forget his superior position as the master of irrational beings, and treat them no longer as a means but as *ends in themselves*, is a violation of the natural order and contrary to his rational nature. It is, for instance, immoral for man to subject his rational nature to the dominance of earthly things, as he does when he succumbs to avarice, gluttony, or drunkenness; they become 'ends in themselves' and obtain thereby an importance greater than that of the rational nature of man itself, and that is a subversion of right order.

2. Man is by nature a *social being*, intended by God to live with other human beings as a member of society for mutual benefit and support. All human beings have the same nature and the same final end, and all must work together toward the realization of their common end; that is the essential purpose of human society. It follows, then, that everything which furthers the well-being of society as a whole and of the individuals as members is morally good, because it is conducive to the realization of man's intrinsic and ultimate end; whatever hinders or frustrates this well-

being, is by that very fact morally evil. Since private property, for instance, is necessary for the well-being of man as a member of human society, respect for the property of others is morally good; theft and robbery, on the other hand, are morally evil. So, too, the power and functions of sex are given to the individual for the benefit of human society, for such is the intention of the Creator; to use this power according to the intention and prescription of the Creator is morally good, but to use it otherwise is morally evil.

3. Man is by nature a *creature of God*. Because of that fact, man is not the absolute master of himself, but is subject in all things to his Creator and to the purposes of the Creator in giving him his human nature. Now, God created man, as He created all things, as a manifestation of His glory. Irrational creatures fulfill this ultimate purpose by the necessity which governs their entire nature. Man, however, is a rational creature and has been endowed with intellect and free will. By means of his intellect he must seek to understand himself and other beings in their relation to God as their ultimate end; by means of his free will he must seek to direct, intelligently and voluntarily, his entire nature with all its powers, tendencies, and functions toward God. Thereby he will not only fulfill the immediate, intrinsic purpose of his being, but also the ultimate purpose — God's glory and his own final beatitude with God. Man must, in virtue of his very nature, worship God and serve Him. He must strive to know and love God in this world, so as to be happy with Him in the next. Consequently, whatever assists man in the realization of his supreme end

is morally good; whatever hinders him in this is morally evil. Therefore, if man follows the dictates of his nature, as manifested by *right reason*, he lives as God wants him to live, and he then leads a morally good life; contrariwise, he leads an immoral life.

To sum up: the *proximate objective norm of morality* for man is his own *entire rational nature* considered in its threefold relation to the world, society, and God. This threefold relation is the basis, as we will see, of Special Ethics.

Conscience

In order that man may know the rightness or wrongness of his personal actions, they must be compared with the objective norm of morality and adjudged to be morally good or bad. The objective norm does not itself make the comparison; the comparison of the actions with the norm of morality and the subsequent judgment as to the morality of individual, specific, personal actions are made by the individual person. It is the function of conscience to make known the morality of any action.

That conscience is a *function of the intellect* should be fairly obvious. Moral goodness is the agreement of an action with man's proximate end (human nature) and ultimate end (God's nature); or, to put it in a different way, an action is morally good if it conforms to his proximate and ultimate end. Moral badness is, of course, the reverse. To know, therefore, whether an action is morally good or evil, a person must *compare* his action with the norm and then

judge whether the action is in conformity or disconformity with the norm. Now, only the intellect can know what the 'proximate and ultimate end' of man is; only the *intellect* can make the comparison' between an action and the norm and pass 'judgment on the conformity or disconformity between the one and the other. Morality affects only *human acts*, and human acts, as we have seen, proceed from the will under the direction of the intellect or reason; hence, again, it is the intellect or reason which judges whether an action is good or evil. It is, however, the function of conscience to judge whether an action is good or evil. Consequently, 'conscience' is nothing other than 'intellect' or 'reason' judging whether an action is good or evil.

There is another point to consider. When we wish to decide the morality of an act, we seek to determine whether the contemplated action falls under a general law as a particular instance of that law. We argue somewhat as follows: 'It is wrong to lie; but if I state this as a fact, although I know it is not a fact, it is a lie; therefore, if I state this as a fact, it is wrong.' Conscience always functions in this manner, either explicitly or implicitly. That is to say, we *always reason* from a general law to a particular instance which falls (or does not fall) under that law. Since, however, the application of a general law to a particular instance involves a process of reasoning, and since a process of reasoning is a function of the intellect or reason, it is evident that the intellect or reason is the mental faculty which judges the morality of an action. To judge the morality of an action is universally conceded to be the function of 'conscience.' Therefore, 'conscience' is intellect

or reason judging the morality of an action. If, then, we consider conscience to be any kind of a mental faculty at all, it must be identified with intellect or reason.

Strictly speaking, though, *conscience is not a faculty*, but an *act*, namely, an act of the intellect or reason. The intellect, in so far as it seeks to discover truth for the sake of knowledge as such, is called 'speculative reason'; the same intellect, in so far as it seeks to discover truth for the sake of directing action in a practical manner, is called 'practical reason.' Morality pertains to actions as directed to their proximate and ultimate end. Morality, therefore, belongs to the field of practical reason. And 'conscience' is simply the *judgment* of the practical reason that an action is morally good (or evil) because it tends (or does not tend) to realize its proximate and ultimate end.

Experience proves that this concept of conscience is the correct and true representation of its essence. If I have been led by greed to commit a theft, I reproach myself for having committed an immoral act, I condemn the act in my own mind, I am conscious that I deserve punishment, and I should restore my ill- gotten gain if I desire to have peace of mind. This reproach (the result of my conscience) presupposes a knowledge of the general law that 'theft is wrong and therefore forbidden.' I realize that I could and should have observed the general law, but I transgressed it voluntarily. Practical reason formulated the following (at least implicit) syllogism: 'Theft is wrong (general law); this act was theft (individual action); therefore, this act was wrong (practical conclusion).' It is the *declaratory judgment* which subsumes an individual act under the precept of the

general law and declares that the act conforms or does not conform to the general law, that constitutes conscience.' General laws are the concern of the intellect as objects of knowledge; individual acts are the concern of conscience declaring them to be permitted or forbidden. In this respect conscience acts like a judge in a criminal court. The general laws are on the statute books prior to the time when the judge ascends the bench to try a case. The judge applies the general law to the individual action committed by the defendant and gives a verdict of 'guilty' or 'not guilty.' Such is the action of conscience. That is why St. Thomas,¹ in speaking of conscience, simply states: "Conscience is nothing else than the application of knowledge to some action.

Conscience, therefore, is defined as the *immediate judgment of practical reason with respect to the character of individual acts as being permitted, commanded, or forbidden.*

The Dictates of Conscience

Conscience is the *immediate subjective* and *manifestative norm* of moral conduct. Since man's conscience is the immediate judgment of the practical reason applying the general principles of morality to individual concrete actions, it is the natural guide of man in matters of moral conduct. Man must follow the dictate of his conscience, whenever he is subjectively certain of this dictate. There is no problem when conscience is certain and agrees with the objective

norm of morality. But man's conscience may rest on an erroneous judgment. What then?

In the case of a conscience which is (subjectively) *certain* but (objectively) *erroneous*, a person must also follow the dictate of conscience. The principle is clear. Where there is error, there is a false judgment; and where there is false judgment, there is ignorance of the true state of affairs. When a person's conscience is erroneous, he mistakingly considers an objectively evil action to be morally good or indifferent and thus commanded or at least permitted, or considers an objectively good or indifferent action to be morally evil and thus forbidden. The ignorance underlying this false judgment is, under the circumstances, *invincible*. Only under the supposition that ignorance is invincible is it possible for an erroneous judgment to be 'certain.' Certitude implies the exclusion of all fear of possible error, but such a state of mind can exist only when there is no doubt as to the truth of the judgment. In the case of a conscience which is 'certain but erroneous,' the situation is this: the person's practical judgment concerning the morality of an action is contrary to the objective truth of the law, but the person's conscience is certain of the presence of the law as (erroneously) understood. What is the person supposed to do in such a case? Here, too, the person *must follow the dictate of his certain conscience, even if it is erroneous*. In other words, a person must follow the dictate of a (subjectively) certain but (invincibly) erroneous conscience in all that it commands and forbids; otherwise he will commit an immoral act; and a person may follow the judgment of conscience in all that it declares to be

permitted. The reason is clear. The will of man is blind and in moral matters is bound to follow the guidance of the practical reason when the latter declares with certitude that something is commanded or forbidden or permitted. In the absence of a special revelation from God, reason is the only normal guide for the direction of human acts; in fact, reason is the only guide under ordinary conditions of life. If, then, the conscience of a person declares with certitude that the law of God commands or forbids a certain action, even though this judgment is erroneous, then the will, in following this (erroneous) declaration of conscience, actually *decides to obey the law of God* as expressed by conscience. But the will must decide to obey the law of God as recognized by reason. Consequently, the will *must* follow the dictate of a certain, though erroneous, conscience. The morality of the will, it is obvious, depends on the object as known by reason and then proposed to the will. If the will decides on an action proposed by reason as morally evil, the will desires something considered to be morally evil and becomes itself morally evil; on the other hand, if the will decides on an action proposed by reason as morally good, the will desires something considered to be morally good and becomes itself morally good. That conscience is erroneous in its declaration is accidental, due to the invincible ignorance of the practical reason. As a result of this invincible ignorance and the subsequent error of judgment, the person following the dictate of a 'certain but erroneous' conscience commits an act that is *materially evil* but *formally good*; such a person must be considered *objectively wrong* but *subjectively right*. According to the

same principle, and for the same reason, one may follow the judgment of a 'certain but erroneous' conscience without sin in all that it declares to be permitted. When a person does the very best he can, he is not subject to censure in what he does.

WHAT SHOULD A PERSON DO WHEN HIS CONSCIENCE IS *IN DOUBT* as to the rightness or wrongness of a particular action? The practical reason cannot reach a definite decision whether the contemplated action is good or evil. The fear of possible error is present in the mind while facing the problem of making a decision. May a person act while in a state of *practical doubt* as to the morality of the contemplated action? In order to solve this problem, we must begin with an indubitable principle of correct action. This principle can be stated as follows: 'Every person is bound to avoid, as much as lies in his power, everything which is morally wrong.' This principle flows necessarily from the basic precept: 'Do the good, avoid the evil.' Now, whoever commits an act, while in the mental state of a practical, reasonable doubt as to its morality, violates the principle just given. A practical, reasonable doubt implies that reason cannot arrive at a definite judgment as to whether the contemplated act is morally good or evil: there are valid grounds for judging that the act is good, but there are also valid grounds for judging that the act is evil. The act, therefore, might be evil. But if the will decides to perform an act which conscience declares might be evil, it practically desires to do what is evil, and thereby the will

itself becomes evil; this is evident from the fact that the will, in order to be and remain morally good, must desire only the good. Consequently, a person with a conscience in a state of 'practical doubt' is not allowed to perform an act which might be evil.

What, then, must a person with a doubtful conscience do in order to be able to act correctly? Such a person must endeavor to *remove the doubt* and *obtain certitude*. 'Absolute' certitude is not required. In practical matters of conduct absolute certitude is seldom obtainable, due to the perplexity of many moral problems and the limitations of the mind in its reasoning powers. Were absolute certitude required for every action, an unbearable burden of inquiry would be placed upon the shoulders of men, because it is seldom possible for them to arrive at a conclusion which would exclude every kind of doubt. The certitude which is required and is sufficient for the practical affairs of everyday moral conduct is the *relative certitude* which satisfies prudent people, namely, certitude which excludes the *prudent* fear of error.

Doubt can be removed in one of two ways: 'directly' or 'indirectly.' It is removed *directly* by means of close examination of the principles and facts involved in the case, so that one is able to decide definitely that the contemplated action does or does not fall under a commanding or prohibiting general law. Oftentimes a thorough study of the case in question will reveal the truth. If a particular individual is incapable of making such an examination himself, due to lack of the necessary knowledge or training, he should consult expert moralists

on the matter. It happens quite frequently, however, that even experienced moralists disagree among themselves as to whether a concrete action is licit or illicit. In that event the practical doubt must be removed *indirectly* before one is allowed to act. When diligent research has proved to be of no avail in removing the doubt, and when experienced moralists cannot agree, one may correctly conclude that the very *existence of the law is positively doubtful* and therefore does not bind in conscience. He is, as a consequence, free in his action.

Synderesis

By *synderesis*, or, as some prefer to term it, synteresis, we understand the *habitual knowledge of Primary moral axioms* or practical principles of moral action which are present in the human intellect.

The intellect has two sets of such fundamental axioms or 'first principles.' In the speculative order there are the Principles of Identity, Contradiction, Excluded Middle, and Sufficient Reason. They are not innate in the sense that they are present ready-made in the speculative intellect at birth; but they are so simple and self-evident that they are readily understood (even though not expressly formulated) and remain habitually in the intellect as long as the intellect functions. In a similar manner, there are certain simple and self-evident principles of the practical order of conduct which every person understands and accepts whenever practical reason functions; they, too, are habitual in character and are never really lost. Such principles or

moral axioms are, for instance: 'Do the good, and avoid the evil'; 'live moderately'; 'honor your parents'; 'murder is a crime'; 'theft is wrong.' Even the child and the unlettered savage are aware of their basic truth. Axioms of this sort need no demonstration: they are obvious to any normal person and are accepted without proof or question. Synderesis, therefore, is the dictate of the practical reason having as its object these 'general' principles of moral conduct, just as conscience is the judgment or dictate of practical reason declaring that a 'particular' action is licit or illicit. Conscience, it will be observed, thus depends to a great extent on synderesis, because conscience applies the knowledge given through synderesis to individual actions.

Conscience, partly by instruction and partly by original reasoning, gradually will amplify its fund of moral truths; good living will make conscience sharper in its moral discrimination and more accurate in its deductions. Habitual evil living will blunt the delicacy of conscience and cause it to decay. Man, however, no matter how depraved he may be, never can obliterate completely the basic principles of morality from his mind; he will at least demand justice from others in their treatment of himself. The 'amoral man' is a myth.

Morally Indifferent Acts

A heated controversy has centered around the question whether any human acts can ever be really *morally indifferent*. All scholastic authors agree that many human acts, considered merely from the standpoint of their *object*,

are morally indifferent; such are, for instance, walking, playing a game, wearing a brown or black suit, taking food or drink. The controversy is about such acts, when considered in the concrete as individual acts from the standpoint of the *circumstances* and the *end of the agent*.

St. Bonaventure (1221—1274) and Duns Scotus (1266 [or 1274]—1308) defended the view that will-acts having an indifferent object also can remain indifferent as concrete acts. They contended that the agent can make the ‘end of the object’ his personal ‘end of the agent.’ Hence, the end of the agent need not, even in a concrete act, change the nature of an act which is directed toward an indifferent object; it would still remain essentially indifferent.

St. Thomas,² on the other hand, maintained that will-acts, in the concrete as individual acts, cannot remain indifferent, even though directed toward an indifferent object; every will-act is either morally good or morally evil. He argues as follows. Every indifferent object of a will-act must be, at least in a general way, a good and as such agree with the nature of man. Since it is a good, it can be referred to the ultimate end of man, namely, the glorification of God. Man, however, as a rational being, is created for this ultimate end and must seek to realize this ultimate end in all his acts, at least in his deliberate acts. Hence, all deliberate acts, even those directed toward an indifferent object, not only can but must be directed toward his ultimate end, either actually and explicitly or virtually and implicitly. Such an act, however, if directed toward the ultimate end, is morally good; if not, it is morally evil.

Consequently, all human acts, in the concrete as individual acts, will always be either morally good or morally evil.

Most scholastic moralists follow St. Thomas.

Some Reflections

There are a number of important points in connection with the norm of morality which should be considered before this subject is concluded.

One point is the distinction between objective and subjective morality. *Objective morality* is the conformity or disconformity of a particular human act and its object with the objective proximate and ultimate norm, irrespective of our judgment. *Subjective* or *personal morality* is the conformity or disconformity of a particular act and its object with the objective norm of morality, according to our judgment. Conduct consists of human acts. An act, to be human, must be under the control of the free will, and the will is dependent on the judgment of the intellect. This judgment regarding the objective morality of the proposed act may be correct; but it may also be erroneous. It may happen, therefore, that a person judges an act to be morally good, while in reality it is objectively evil; or, that it is morally evil, while in reality it is objectively good. Imputability follows the judgment, and so does responsibility. Hence, the individual must follow his *personal considered judgment*, even if this judgment is erroneous. In such a case, the individual would perform an act which is *materially* (objectively) evil, but *formally* (subjectively) good; or *vice versa*.

Another point. Some people use the term 'subjective morality' in the sense that all moral distinctions between good and evil are *purely subjective*, as when the statement is made that "Morality is what you make of it" or "That is morally good or evil what you think is morally good or evil." Such a view implicitly denies the existence of an objective norm of morality in virtue of which some acts are morally good in themselves and other acts morally evil in themselves. From what has been said, it should be clear that this view is false. This view could be true only on the supposition that God does not exist; if God exists, there must be an objective norm of morality and an objective distinction between moral good and evil.

A further point. Every finite thing, since it is in some degree an imitation of God's perfections, is good. But if it is good, how can it ever be morally evil to strive for it? A distinction must be made. Every being is good in its physical being; it is an 'ontological' good. Such a being is good, considered in itself and for itself, without regard to its relation to other beings; in this sense it is said to be an 'absolute' good, even though it is finite in being. Thus, carbolic acid and a pork chop are an ontological and absolute good. However, every being also can be considered in its relation to other beings. If it benefits another being, it is a 'relative' good for this being; if it harms another being, it is a 'relative' evil for it. When a person eats a pork chop, this food is a relative good for him, because it benefits the person; but when a person drinks carbolic acid, this drink is a relative evil for him, because it harms the person. Even on the level of physical being,

therefore, something that is an ontological and absolute good, considered in itself, may be either a relative good or evil, considered in its relation to the well-being of another being. In a similar manner, something is an ontological and absolute good in itself, but a *relative moral evil* or a *relative moral good* for the person striving for it, depending on whether this ontological and absolute good is evil or good for the *moral welfare* of the person; if it promotes the attainment of the ultimate end of man, it is morally good, and if it hinders this attainment, it is morally evil. To drink poison in order to commit suicide is a relative moral evil; to eat food in order to preserve one's health is a relative moral good. If a physician has forbidden the eating of pork for a certain person as harmful, then the eating of pork under the circumstances would be morally evil. An onto-logical, absolute good, therefore, may be a *morally evil* object for the will in its striving. In order that something be the proper object for the will, it must be both an ontologically and morally good object.

Another point. Oftentimes it is stated that the proximate norm of morality for man is *reason* or *right reason* (*recta ratio*). If understood correctly, the statement is true. St. Thomas³ uses the expression and explains it as follows: "It must be observed that the nature of a thing is chiefly the form from which that thing derives its species. Now man derives his species from his rational soul, and consequently whatever is contrary to the order of reason is, properly speaking, contrary to the nature of man, as man; while whatever is in accord with reason is in accord with the nature of man, as man." The will must rely entirely on the

judgment of the intellect or reason as to what is morally good or evil; consequently, if something is adjudged to be in accord with reason, it is morally good, and if contrary to reason, it is morally evil. For all practical purposes, therefore, the judgment of reason is the proximate, *subjective* norm of morality for man. In order, however, that reason be 'right' and not purely subjective in its judgment, it must base its judgment on an 'objective' norm. It is because some objects or acts agree or disagree with this objective norm that reason declares these objects or acts to be morally good or evil; and this proximate objective norm is the nature of man.

A final point. What God can or cannot do is not the result of an arbitrary decision, but depends on *His infinitely perfect nature*. God cannot be deceitful or lie or break His promise, because that would not be consonant with the infinite perfection of His wisdom. God cannot punish the good and reward the wicked, because that would not be consonant with the infinite perfection of His justice. And so with other acts of God. God's nature is the ultimate objective norm for all His acts. This is the reason why His nature is the ultimate objective norm for the morality of man's actions and the reason why certain acts of man are intrinsically good or evil. Lying, for instance, is intrinsically evil for man because it contradicts the infinite veracity of God; mercy is *intrinsically* good because it agrees with the infinite mercy of God. The basic reason why certain acts of man redound to the glory of God and promote man's final beatitude is that they ultimately agree with God's nature and infinite perfections. Here we have the *fundamental*

ground of all morality. Thus, also, it can be seen why the ultimate objective norm of morality for man was not placed in the fulfillment of his ultimate end, but in the nature of God.

Moral Positivism

Moral positivism is any system of ethics which denies the *natural* (intrinsic) distinction between the morally good and morally evil and claims that this distinction is derived solely from the *free and positive enactment of authority*.

There are *two types* of moral positivists. One places the ultimate ground for the distinction between right and wrong (good and evil) in the enactment of some form of *human institution*; the other type, in the enactment of the *free will of God*. Moral positivism, in the first meaning, is 'anthroponomic' (Gr., *άνθρωπος*, man, and *νόμος*, law); in the second meaning, 'theonomic' (Gr., *θεος*, God, and *νόμος*, law).

Anthroponomic positivism has had many defenders, though they differ widely among themselves when they attempt to specify the ultimate ground of morality. We find moral positivists already among the ancient philosophers, for example, Aristippus, Protagoras, Gorgias, Carneades, Pyrrho, and Sextus Empiricus.

Among the more modern writers, Montaigne (1533—1592) was the first to deny the objective validity of moral concepts and principles. However, to *Thomas Hobbes* (1588—1679) must go the dubious honor of being the first to develop a complete system of positivistic ethics. The good,

according to Hobbes, is a relative idea which changes with the subjective temperament of the desiring person; what may appear as a good to one may appear as an evil to another. It is only through the state and its laws that a moral standard of universal validity has become established. The distinction, therefore, between right and wrong has its origin in the civil laws of the state. Other positivists are J. J. Rousseau (1712—1778), B. Mandeville (1670—1733), Ch. F. de Saint-Lambert (1717—1803), Aug. Comte (1798—1857), W. Wundt (1832— 1920), L. Levi-Bruhi, and most evolutionists, socialists, and communists. The latter derive all morality from the economic and social conditions prevailing at any particular period of history. All who reduce the norm of morality to convention, custom, public opinion, and governmental law are moral positivists.

Theonomic positivism bases the distinction between the morally good and morally evil on the *free will of God*. Certain acts are morally good because God, through His free will, commands them; others are evil because He forbids them. Since such a command or prohibition is an act of God's free decision, He could, absolutely speaking, reverse His decision and thereby reverse the concept of what is morally good and morally evil.

Among those who defended this view are William of Occam (died 1347) and J. Gerson (died 1429). *René Descartes* (1596—1650) contended that all things, even the essences of beings, have their ultimate ground in the will of God; he therefore drew the conclusion that the ultimate reason for the distinction between right and wrong (good and evil) lies in the free decision of God's will. *Samuel von*

Pufendorf (1632—1694) considered 'law' to be the ultimate ground of morality; and since all law depends upon the will of God, the ultimate ground for the distinction between the morally good and the morally evil lies in the free decision of God's will.'

Both types of moral positivism, the anthroponomic and theonomic, deny the 'intrinsic' distinction between any and all moral acts as good or evil in themselves; they are good or evil merely because of some 'positive' law of God or man.

There is no need to formulate a distinct refutation of moral positivism. Some acts are, it is true, morally good or bad because of a positive precept of some kind. However, many acts, as was shown above, are *intrinsically* (by their very nature) good or bad in a moral sense, irrespective of the will of God or man.

We have now established a few truths which form the very basis of all morality: God's infinitely perfect nature is the ultimate objective norm to which all human acts must conform, if they are to be adjudged morally good; the nature of man, viewed in its entirety and in all its essential relations, is the proximate objective norm to which all human acts must conform in order to be morally good. Some human acts, by their very nature, agree with this ultimate and proximate norm and as such are objectively and intrinsically good in a moral sense; others, by their very nature, disagree with this ultimate and proximate norm and as such are objectively and intrinsically evil in a moral sense. *Morality*, therefore, is not subjective but *objective*.

Summary of Chapter VII

This chapter treats of the *norm of morality*.

1. *Criterion and Norm*. A moral *criterion* is a rule or test by means of which we are able to discriminate between what is morally good and morally evil. A *norm of morality* is an objective standard or rule or principle which determines the morality of 'an act in itself.'

The *qualifications* of an effective norm of morality are: it must be unchangeable; it must be universal; it must be accessible to all; it must be applicable to all conditions; it must be a single standard.

2. *Acts Objectively Good or Evil*. The reason why some human acts are objectively and intrinsically good or evil lies in the ultimate end of man and all creatures. All finite beings, including men, were intended by God for the furtherance of His glory. Now, some human acts, *by their very nature*, promote the glory of God, while others detract from it. Man, therefore, 'ought to' imitate God's perfections, so as to fulfill his ultimate end; and this implies *moral obligation*. Human acts, then, that are in conformity with God's perfections and nature, are morally good, intrinsically, objectively, and by their very nature; contrariwise, they are morally evil.

3. *The Ultimate Norm of Morality*. Man's final beatitude (his ultimate subjective end) depends entirely on God and His glory (man's ultimate objective end). And the ground and reason why God's glory is the ultimate end of all creatures, including man and his acts, lies in the infinite

perfection of God's attributes and nature. Hence, *God's nature is the ultimate norm* or standard of comparison for judging the morality of any human act.

4. *The Proximate Norm of Morality.* The proximate norm is the nature of the whole man. Such a norm has all the qualifications mentioned above.

All creatures glorify God by their very *nature* and by every *natural function*. Man, therefore, if he acts according to the dictates of his nature as a human being, fulfills his ultimate purpose. To do this, however, man must, by a free decision of his will, observe the *hierarchical order* of functions and powers intended by God in giving him this human nature. *Man's nature* is thus the immediate or proximate norm of morality. All acts performed in accordance with the hierarchical order of functions and powers intended by God will be 'morally good'; acts performed in opposition to this order will be 'morally evil.'

5. *Conscience.* Only the *intellect* can know what the 'proximate and ultimate end' of man is and what the 'norm' is which results from this end; only the intellect can 'compare' an action with the norm and pass 'judgment' on the conformity or disconformity between the one and the other. Usually a 'process of reasoning' is required to determine whether a particular act is an instance falling under a general law. Hence, conscience is an act of the intellect or reason and is defined as the *immediate judgment of practical reason with respect to the character of individual acts as being permitted, commanded, or forbidden.*

6. *The Dictates of Conscience.* The judgment of conscience is expressed in the form of commands or *dictates*.

A person is obviously bound to obey his conscience, if the latter is *certain* and *true*. A person must follow the dictates of his conscience, if the latter is *certain* but *erroneous*. When a person is 'certain' in his moral judgment, but the judgment is 'erroneous,' then his ignorance is invincible. Such an act would be 'materially evil' but 'formally good.'

A person in a state of *practical doubt* about the morality of an act is not allowed to act while in this state of doubt; he must first *remove the doubt* and seek to obtain a relative or *prudent certitude*, if 'absolute' certitude is unobtainable. The doubt may be removed either 'directly' or 'indirectly.'

7. *Synderesis.* *Synderesis* is the habitual knowledge of primary moral axioms or practical principles of moral action which are present in the human intellect. Conscience depends to a great extent on synderesis, because conscience applies the knowledge given through synderesis to individual actions.

8. *Morally indifferent Acts.* St. Thomas maintains that there can be no really morally indifferent acts, when considered in the light of concrete circumstances and of the end of the agent. All deliberate acts, even those directed toward indifferent objects, must be directed toward man's ultimate end, either actually and explicitly or virtually and implicitly. Such an act, however, if so directed, is morally good; if not, it is morally evil.

9. *Some Reflections.* *Objective* morality is the conformity or disconformity of a particular human act and its object

with the objective proximate and ultimate norm of morality, irrespective of our judgment. *Subjective*, or personal morality is the conformity or disconformity of a particular act and its object with the objective norm of morality, according to our judgment.

Morality can never be 'subjective' in the sense that it is *purely subjective*. Since God exists, there must be an objective norm of morality and an objective distinction between the morally good and the morally evil.

Every being, considered in its being, is an 'ontological' and 'absolute' good. Considered in its relation to another being, it may be *a relative good or a relative evil* for that being. Such an ontological good, if it promotes the ultimate end of man, will promote man's moral welfare' and as such is a 'morally good object' for man; if it hinders man in the attainment of his ultimate end, it is a 'morally evil object' for man.

Right reason is the proximate norm of morality, because what ever is in accord with reason is in accord with the nature of man as man.

What God can or cannot do is not the result of an arbitrary decision, but depends on His *infinitely perfect nature*.

10. *Moral Positivism*. It is the system which denies the *natural* (intrinsic) distinction between the morally good and the morally evil and claims that this distinction is derived solely from the *free and positive enactment of authority*. It is either 'anthroponomic' or 'theonomic.'

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1 *Summa theol.*, 1a 2ae, q. 19, art. 5

2 *Summa theol.* 1a 2ae, q. 1, art. 6

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Chapter 8

FALSE NORMS OF MORALITY

THE ULTIMATE OBJECTIVE NORM OF MORALITY IS THE NATURE OF God and its perfections. The proximate objective norm is man's nature considered in its entirety. The rational nature of man, in whatever grades of being it possesses, is a true though imperfect representation and imitation of God's infinitely perfect nature. Therefore, all human acts which agree with man's rational nature also agree with God's nature and as such are morally good; on the other hand, those which disagree with man's rational nature thereby also disagree with God's nature and are morally evil.

Not all moral philosophers, however, are in accord with our view of the proximate and ultimate norm of morality. The history of ethics acquaints us with a *variety of norms* which have been advanced and advocated in the course of the centuries.

General Survey

It would be an impossible undertaking to list all the individual views concerning the norm of morality. However,

a broad division of ethical systems, based on their doctrine of the ultimate norm, can be made.

There are *two main classes* of ethical systems, those that advocate an intrinsic norm of morality and those that advocate an *extrinsic norm* of morality.

The systems with an 'intrinsic' norm are characterized by the doctrine that the morality of a human act must be judged by its relation to the *human person* performing the act. These systems were divided into two main groups. The one group accepts an intrinsic 'objective' norm as the ultimate standard, namely, human nature. Chief among these are 'stoicism' and 'perfectionism.' The other group accepts an intrinsic 'subjective' norm as the ultimate standard, namely, some faculty of man, such as a moral sense or feeling. This last group often goes under the designation of 'intuitionism,' because the moral character of an act, according to this doctrine, is perceived through some form of immediate intuition by man.

The systems with an 'extrinsic' norm are characterized by the doctrine that the morality of an act must be judged by its *usefulness* in attaining a certain end, and this end lies outside the individual human nature. These systems go under the general designation of eudaemonism (Gr., *εὐδαιμονία*, wellbeing), because they consider earthly 'happiness' to be the ultimate end of man and the standard according to which we must judge what is morally good or evil. Happiness, however, may be taken from the standpoint of the individual human being or from that of the human race at large. If individual human happiness is considered to be the norm of morality, we speak of 'egoistic hedonism'

(Gr., *ἡδονή* pleasure). A system which considers the happiness of the race the norm of morality, is designated 'utilitarianism.' The combination of the doctrine of happiness of the race with the theory of evolution is 'evolutionary naturalism.'

Stoicism

Stoicism was founded by *Zeno* (356—264 B.C.) of Cittium in the year 308 B.C. in Athens. He had many followers among the Greeks and Romans. Prominent among the latter were Cicero (104—43 B.C.), Seneca (A.D. 4—65), Epictetus (A.D. 60—110), and Marcus Aurelius (A.D. 121—180).

Zeno accepted the doctrine of Socrates that the virtuous man is the one who has attained happiness through knowledge. Virtue is the only good. The supreme good of man is happiness, and happiness consists in virtue. Virtue and happiness consists in living a *life consonant with reason*.

Virtue and happiness being identical, *virtue alone* suffices for happiness and is for man an end-in-itself. Whatever is neither a virtue nor a vice is indifferent and can, according to circumstances, be striven for or avoided. Pleasure is a result of virtue, but may never be made the end of an action and be desired for its own sake. Since life according to reason is the norm of morality, the stoics considered the *emotions* and *passions* as unworthy of the wise man. In fact, emotions and passions are transgressions of the right order, diseases of the soul, irrational. The virtuous man, therefore, while not insensitive, must be

emotionless and passionless. Complete *apathy* is the characteristic mark of stoic virtue and a duty.

Evaluation. Stoicism is an austere code of morals. The idea that the norm of morality is the nature of man as a rational being is fundamentally sound. The stoic norm, however, is too *one-sided* and *limited*, basing its norm *solely on reason* to the exclusion of every other part of man's composite nature. As a result, the stoics were compelled to condemn all emotions and passions as irrational and evil. Why should emotions and passions be morally evil in themselves? They are part and parcel of man's nature as much as reason is. True, they should be governed by reason according to the hierarchical order of man's being, but they cannot be excluded from this hierarchical order as such. As was pointed out in the preceding chapter, man's entire composite nature is good in itself and the proximate norm of morality.

Kant's Formalism

Immanuel Kant (1724—1804), the eminent German philosopher, was essentially a stoic in trend and principle. He considered 'apathy' to be a perfectly correct and sublime principle of the stoical school.

After having destroyed the foundations of human knowledge in his *Critique of Pure Reason*,¹ Kant sought to re-establish our knowledge of the soul, the world, and God by means of his *Critique of Practical Reason*. By means of the 'practical reason' he believed he could save our belief in

these supreme realities, because they are 'postulates' of the moral order.

Kant begins his moral discussion with an investigation as to what constitutes *moral goodness and duty*.

Gifts of body and mind, gifts of fortune, and even happiness, are good only in a limited sense, because they can be abused. Nothing is good without limitation except a *good will*.² In order that the will be truly good, it must perform actions not only 'in accordance with' duty, but rather *because of duty*. An action performed by the will receives its moral value, not from the object which it intends, but from the maxim by which it is determined. *Duty is the obligation to act from pure reverence for law* and from no other motive. Thus, according to Kant, two things are required for the 'good will' and the 'morally good act': the objective principle, or the law, which prescribes the action; and the subjective principle, or the maxim, through which the will is driven to perform the prescribed act.³

The 'object' of volition is the matter of volition; the 'motives of volition is the form of volition. Since, in Kant's view, the norm of morality is not found in the matter but in the form of volition, the matter of volition does not determine the morality of the action. The reason is that the volition of a definite object proceeds from self-interest, and self-interest possesses no universal character which could be formulated into a universal law. Furthermore, the matter of volition can lead only to 'hypothetical imperatives,' i.e., to counsels of prudence. One then acts according to the principle: 'if you wish to realize a certain end, you must act in a certain manner' (for instance, if you wish to become a

competent physician, you must study medicine). The principle or norm of morality, however, must be a *categorical imperative*, i.e., reason must command moral action in a categorical and unqualified manner, no matter what the consequences may be; the command is definite and unconditional: 'Thou shalt, thou must.' As Kant states:

"The categorical imperative declares that an act is in itself or objectively necessary, without any reference to another end. There is therefore but one categorical imperative, which may be thus stated: *Act in conformity with that maxim, and that maxim only, which you can at the same time will to be a universal law.*" In its final formula the categorical imperative can be expressed: "*Act so that the will may regard itself as in its maxim laying down universal laws.*"⁴

The renunciation of all interest in volition and duty is characteristic of the categorical imperative. A volition of this nature is only possible, if the will is not subject to any outside law, but is 'nomothetical,' i.e., is the author of its own laws. The result of this is the *autonomy* of the will. Heteronomy, or being subject to a law imposed by another, does not lead to 'duty,' but to the necessity of action out of interest for one's self or another.

Freedom is a postulate of morality. 'You can, because you should.' And freedom is only possible, if man, as a rational being, belongs to an intelligible world; hence, such a world is also a postulate of morality. Similarly, the immortality of the soul and the existence of God are postulates of moral living.

EVALUATION. KANT'S ENDEAVOR TO FREE MORALITY FROM THE baneful effects of English empiricism was laudable; but his own teachings suffer from a number of serious *defects* and *errors*.

First. Kant builds his system of morality upon the principle of the 'good will' and claims that the will is only then 'good in itself' when it performs actions, not merely 'in accordance with' duty, but exclusively 'because of' duty, from '*pure* reverence for the moral law.' To perform an action out of personal inclination or from a motive of self-interest, Kant asserts, makes this action 'legally good,' but not 'morally good,' even though the action be in conformity to the moral law. This is an unheard-of doctrine. Do we really judge that only those actions are 'morally good' which proceed *exclusively* from a pure sense of *duty*, and that personal inclination and self-interest destroy the morality of an act? Not at all. We consider almsgiving from a motive of compassion, neighborly assistance from a motive of friendliness, conjugal affection of spouses for each other and parental affection toward children and filial affection toward parents from a motive of love, to be morally good acts, even though they are not performed from a motive of pure and strict duty. According to Kant, the motive of *charity* would have no moral value at all, and acts performed out of charity would not be morally good. Everybody acknowledges that many heroic acts in time of peace and war go far 'beyond the call of duty,' because duty does not demand such supreme sacrifices under the circumstances. Yet such acts are considered to be of the highest moral character, because 'greater love hath no man

than that he lay down his life for his friends.' What a distortion of moral values and principles to consider such acts of supreme devotion and loyalty toward one's country and fellow men only 'legally' but not 'morally' good! Kant's principle is definitely at variance with the common conviction of mankind, because mankind always judges acts performed out of love and charity to be of greater moral value than those done merely from a sense of duty.

Again. The will or practical reason, Kant claims, must be *autonomous*, i.e., not subject to any law but to a law of its own making; otherwise there would be no freedom but compulsion. Man is his own supreme end and the sole maker of laws for his moral conduct. On the other hand, Kant postulates the existence of God as the Creator of all things, including man. Yet God can make no laws for man's moral conduct, and man is not subject to such laws, because that would be 'heteronomy'; to perform an act out of obedience to God's command would not be a morally good act! Such a doctrine means a complete deification of man and a subversion of the whole moral order. The final supreme end of man, as we have shown, is the glorification of God, and the realization of this supreme end can only be achieved if man leads a life in conformity with God's attributes.

If man's will is 'autonomous' and makes its own moral laws, then morality is completely *individualistic*, dependent solely on the individual's own will. Morality should then differ from individual to individual. As a matter of fact, why should the individual will burden itself with any laws of morality at all? We are conscious that we are subject to the

moral law as something independent of our wishes and desires, and we are in no way conscious that we ourselves are the authors of the moral law which binds our will. Finally. According to Kant, the *norm* of morality consists in the categorical imperative of the autonomous practical reason (will). The *categorical imperative*, in its final formulation, is expressed as follows: 'Act on maxims which can at the same time have for their objects themselves as universal laws of nature.'⁵ Hence: "Morality then is the relation of actions to the autonomy of the will, that is, to the potential universal legislation by its maxims."⁶ Such a norm, however, is useless for practical purposes. How is the ordinary man to know whether his maxims of conduct are fit to become universal laws? The norm of morality must be accessible to the generality of persons, because all persons without exception are bound by the law of morality in their daily conduct. Most persons, however, are not capable of judging whether their maxims of conduct "can at the same time have for their objects themselves as universal laws of nature." Even the learned will find it difficult to apply Kant's expression of the categorical imperative to human conduct. In order to know whether our maxims are capable of universal legislation, we must have a *norm over and above these universal laws*. That norm, as we have shown, is the *rational nature of the whole man* as an individual, as a social being, and as a creature subject to God.

Kant's ethics exerted a great influence upon many subsequent thinkers. The neo-Kantian *Marburg School*, headed by Hermann Cohen (1842—1918) and Paul Natorp (1854—1924) and supported by Ernst Gassirer (1874—

and Rudolf Stammier (1856—1938), carried on the Kantian tradition even up to present times.

Perfectionism, Sell-Realization

Perfectionism, or *self-realization*, as an ethical system, maintains that the total perfection of man is the end of all ethical striving. This perfection pertains chiefly to a life of virtue, but it also embraces all man's natural endowments.

Christian Wolff (1679–1754) considered it to be the foremost duty of man to perfect himself by bringing his various powers and activities into a harmonized whole. Whatever furthers this harmony is morally good; whatever hinders or disturbs it is morally evil. A somewhat similar view was advocated by *A. Ferguson* (1723—1816), with the additional contention that the achievement of complete perfection is never actually realizable by man. *H. Ulrici* (1806—1884) taught that the good is 'the willing of perfection for its own sake'; the end and goal of this willing is a perfect humanity, and the cognitional principle which enables man to recognize what promotes perfection is an innate 'feeling of oughtness.'

The idealists *G. Hegel* (1770—1831) and his followers, *T. H. Green* (1836–1882) and *F. H. Bradley* (1846—1924), expounded perfectionism as the self-realization of man through the unfolding of the Absolute in the consciousness of man. In as much as man is a phase of the Absolute, the self-realization of the Absolute involves also the self-realization and perfection of man. *B. Spinoza* (1632—1677) and *J. G. Fichte* (1762—1814), in their system of idealism,

proposed a theory of transcendental evolution which, in its ethical portions, develops a form of perfectionism.

Evaluation. The perfection of the human personality as a norm of morality *is not adequate*. The norm of morality must be the same for all persons and for all times and under all circumstances, because such is the nature of morality itself. The norm of perfectionism, in its very concept, refers to the human person in so far as he is 'perfectible,' capable of development and improvement; it applies to the variable elements in man. Such a norm would differ according to the differences of the various personalities, and such a norm is too *vague* to be applicable to the conduct of all as a standard and measure of moral living. While good morals tend, no doubt, to perfect the human person, the supreme end of man is not the perfection of his personality, but a life lived for the glorification of God and for the achievement of perfection and happiness in the life to come.

Intuitionism

Intuition means a mental process of direct and immediate apprehension. Applied to ethics, it means the direct and immediate perception of human conduct as 'good' or 'evil,' so that the knowledge of the distinction between good and evil conduct is not the result of an intellectual process or reasoned judgment, but of a special perceptual faculty or sense. The human mind would then perceive this moral distinction as clearly, directly, and intuitively as it does the distinction between red and green color, between the shape

of a cube or sphere, or between the hard or soft texture of objects. Hence, intuitionism or, as it is also called, *intuitionism* is that theory of ethics which claims that man possesses a *distinct faculty or power or sense* which, through its own immediate perception, is the criterion of what is right and wrong, good and bad, in human conduct. Intuitionism, in the main, defends the intrinsic distinction between moral good and evil and stresses right motives in conduct. According to the intuitionists, man should do right because it is right, and not so much because of the consequences of the moral act.

Ralph Cudworth (1617—1688) maintained that moral principles derive their origin from the ideas which exist in the mind of God and which are immutably present in the mind of man. Samuel Clarke (1675—1729) held a similar view. *Anthony A. C. Shaftesbury* (1671—1713) was an aesthetic intuitionist. According to his theory, morality consists in the balancing of the selfish and social propensities. The faculty of moral discrimination is not a rational faculty but an 'aesthetic sense.' *Francis Hutcheson* (1694—1746) advocated a 'moral sense,' implanted in the soul by the Creator, as the faculty of moral discrimination, and the faculty is distinct from reason. *Joseph Butler* (1692—1752) followed Shaftesbury and Hutcheson in his general theory, but substituted 'conscience' as the distinct and immediate faculty of approval and disapproval in moral matters. *Richard Price* (1723—1791) followed more in the footsteps of Cudworth. *Adam Smith* (1723—1790) regarded the disinterested feeling of 'sympathy' as the norm of morality, namely, the sympathy of the impartial and well-

informed spectator. David Hume (1711—1776) defended a ‘moral faculty’ as distinct from reason.

Thomas Reid (1710—1796) based his philosophy on the principles of ‘common sense.’ In the field of ethical behavior, Reid attributed the immediate perception of moral principles to ‘conscience’ as the proper cognitional faculty; most of the content of morality, he claimed, could be discriminated and understood by the ordinary man’s conscience. Among the followers of Reid were *Dugald Stewart* (1753—1828), *Thomas Brown* (1778—1820), and *James McCosh* (1811—1894).

According to *F. H. Jacobi* (1743—1819), man possesses a reason which is merely receptive and which perceives spiritual realities, including moral principles, just as immediately as the senses perceive physical realities; and since this spiritual perception manifests itself in ‘feeling,’ we feel instinctively what is morally good or bad, and this ‘feeling’ thus becomes the norm of morality. *J. F. Herbart* (1776—1841) placed ethics under aesthetics, and moral judgments are simply the result of a ‘moral taste’ based upon various harmonious relations of the will. *James Martineau* (1805—1900), in his ‘moral impulse’ theory of ethics, contended that the ‘sense of right and wrong’ is primarily directed toward the perception of the comparative excellence of motives. In recent time, the doctrine of intuitionism has been defended by a number of *neo-intuitionists* at Oxford, among them H. A. Prichard, W. D. Ross, and E. F. Carritt.

Writers make a distinction between the formal and material goodness of acts. They understand by ‘formal’

goodness the goodness of the act as such; the goodness is considered to be 'inherent' in the act, irrespective of its consequences. They understand by 'material' goodness the goodness of the act in its results; if the consequences of the act are good, the act itself is considered good. Since intuitionism looks toward the formal goodness of acts, it is often referred to as *ethical formalism*.

Evaluation. The 'moral sense,' by whatever name it goes, is not the same as the reasoning intellect, but is a distinct and special faculty which discriminates between good and evil in conduct directly and not by means of any reasoning process or conclusion. We must *reject intuitionism* as false.

For one thing. There is *no evidence* for the existence of such a special faculty. Psychology, both through introspection and experimentation, has discovered but two distinct spiritual powers, namely, the cognitive power of the intellect and the appetitive power of the will. The discrimination between the moral goodness and badness of conduct is always expressed in the judgments: 'This act is morally good,' or 'This act is morally bad.' Since discrimination is a matter of *judgment*, and since judgment is an act of the intellect, there is no justification in assuming a special 'moral sense' or 'moral faculty' distinct from the intellect itself.

Again. Even if such an intuitive 'sense' or 'feeling' existed for moral conduct, it would be nothing more than a *discriminatory* faculty, enabling us to distinguish between what is morally good and morally bad, so that we can pass proper judgment on the morality of human acts. Now, in order that moral conduct be intelligent and reasonable, we

must not only be able to judge *that* an act is morally good or bad but also *why* the act has the character of moral goodness or badness. Hence, a special 'moral sense' might be a *criterion* for judging the morality of an act, but it is not in any sense a norm of morality which would enable us to know 'why' an act is good or bad. By comparing an act with the 'norm,' we discover the reason why the act is *objectively* good or bad *in itself*, and that is of paramount importance to the moral philosopher, because he must seek to determine the ultimate reasons, principles, and causes of the morality of human conduct. A 'criterion' of morality is altogether too subjective, unless it is based upon an objective norm. An intuitive moral faculty might serve as a subjective guide in our moral conduct, but it could tell us nothing of the 'ground' on which its judgments are based. As rational beings, however, we should also know the ground or reason of our moral judgments, otherwise our judgments are blind; but the ground or reason for our distinction between good and bad acts can only be furnished by an 'objective norm' with which moral acts are compared. As we have seen, this proximate objective norm is the complete rational nature of man. Since intuition is at best only a criterion, not a norm, we must reject it as *inadequate*.

So far we have investigated various ethical theories which attempt to give an 'intrinsic' norm of morality. One way or another, they are deficient. We must now turn our attention to another group of theories. This group looks to the consequences of actions as the constituent norm. Such a norm is 'extrinsic,' because they do not consider human

acts to be intrinsically good or bad, but good or bad in virtue of their effect in furthering or hindering the well-being of either the individual or the race. Since temporal *well-being* or happiness is the goal of action in this group of theories, many writers, for the sake of convenience, place them together under the general heading of eudaemonism.

Egoistic Hedonism

Hedonism, as an ethical theory, had its beginning among the Greeks. Aristippus, born in Cyrene about 435 B.C., the founder of the Cyrenaic School of Philosophy, is the father of hedonistic ethics.

The Gyrenaics were sensists. They accepted the teaching of the sophist Protagoras that all knowledge is relativistic; so they maintained that man's knowledge is restricted to his experiences or feelings. Assuming with Socrates that the aim of human conduct is happiness, they perverted Socrates' doctrine of happiness and gave it the meaning of *personal pleasure-feelings*. Pleasure is the supreme and only good. Everything, even virtue, is good only as a means of procuring and maintaining the maximum of pleasurable emotion, together with a minimum of painful emotion. Some of the later Cyrenaics, like Theodorus and Hegesias, advanced a less crude system of hedonism.

The Epicureans took over the general tenets of hedonism. *Epicurus* (341 or 342—270 B.C.) founded the Epicurean School. Pleasure is the only unconditioned good; everything else, including virtue, has only relative value. According to the Epicureans, however, pleasure is viewed

more in its negative aspect as 'repose of mind.' Hence, there exists a hierarchy of pleasures, and among them the pleasures of the mind and of social life are more important than mere organic pleasures of sense, if they contribute more to painlessness or repose of mind. Basically, though, all pleasure is reduced to the pleasure of sense, because Epicurus and his followers were materialists. Each person must determine for himself what is more pleasant and less painful. Moderation is the practical principle of virtuous living, and the wise man will restrain his needs and desires within the limit of his ability to satisfy them.

With the spread of Christianity egoistic hedonism died out. *Thomas Hobbes* (1588—1679) revived it. Hobbes was a thoroughgoing materialist, denying everything spiritual. He identified the good with the desirable, and, since man is only a sense-being, it follows with necessity that pleasure is man's supreme good; whatever, therefore, agrees with man's appetites or desires is morally good. Similar views were held by *J. O. de Lamettrie* (1709—1751) and *C. A. Helvetius* (1715—1771). *Pierre Gassendi* (1592—1655) defended the system of Epicureanism, including its ethical teachings.

Evaluation. Hedonism is correct, of course, in stressing the fact that pleasure and pain are important factors in driving men to action and play a prominent part in the general pattern of moral conduct. But hedonism, as an ethical theory, is a decadent system and must be *rejected*.

First. It identifies *physical* and *moral good*, although the very reason for the existence of any moral philosophy is the necessity to explain the universal conviction of mankind

that there is a radical difference between physical and moral good and between physical and moral evil.

Another point. If pleasure is the constituent of moral good, then everything which furthers the individual's sum of pleasure would be morally good and everything which hinders it would be morally evil. In that case, however, *crimes* like theft, drunkenness, adultery, and murder could, in many circumstances, be morally good. The laws of the state, however, which hinder and punish these acts would be morally evil.

Finally. The consequences for the *social life* of man would be disastrous, if egoistic hedonism were carried out to its logical conclusion. Man cannot live in isolation; he must live as a member of his family, his community, and his nation. The interests of society, however, often are at variance with the private interests of individuals. If egoistic hedonism were a correct theory of ethical living, each individual would be constrained to consider the conflicting interests of society as morally evil, and society would become a war of all against all. To sacrifice one's life in a spirit of duty and devotion for the welfare of one's country and fellow men would not only be the height of folly but a supreme act of immorality.

Utilitarianism

The absurdities inherent in egoistic hedonism brought about a broadening of the hedonistic principle so as to include both the happiness of the individual and that of the race. *Social eudaemonism* or utilitarianism was the result.

Utilitarianism (universalistic hedonism) was founded by Jeremy Bentham (1748—1832). He states his position⁷ as follows: “Nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure*. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne. They govern us in all we do, in all we say, in all we think; every effort we can make to throw off our subjection, will serve but to demonstrate and confirm it.

The *principle of utility* recognizes the subjection, and assumes it for the foundation of that system, the object of which is to rear the fabric of felicity by the hands of reason and of law.” The end of human conduct is thus seen to be ‘felicity’ or ‘happiness,’ and happiness consists in the maintenance of pleasure and the diminution of pain. ‘Utility’ is the power of human action to produce, sustain, and promote pleasure; whence the term ‘utilitarianism.’ Although Hutcheson had already used the formula ‘the greatest happiness for the greatest number,’ it was Bentham who promulgated the formula as the fundamental aim of moral endeavor and as the basic principle of utilitarianism. The ‘greatest happiness principle’ in terms of pleasure for the greatest number of men is the *norm of morality*: what contributes toward this happiness is morally good, and what detracts from it is morally evil. Beginning with Bentham, therefore, hedonism ceases to be egoistic and becomes *altruistic* and *universalistic*, uniting the

welfare and happiness of the individual with that of the community and of the race.

James Mill (1773—1836) was a faithful disciple of Bentham, but his son, *John Stuart Mill* (1806—1873), revised Bentham's doctrine by recognizing qualitative as well as quantitative differences in pleasure. John Stuart Mill leaves no doubt as to his position. "The creed," he states,⁸ "which accepts as the foundation of morals, Utility, or the Greatest Happiness Principle, holds that actions are right in proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness. By happiness is intended pleasure, and the absence of pain; by unhappiness, pain, and the privation of pleasure. . . . It is quite compatible with the principle of utility to recognize the fact, that *some* kinds of pleasure are more desirable and valuable than others. It would be absurd that while, in estimating all other things, quality is considered as well as quantity, the estimation of pleasure should be supposed to depend on quantity alone. . . . It is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied."

As a proof of the truth of ethical utilitarianism Mill advances the doctrine of *psychological hedonism*. Ethical hedonism, of itself, merely claims that pleasure 'ought to' be the only thing desired; psychological hedonism, however, claims that the only thing man 'can and does' desire is pleasure. Here are Mill's words:⁹ "The only proof capable of being given that an object is visible, is that people actually see it. The only proof that a sound is audible, is that people hear it; and so of the other sources of our experience. In

like manner, I apprehend, the sole evidence it is possible to produce that anything is desirable, is that people do actually desire it. . . . No reason can be given why the general happiness is desirable except that each person, so far as he believes it to be attainable, desires his own happiness. This, however, being a fact, we have not only all the proof which the case admits of, but all which it is possible to require, that happiness is a good; that each person's happiness is a good to that person, and the general happiness, therefore, a good to the aggregate of all persons." In these words J. S. Mill believes he has given the proof that the happiness of the individual and of the race ("the aggregate of all persons") is the supreme good of man and that pleasure-and-pain is the norm of morality.

Henry Sidgwick (1838—1900) modified the strict tenor of utilitarianism to some extent. He made some concession to intuitionism. He did not consider the pleasure-and-pain standard serviceable as a universal norm; the primary norm of conduct, however, is general happiness. In general, Sidgwick subscribes to the principles of utilitarianism.

Among the utilitarians must also be numbered *A. Comte* (1798—1857), *A. Bain* (1818—1903), *G. Fechner* (1801—1887), *H. Lotze* (1817—1881), *F. Ueberweg* (1826—1871), *F. Paulsen* (1846—1908), and *A. Schopenhauer* (1788—1860), even though the latter was a pessimist.

The main feature of utilitarianism is the transition from *egoism* to *altruism*, from 'the agent's own happiness' to 'the happiness of all concerned.' Its most striking characteristic is the identification of 'self-interest' and 'benevolence,' and of the 'morally good' and the 'useful.'

Evaluation. There can be no question about the fact that utilitarianism is a great improvement on the older system of egoistic hedonism. It at least makes a brave attempt to bring man's social nature into the general field of ethical conduct. Nevertheless, utilitarianism must be rejected as *deficient* and *inadequate*.

First. John S. Mill admits that a distinction must be made between *quantitative* and *qualitative* pleasures and that the latter are 'preferable' because they are 'higher.' On the mere basis of 'pleasure' there are no such things as 'higher' and 'lower' pleasures, and Mill has no right, from a utilitarian standpoint, of making such a distinction; pleasure is simply pleasure. By making such a distinction, Mill surreptitiously introduces a 'moral' classification that has no foundation in utilitarian principles. If there are 'higher' and 'lower' pleasures of 'higher' and 'lower' moral value (and we do not deny this), we admit some *other criterion and norm* as the standard which measures the morality of actions, independently of their pleasurable or painful effects, so as to know which pleasures are 'higher' and which 'lower' and *why* they are to be adjudged in this manner. That, however, is a relinquishment of the fundamental position of utilitarianism, and utilitarianism collapses as the true interpretation of moral conduct.

Again. Mill is guilty of two serious *logical fallacies* in his proof of utilitarianism. Something is 'visible' because people see it, and something 'audible' because people hear it. From this he concludes that something is 'desirable' because people actually desire it. There is an equivocation in the word 'desirable,' as used here by Mill. 'Visible' means

‘capable of being seen’ and ‘audible’ means ‘capable of being heard’; hence, Mill should conclude that ‘desirable’ should here mean ‘capable of being desired,’ and that conclusion would be logically correct. But that is not what Mill intends to infer. The word ‘desirable’ has a twofold meaning, namely, ‘capable of being desired’ and *ought* to be desired.’ The first meaning represents a *psychological fact*, the latter a *moral fact*, and the two meanings are obviously not identical. The argument by analogy, which Mill here uses, merely establishes the first meaning; but Mill would have us believe that it establishes the truth of the second meaning in the sense that ‘desirable’ means ‘ought to be desired.’ This is an illegitimate substitution of meanings. Mill is guilty of the fallacy of figure of speech,¹⁰ and he does not prove his point that man ‘ought to’ desire general happiness. The *second fallacy* consists in the manner in which he attempts to prove that “general happiness is desirable (because) each person, so far as he believes it to be attainable, desires his own happiness.” Here he argues from the fact that each individual desires his own happiness to the fact that each individual also desires, or should desire, the happiness of all. The fallacy is patent. The fact that each individual desires his own happiness merely proves that each individual in the entire aggregate of human beings desires his *own happiness*; it does not prove that he ‘ought to,’ or actually does, desire the ‘general happiness of the aggregate of all persons’ *as distinct from his own*, and that is precisely the point in question so far as the truth of utilitarianism is concerned. Due to this double fallacy, Mill has failed to prove that universal happiness, in

the sense of 'earthly happiness through pleasure,' is the supreme moral end of man.

Finally. As a criterion and norm of morality the 'greatest happiness principle' is valueless. Everybody without exception is bound by the law of morality. But how is the average man to know what actions are conducive to the general happiness of all concerned? The interests of the various individuals and groups and communities and nations are so different, depending so much on circumstances of time and place and social conditions, that even the wisest statesmen often are not in a position to decide what course of action is best for the promotion of the general welfare. The consequences of actions are as a rule so manifold and complex that 'general happiness' as a norm of moral action is undeterminable and inapplicable and therefore useless.

Evolutionary Naturalism

Herbert Spencer (1820—1903) and modern evolutionists in general united the principles of utilitarianism with those of organic evolution to form the ethical theory of evolutionary naturalism. In opposition to the empirical utilitarianism of Bentham and his followers, Spencer called his own system *rational utilitarianism*.

Spencer accepts the 'greatest happiness' principle as the supreme end of man and 'pleasure' as man's supreme good. Life, for him, was good or bad, in so far as it does, or does not, "bring a surplus of agreeable feelings." As he states:¹¹ "The conception of good conduct always proves,

when analyzed, to be the conception of a conduct which produces a surplus of pleasure somewhere; while, conversely, the conduct conceived as bad proves always to be that which inflicts somewhere a has any concomitant of pain, or any painful consequence. is surplus of either positive or negative pain. . . . Conduct which partially wrong; and the highest claim to be made for such conduct is, that it is the least wrong which, under the conditions, is possible — the relatively right.” At other times, Spencer defines the good as “the preservation of human society” or “quantity of life measured in breadth as well as length.”

Moral conduct is the product of *organic evolution*, In the lowest forms of animal life actions are often purposeless; in the higher forms, as evolution progressed through the ‘struggle for existence,’ they become purposive, i.e., actions are performed to realize definite ends. Gradually conduct was evolved which progressed from ‘self-maintaining’ to ‘race-maintaining’ interests through the development of instincts and other tendencies. This evolution took place through the adaptation of individuals and groups to their environment. Man inherited these social instincts and tendencies, and they form the foundation of moral conduct. From ‘egoism’ man thus progressed to ‘altruism.’ The ultimate goal of the evolutionary process of man’s moral life is *the ideal man in the ideal society*.

On the basis of this evolutionary process Spencer developed his doctrine of *absolute* and *relative ethics*. ‘Absolute ethics’ is the ethics which prevails in the ideal society; here conduct is perfectly adapted and adjusted to the environment and produces pure pleasure unalloyed by

any pain. Spencer delineates the conditions existing in this ideal state and from them deduces the ethical principles concerning what conduct is detrimental or beneficial. 'Relative ethics' consists in the application of the principles of absolute ethics to the present conditions of human society in its evolutionary stage where adaptation and adjustment are still incomplete. The four principles for the guidance of human conduct are 'justice' (it is really 'non-interference' with others), 'negative beneficence' (to perfect one's own nature without causing unhappiness in others), 'positive beneficence,' and 'enlightened self-interest.'

According to Spencer, the 'more evolved' life is the 'higher' or 'better.' The *norm* of morality then would be the greater quantity of life in length and breadth' attained for the individual and promoted in others. On the other hand, Spencer interprets 'happiness' in terms of the 'pleasurable.' His 'norm' is both evolutionary and hedonistic, and his thought seems to be definitely that the 'more evolved' life is the 'better' and 'higher' in moral value because it is proportionately productive of more pleasure.

Evaluation. No one denies the fact that moral customs and maxims undergo change and development, particularly as regards the application of moral principles to changing conditions. Evolutionary naturalism, however, as an explanation of moral consciousness and moral conduct, is an *inadequate* and *false theory*.

First. It is assumed that mankind goes through a continuous process of evolution, starting with a *pre-moral primitive stage*, in which man is but very imperfectly

adjusted to his environment, and ending in the stage of an *ideal society*, in which he is perfectly adjusted and will enjoy pure pleasure unalloyed with any pain. Man's present condition is thus a stage somewhere between these two extremes. In the primitive stage man had no morals; in the present stage, he has need of morals; in the ideal stage morals will be superfluous. This view is altogether speculative and devoid of any real evidence: the past is too obscure and the future too uncertain to permit of anything but guesswork and conjecture. In terms of the present condition of man, there is no solid reason for the conclusion that mankind will reach an ideal state of perfect happiness through pleasure without the admixture of any pain. In the ideal state men will either die or not die. If they will not die, the world will soon be overpopulated, and men will again have to struggle for existence, one against the other; such a struggle, however, involves pain and misery, just as it did in the past and as it does now. If they will die, there will be organic disintegration of the individuals; and physical degeneration without pain and misery of body and mind would indeed be an evolutionary miracle.

Again. Evolutionary ethics is guilty of an *illegitimate transition from descriptive to normative morality*. A knowledge or science is said to be 'descriptive,' when it merely acquaints us with things as they actually are; it is 'normative,' when it tells us how things really *ought to be*. The former explains what kind of a thing something is; the latter explains why it *should be* this kind of a thing. For example, logic not only gives us a description of the various types of arguments used by the human mind as they

actually 'are,' but it also shows us 'why' these arguments are valid or invalid; logic is a normative science. Ethics, too, is a normative science. It does not merely point out that a certain act 'is' morally good or bad; since man is convinced that the good act 'ought to' be done and the bad act 'ought to' be avoided, ethics must be able to account for this 'ought' over and above the mere 'is.' To attempt to explain the 'ought' by describing merely what 'is,' is an illegitimate transition from the descriptive to the normative.

Evolutionary ethics is guilty of this fallacy. The social tendencies of man, evolutionists claim, have evolved out of the social instincts of animals because of their usefulness or utility for race-maintenance. In animals these instincts or tendencies are non-moral because purely natural. In man these tendencies have a moral character: he 'ought to' promote the welfare of the race. However, on evolutionary principles, *nothing new has been added* to these instincts, so as to make them 'moral'; the utility for survival remains unchanged in both cases. By merely giving a description of the supposed genesis of man's social tendencies out of the animal's social instincts, the evolutionists believe and claim they have explained the 'ought' of morality and the origin of man's moral consciousness with its peremptory judgments that certain actions are not only 'useful' but 'morally good.' One might just as well ascribe moral goodness to the lioness defending her cubs and to the bird feeding her fledglings. From an evolutionist standpoint the instances are identical, so far as utility for survival is concerned. Why the distinction between these instances, so that the action of the animal is declared 'non-moral' and the same action of

man moral'? Evidently something else is required in the case of man. The description of the genesis of man's social tendencies is not sufficient to explain the character of human conduct and its 'moral demands.' Here evolutionists are guilty of what has been aptly called the *genetic fallacy*. The irrational simply cannot account for the rational, nor the non-moral for the moral: the effect would be greater than the cause.

Furthermore. It is a common practice among scientists in their research to concentrate their attention upon a pertinent feature of the object investigated, to the exclusion of other features which they consider irrelevant to the investigation. This is a legitimate procedure. The mere fact, however, that a scientist may 'prescind from,' or ignore and exclude, certain features, obviously does not entitle him to consider them as non-existent; to do so would make him guilty of the *fallacy of false exclusion*. A geologist, for example, may examine Michelangelo's statue of 'Moses' and consider it merely from the standpoint of the 'marble' which was used; he may ignore the artist and the representation of 'Moses' in the marble. If, however, the geologist denied the existence of the artist and the artistic representation and declared that the statue is 'nothing but' a block of 'marble,' he evidently would be in error, being guilty of a 'false exclusion.' In a similar manner, evolutionary scientists, in investigating the possible process of evolution in ethics, may ignore the existence of God and His causal influence on the elevation of man to the higher plane of morality. If, however, these scientists claim or imply that morality is 'nothing but' a naturalistic phenomenon of

evolution, they commit the fallacy of false exclusion; and that is precisely what they do, but have no right to do. That evolution should tend toward a higher development, from primitive animals to man and to an ideal state of society, is one thing; but that this purposive tendency should originate and be carried through to completion through the agency of unintelligent natural forces, is a totally different thing. Morality involves rationality, and only a *rational agency* can adequately account for the distinctive fact that man experiences the 'rational demands' of morality in his individual and social life. Only on this basis is it possible to explain why man is obligated to strive not only for his own welfare but for the welfare of others as well. Man is not the author of the moral law; he is subject to the law and feels that the law has been imposed upon him, because he is incapable of escaping its force or of changing its demands. Since the moral law is superior to the biological law, a being superior to irrational nature and to man must be admitted in order to explain the origin and presence of the moral law in man's nature. There is only one such being — God.

Finally. The supreme good aimed at by moral living, according to evolutionary ethicists, is the 'welfare of human society.' Human actions are morally good or bad in so far as they promote or do not promote this welfare. The *welfare of human society*, therefore, is the *norm* and *criterion* for determining what is morally good or bad. As in the case of universalistic utilitarianism, the morality of conduct is judged by its consequences for the welfare of society: if the consequences are such that the act promotes the welfare of society, it must be adjudged morally good'; if

the consequences are such that the act opposes the welfare of society, it must be adjudged 'morally evil.' The term 'society,' of course, can only mean 'mankind.' Evolutionists surreptitiously endow 'society' with a sort of mythical personality, as if it were an entity distinct from the individuals which compose it. In reality, however, 'society' or 'mankind' is an abstraction and means nothing more than the sum-total of individual men united in a community of interests. The 'welfare' or 'happiness' of society, therefore, can only mean the happiness of the individuals, because individuals alone are capable of experiencing pleasure and pain. To be consistent, evolutionists should restrict their norm of morality and apply it only in so far as it affects the individuals: whatever affects the individual favorably for survival in the struggle for existence should be considered morally good; whatever affects him unfavorably for survival, morally evil. Needless to say, such a norm would open the door to murder, theft, and every sort of crime.

Recent Trends

The hedonistic pleasure-principle is now quite generally abandoned, at least in so far as pleasure is considered to be the supreme good and ultimate end of man in his moral life. Pleasure is recognized as being an accompaniment of the normal, healthy function of all organic and mental powers which aim at the realization of natural ends; we seek to attain desired objects, and pleasure results from the activity involved. Hence, man strives for these ends directly and for

pleasure only indirectly. Aristotle was aware of this truth and expressed it long ago.

The number of writers on ethical subjects has been, and still is, very numerous. Uniformity of doctrine, however, is conspicuously absent. Outside of the circle of traditional Christianity, the views are kaleidoscopic. In the welter of opinions the shift is decidedly toward *teleological* ethics, not formalistic (intuitional) ethics.

Until recently the 'formalism' of textbooks on ethics was quite pronounced. They stressed the 'inherence' or intrinsic objective character of rightness and wrongness and gave extensive lists of virtues and duties. This formalism is unequivocally present in the writings of men like William Paley, Joseph Haven, William Whewell, Francis Wayland,

L. P. Hickok, Mark Hopkins, and Paul Janet. Since the beginning of the century this attitude has changed, and the 'new morality' is based primarily on the 'results of conduct,' consciously directed toward the *perfection of the individual* and the attainment of *maximum happiness for mankind*. This trend is manifested in the writings of J. H. Muirhead, J. C. Mackenzie, J. Seth, W. Fite, F. Thilly, W. James, J. Dewey, J. H. Tufts, H. W. Wright, W. G. Everett, F. C. Sharp, C. Barrett, P. E. Wheelwright, D. Drake, W. M. Urban, W. E. Hocking, R. B. Perry, D. H. Parker, A. P. Brogan, and others. Many names have been given to this 'new morality,' among them 'self-realization,' 'energism,' 'total self-development,' 'idealistic perfectionism,' 'cultural progress,' 'meliorism,' and 'value ethics.' The most recent trend is toward the betterment of society in the economic and political order.

Evaluation. Notwithstanding the chaos in present-day ethical teaching, the recession from hedonism to a more rational basis of moral living is a good sign. The characteristic of the recent trends is a mixture of personal perfectionism, utilitarian happiness of the race, and evolutionary progress toward a better world. The norm of morality, as exhibited in these teachings, suffers from the same defects as those manifested in these basic systems: it is too vague and fluctuating, or too individualistic and subjectivistic, to serve as a practical standard and criterion for deciding what is morally good and morally evil in the actions of daily life.

The reason for this confusion in ethical thinking and for the existence of so many diverse systems of morals is clear: it is the secularistic and naturalistic approach and outlook. So long as moral philosophers deny or ignore the existence and governance of God as the Creator and Lawgiver of mankind, no solid objective basis for ethics will be forthcoming, as the history of ethics proves only too abundantly. Man is not altogether autonomous, either in his physical or in his moral being. Not until moralists recognize the fact that the proximate norm of morality is man's complete rational nature and the ultimate norm is God and His infinite attributes will order be brought into the present-day disorder of ethical thinking.

Summary of Chapter VIII

History acquaints us with a number of ethical systems which have advanced false norms of morality.

1. *General Survey.* There are two main classes. First, those with an 'intrinsic' norm: stoicism, Kant's formalism, perfectionism, intuitionism. Second, those with an 'extrinsic' norm: egoistic hedonism, utilitarianism, evolutionary naturalism.

2. *Stoicism.* The supreme good is happiness, and happiness consists in virtue; virtue is the only good. Virtue and happiness consist in living a *life consonant with reason*. Emotions and passions are irrational and must be avoided.

Evaluation. The stoic norm is *one-sided and limited*, since it is based solely on reason to the exclusion of every other aspect of man's composite nature. Emotions and passions belong to man's being, and many of them are praiseworthy and morally good.

3. *Kant's Formalism.* Nothing is good without limitation but a good will. The will is truly good only when an act is performed 'because of duty.' Duty is the obligation to act from 'reverence for law.' Man must act in such a way that he can will that his maxim should become a *universal law*. The moral norm is the *categorical imperative*: "Act so that the will may regard itself as in its maxims laying down universal laws." 'Autonomy' of the will is required, because the will is 'nomothetical,' i.e., is the author of its own laws. 'Heteronomy' does not lead to duty, but to necessity of action out of interest.

Evaluation. For one thing. An act, Kant asserts, is morally good only when performed from pure reverence for the law, 'because of duty.' This is contrary to the conviction of mankind. In the estimation of Kant, acts performed out of *affection* and *charity* would have no moral value. — Again. Kant claims that the will must be 'autonomous.' This makes man his own supreme end and excludes God; it means the *deification* of man. Morality then is completely individualistic. If the will is the sole lawgiver, no reason can be given why man should burden himself with moral obligations. — Finally. The categorical imperative with its potential legislation is an *impractical norm*, because most persons are incapable of applying such a norm.

4. *Perfectionism. Self-Realization.* This system maintains that the total perfection of the human person is the end of all ethical striving.

Evaluation. As the norm of morality, perfectionism is not adequate. It refers merely to the 'perfectible' and variable elements in man, and such a norm is too vague to be applicable to the conduct of all. It excludes God from morality and pertains only to the perfection of human personality in this life.

5. *Intuitionism.* Intuitionism postulates the direct apprehension of human conduct as 'good' or 'bad.' The discrimination is made, not as the result of a reasoned judgment, but of a special *perceptual faculty or sense*. Man should do right because it is right, and not because of the consequences of the act. Some consider this special faculty to be an 'aesthetic sense'; others, a 'moral sense'; others, 'a feeling of sympathy'; others, 'conscience'; others, a

‘spiritual feeling’; others, a ‘moral taste.’ Intuitionism often is referred to as *formalism*, because it stresses the ‘formal’ or intrinsic morality of acts.

Evaluation. For one thing. There is no evidence for the existence of such a special intuitive faculty. Discrimination is always expressed in an *intellectual judgment*; hence, the intellect is the power which distinguishes between good and bad, not a ‘moral sense’ or ‘moral faculty.’ — Again. The intuitive faculty would be only a ‘discriminatory’ faculty, telling us ‘that’ an act is good or bad, but not ‘why’ it is so. It might serve as a criterion for judging an act, but *not as a norm* whereby we could discover the reason why the act is objectively good or bad in itself.

6. *Egoistic Hedonism.* The hedonists consider pleasure to be the supreme good and pain the supreme evil. Everything, even virtue, is good only as a means of procuring and maintaining the maximum of pleasurable emotion, together with a minimum of painful emotion. *Egoistic* hedonism considers the pleasure of the *individual* as the supreme good and norm of morality.

Evaluation. The identification of ‘physical’ and ‘moral’ good contradicts the universal conviction of mankind. — Again. If pleasure is the constituent of moral good, then crimes could be morally good, provided they procure pleasure. — Finally. The consequences for the *social life* of man would be disastrous: each individual would be constrained to consider the conflicting interests of society as morally evil, and society would become a war of all against all.

7. *Utilitarianism.* — According to utilitarianism or universalistic hedonism, the end of human conduct is ‘the greatest happiness for the greatest number’ in terms of pleasure. This is the *norm* of morality: what contributes toward this happiness is morally good, and what detracts from it is morally evil. Bentham admitted only a ‘quantitative’ difference between pleasures; John S. Mill admitted also a ‘qualitative’ difference. Both based their ethical hedonism on *psychological hedonism*: man not only ‘ought to’ strive for pleasure, but pleasure is the only thing man ‘does and can’ strive for.

Evaluation. First. The admission of *qualitative* differences in pleasures implies some other criterion and norm which will enable man to know which pleasures are ‘higher’ or ‘lower’ and ‘why’ they are adjudged to be so. — Again. Mill is guilty of equivocation in the use of the term ‘desirable,’ in as much as he passes surreptitiously from the meaning ‘capable of being desired’ to ‘ought to be desired.’ Similarly, because each desires ‘his own’ happiness, he falsely concludes that each desires the ‘happiness of all.’— Finally. As a norm the ‘greatest happiness’ principle is *useless*, because the average person is incapable of knowing whether his individual actions are conducive to the happiness of all.

8. *Evolutionary Naturalism.* In this system the principles of utilitarianism are united with those of *organic evolution*. Man inherited the social instincts and tendencies from animals, thus progressing from ‘egoism’ to ‘altruism.’ The ultimate goal is the ideal man in an ideal society. The ‘more evolved’ life is the ‘better’ life.

Evaluation. First. It is assumed that man evolved from a 'premoral stage' and evolves into 'ideal society.' This is all conjecture. — Again. Evolutionary ethics is guilty of an illegitimate transition from *descriptive to normative morality*. By merely describing the supposed genesis of man's social tendencies out of the social instincts of animal, evolutionists do not adduce anything 'new' to account for the 'moral demands' present in human conduct; they are thus guilty of the *genetic fallacy*. — Furthermore. Evolutionists are entitled to focus their attention upon the circumstances and factors of a possible evolution in ethics. But when they consider other circumstances and factors as non-existent, because 'excluded' from consideration, they are guilty of the *fallacy of false exclusion*. They do this, when they consider God and His governance excluded from morality. — Finally. The welfare of society is a norm of morality which is too *vague* and *fluctuating* to be of any value. Since views differ as to true and false welfare, another norm is required to determine what is true and what is false welfare.

9. *Recent Trends.* No uniform doctrine exists, but the general shift is toward *teleological* ethics, not formalistic (intuitional) ethics. The 'new morality' is based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the maximum happiness for mankind. It has different names: self-realization, energism, total self-development, idealistic perfectionism, cultural progress, humanism, meliorism, value ethics, etc.

Evaluation. The recent trends are characterized by personal perfectionism, utilitarian happiness, and

evolutionary progress. The *norm* of morality is too *vague* and *fluctuating*, too *individualistic and subjectivistic*, for daily conduct.

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1 See the author's *Reality and the Mind*. pp. 108—112

2 *A Metaphysic of Morality*, tr. from Kant's book, *Grundlegung zur Metaphysik der Sitten*, by John Watson, Section I

3 *Loc. cit*

4 *A Metaphysic of Morality*, Section II

5 *Critique of Practical Reason*, tr. by Thomas Kingsmill Abbott, 4th ed., rev. (London: Longmans, Green, 1889), 2, p. 56

6 *Ibid.*, p. 58

7 *An Introduction to the Principles of Morals and Legislation* (1780), Ch. 1

8 *Utilitarianism*, Ch. II

9 *Ibid.*, Ch. IV

10 See the author's *The Science of Correct Thinking*, Ch. 21.

11 *The Data of Ethics*, Ch. XV, 101

Chapter 9

THE MORAL LAW

THE CONTENT OF MORALITY, AMONG ALL NATIONS, IS EMBODIED IN a code of laws which governs the activities of the individual, the group, the tribe, the nation. No nation is without laws. And laws partake, to a great extent at least, of a moral character.

When the critical mind of man began to philosophize about the different types of laws, their nature and binding power, distinctions arose between laws and laws. The philosophers of Greece led the way. The Romans followed. Christianity deepened the trend of thought considerably. Controversies raged, and schools were formed. The discussions centered around divine law and human law, natural law and positive law.

The vital questions of 'duty' and 'moral obligation' depend in a great measure on the nature of law. No one can have a clear conception of the possible moral obligation to obey the law, if he is vague about the nature of the various types of laws. Hence, the necessity for the ethicist of a philosophy of the *moral law*.

General Concept of Law

The term *law* appears in a threefold connotation or meaning, depending on the field of action in which it is found.

In its widest and most general meaning a 'law' is the *rule* or *norm* according to which something is *drawn toward an action or restrained from an action*. All beings in the universe, whether living or nonliving, are governed by laws in this sense. They are styled 'laws of nature.' Thus, we speak of the laws of electricity, of light, of heat, of magnetism, of gravity, and of motion; they are the laws which govern physical and chemical bodies in their actions. We also speak of the laws *which* control the biological functions of plants and animals, such as the laws of nutrition, of growth, of reproduction, and of heredity. In every case, a 'law' is conceived as a directive of action.

In a more restricted sense, a 'law' is the rule or norm which governs the *free actions* of rational beings in any field of practical endeavor. Such laws refer to the techniques of the various crafts or arts. In order that the work pertaining to a craft or art be done expeditiously and the product itself be a perfect sample of its kind, certain rules and norms of procedure must be followed; these rules and norms of procedure are the 'laws' which govern the action of the craftsman or artist. In this sense, we speak of the laws of painting, of music, of architecture, of literature, of logic, of singing, and so on. Actions of this kind are within the free control of the person performing them and are not

determined by the necessity characteristic of the action of physical bodies.

In its *ethical* or strictest sense, the term 'law' means the rule or norm governing the free actions of man relative to *moral obligation*. The violation of a law in this sense involves moral delinquency and sin. The laws mentioned in the preceding paragraph also pertain to free actions, but they lack the peremptory, unconditional command and demand of the moral laws. An example will illustrate the difference. If I wish to make a valid process of syllogistic reasoning, I must observe the laws of logic; if I deliberately violate the laws of logic, I will draw an invalid conclusion, but such an act is not in any sense an 'immoral act.' On the other hand, if I violate the moral law of right speech knowingly and voluntarily, I tell a lie, and a lie is an 'immoral act.' There is no obligation of the will to observe the laws of logic, but man feels obligated to observe the laws of the moral order.

Ethics, of course, is vitally interested in *moral laws*, and these will now be examined more fully.

The Nature of Law

A *law* is defined as an *ordinance of reason directed toward the common good and promulgated by the one who has the care of the community*.¹ This definition, given by St. Thomas Aquinas, is adequate and agrees with the idea of 'law' as generally understood.

A law is an '*ordinance*.' By this is meant, that a law is a directive demanding a definite course of action from them

to whom it is given; they are not at liberty to accept or reject this ordinance, but are subject to a moral (not physical) constraint to carry out the injunction demanded by the ordinance and contained in it. The ordinance 'can' be disregarded and disobeyed, but it *ought to*, or *should be*, carried out. The moral obligation is expressed in the words: 'Thou shalt!' and 'Thou shalt not!' The decalogue, for instance, has the form of an ordinance when it states: 'Thou shalt honor father and mother' and 'Thou shalt not steal.' The exact wording is inconsequential here; it is the intent that must be considered. An ordinance always contains a peremptory command to perform or omit an act. In this it differs from a 'plea' or 'advice,' because these do not demand obedience and subjection of the will.

A law is an 'ordinance of *reason*.' A law, in the strict sense, is a directive of action that is free because it is rational; hence, a law can be given only to *rational* beings, with the purpose of controlling their 'human acts.' A law, therefore, belongs to the rational order and, in order to be a true law, cannot command anything contrary to reason. Everything immoral is contrary to reason and the rational order, and it follows that no law is a right and just law if it commands anything irrational and immoral. No law can bind the will to commit acts which are intrinsically evil, for instance, to commit perjury, to cheat, to dishonor God, to kill an innocent person, because such a law would be contrary to reason and therefore in itself immoral; such a law cannot command obedience, and one may not submit to such a law.

A law is an 'ordinance of reason *directed toward the common good.*' A law is not directed to promote the private welfare of individuals or relatively small groups within a community, but to the common good, the welfare of the community as a whole. In other words, a law has as its objective 'public welfare,' so that the activities of the members of the community may be harmonized and ordered for the benefit of all concerned. Parents can make regulations governing the conduct of their household, and cities can issue ordinances controlling the activities of their subjects in certain matters; but neither the family nor the city is a sovereign unit capable of making laws in the strict sense of the term, because they are subordinate units of the community at large. Only a sovereign state is a perfect society with the 'common good' as its supreme concern, and therefore only a sovereign state has the power to make laws affecting the entire community under its jurisdiction. Hence, laws must really promote the common good if they are to be considered 'laws' in the strict meaning of the word; otherwise public welfare would be made subservient to private welfare, and that would be a subversion of the right order.

A law is an 'ordinance of reason directed toward the common good and *promulgated by the one who has the care of the community.*' Laws are matters of public authority and jurisdiction, and only the bearer (or bearers) of the supreme public authority and jurisdiction has (or have) the authority to enact a law affecting the common good of all. A law is binding upon all subjects and is enacted for the common good of all; hence, the law must proceed

from the supreme legislative power, because only that person or body represents the community at large and can issue commands binding upon all for the welfare of all. Since all citizens as a body must direct their activities toward the common good of all, only the citizens themselves or their legal representatives have the necessary authority and jurisdiction to make ordinances affecting the common welfare. In order, however, that such public ordinances or laws be binding upon the will of the citizens, the laws must be promulgated by public authority. Every law is a directive to action; hence, the persons affected by the law must become acquainted with the existence of the law; otherwise they cannot direct their actions accordingly. Rational beings can be obligated only through knowledge of the law, but knowledge of the law would be impossible without proper promulgation. It is a universally recognized principle that a law which is not known because not properly promulgated, has no binding power.

On the part of the legislator, *three acts* at least are required so that an ordinance may be considered to have the *force of law*. First, the legislator must possess the *knowledge* that the ordinance which is to be a rule and norm of action for his subjects is rational and serves the common good. Were this not the case, the legislator would have neither the reason nor the right to set up the ordinance as a law. Second, the legislator must have the *will* to impose upon his subjects the 'obligation' that they submit to this particular rule and norm of action. If the legislator had no intention of binding his subjects in virtue of his sovereign authority as ruler, there would simply be no

‘law.’ Third, the legislator must *manifest* his will to his subjects, so that they know that he intends to bind them to the observance of the ordinance which is present in his intellect and decreed by his will. This manifestation of the will of the legislator constitutes the ‘promulgation’ of the law and is the most essential point so far as the subjects are concerned, because without it they could not become aware of the existence of the law. So far as the legislator himself is concerned, the law proceeds from his *reason* and his *will*. That is why St. Thomas² states: “All law issues from the reason and the will of the legislator: the divine and natural law from the reasonable will of God, but the human law from the will of man as regulated by reason.”

Kinds of Laws

A law, as just defined and explained, implies obligation, and obligation implies morality. Obligation, however, is not the same for all types of laws. Laws can be viewed from various standpoints, and accordingly we distinguish between different *types of laws*.

Viewed from the standpoint of the *obligation* imposed by the law, we distinguish between four kinds of laws: affirmative, negative, permissive, and punitive.

An *affirmative* law is a law of ‘command’ obligating a person to perform a definite positive act. Such is the law of the decalogue commanding children to honor their parents and the law of the state commanding citizens to pay taxes in support of the government. A *negative* law is a law of ‘prohibition’ obligating a person to refrain from performing

a definite act. Thus, the decalogue forbids adultery and murder, and the state forbids the taking of a false oath in a court of justice. A *permissive* law is one which allows a person to perform a certain act without hindrance from others. In the case of a permissive law, no obligation is imposed upon the persons benefiting from the law; but certain rights are granted to such persons, and the obligation is imposed upon other persons not to interfere with the exercise of these rights. The state, for example, may permit a homesteader to cut timber in a restricted area, and others have the obligation to respect the homesteader's right. A *punitive* or *penal* law is one which imposes a penalty upon violation. The law itself may stipulate the exact penalty, or it may be left to the discretion of the judge; the obligation consists in the assumption of the penalty imposed by the law or the judge. Some laws may be *merely penal* laws; laws of this kind do not obligate in conscience to the performance of the act prescribed, but only to the penalty after due conviction of a violation of the law. Under ordinary circumstances, the law which imposes a fine for fishing or hunting out of season is a purely penal law; it is also the opinion of conscientious moralists that, in general, excise laws, game laws, and many traffic laws are of a purely penal character. The following points may assist in recognizing a purely penal law, one not strictly binding in conscience: the wording of the law may indicate that the legislators do not intend imposing an obligation binding in conscience; the penalty may be so disproportionately severe in comparison to the matter of the law that it is obvious that the legislators are satisfied that the penalty

alone will compel observance; the considered judgment of competent and conscientious moralists may regard it as such.

Viewed from the standpoint of the *legislator*, we distinguish between divine and human laws. *Divine* laws emanate from God as the legislator. The laws contained in the decalogue were given by God directly. *Human* laws are enacted by legitimate human authority, for example, by the state as properly constituted and recognized. Such are the laws regulating the use and sale of property, inheritance, and similar transactions.

Viewed from the standpoint of *promulgation*, we distinguish between natural law and positive law. Natural law is a law in so far as it is manifested by the natural light of human reason reflecting on the fundamental principles of morality. *Positive* law is a law enacted by legitimate authority, such as the state, supplementing the provisions of natural law and made in view of the special needs of the community.

Viewed from the standpoint of *duration*, we distinguish between eternal law and temporal law. *Eternal* law is the plan of God's wisdom directing all created things toward the realization of their natural end. *Temporal* laws are those enacted, not from eternity, but in time by temporal authorities, for example, by the state, through legislative channels. The eternal law is the exemplar, foundation, and source of all temporal laws, because all legislative power is derived ultimately from God.

The Eternal Law

When speaking on the eternal law, St. Thomas³ makes some profound observations. He says: “Just as in every artificer there pre-exists an exemplar of the things that are set up by his art, so too in every governor there must pre-exist the exemplar of the order of those things that are to be done by those who are subject to his government. And just as the exemplar of the things yet to be made by an art is called the pattern or model of the products of that art, so, too, the exemplar in him who governs the acts of his subjects has the character of a law, provided the other conditions be present which we have mentioned above as belonging to the nature of law [Quest. 90]. Now God, by His wisdom is the Creator of all things, in relation to which He stands as the artificer to the products of his art. . . . Moreover, He governs all the acts and movements that are to be found in each single creature. . . . Therefore, just as the plan of the divine wisdom, in as much as all things are created by it, has the character of an exemplar, a model or an idea, so the plan of divine wisdom, as moving all things to their due end, has the character of law. Accordingly, the eternal law is nothing else than the plan of divine wisdom, as directing all actions and movements.” In these simple, lucid words the Angelic Doctor develops the basic concept of the eternal law.

In the words of St. Thomas, the *eternal law* is defined as “*the plan of divine wisdom directing all actions and movements.*” The present world is not the only possible world God could have created. Among all possible worlds

He freely chose this one and gave it existence. The creatures of this (and any other possible) world had their intrinsic possibility in the fact that they could, in some measure, imitate the perfections of God's essence. The present world owes its existence to God in a twofold manner: the *idea* of the world and all its contents was present from eternity in the intellect of God, and this idea is the exemplar or model of the world and the creatures in it; the *creative will* of God then gave them their being and existence, as they were foreknown in the exemplars of His divine intellect. The ultimate end of all creatures could be no other than the glorification of God, because God can have no end which would be outside, and ulterior to, Himself. The essence and activities of all creatures, therefore, were *planned* by God from eternity for this supreme end. This supreme end, however, could not be achieved except in so far as God *directed* the essence and activities of His creatures toward this end; and He directed their essence and activities by impressing upon all creatures the natural impulse to act in such a manner that they actually do co-operate with His plan of the world as a whole and thereby promote His glory. Such is the *law* of their being in virtue of their very creation. This law, viewed from the standpoint of God as the plan of His wisdom directing all the activities and movements of creatures toward their supreme end, is the 'eternal law' itself; viewed from the standpoint of the creatures, their natural propensities and impulses to act in accordance with the divine plan of God's wisdom are the creatural participation in the eternal law. The law itself is eternal, because it

existed from eternity in God's intellect and will; the creatural participation began in time, because the creatures themselves are not from eternity.

The eternal law, as just explained, extends over all creatures, whether inanimate or animate, whether irrational or rational. In a more restricted sense, the term 'eternal law' is applied only to rational creatures, because they alone are capable of receiving commands with an understanding of their meaning and import. Taken in this restricted sense, the eternal law is the *rational will of God commanding the preservation of the natural order and prohibiting its violation*.

That the eternal law is an *actuality*, should be evident to all who are convinced of the existence of an infinite personal God. The wisdom of God demands that He create the world for the ultimate end of His glory; it also demands that He give the creatures of this world a nature and activities which will enable them to achieve this ultimate end. It follows, then, that His wisdom had to have such a plan and that His will had to impress upon the nature of the creatures the natural tendency to carry out this plan. Hence, this plan of His wisdom is present from all eternity as the eternal law, because God Himself is eternal.

The Natural Law

'Natural law' can be taken in a general and in a strict sense. In a *general* sense, a natural law is a participation in the eternal law on the part of creatural beings, based on the *nature* of creatures urging them by means of natural

tendencies and impulses to realize the supreme end of their being according to the plan of divine wisdom. Inanimate beings, such as bodies in their physical and chemical activities, and animate beings, such as plants, animals, and men in their biological and sentient functions, carry out the eternal law through the very *necessity* of their nature. There is nothing 'moral' about such activities, because there is no understanding or freedom of choice in these activities of nature.

In a strict sense, we mean by 'natural law' the participation of rational man in the eternal law, not in so far as he is compelled to follow the blind, unconscious impulses of his nature, but in so far as he is capable of realizing the demands and prohibitions of the eternal law through the use of reason and will. The natural law in this sense has a 'moral' character and is more properly termed the *natural moral law*. It is defined as the *moral law, manifested by the natural light of reason, demanding the preservation of the natural order and forbidding its violation*; or, more briefly but with the same meaning, as the *binding norms of moral actions, in so far as these norms are manifested by mere reason*. For the sake of convenience and brevity, the 'natural moral law' is usually termed simply the 'natural law' in ethics, because ethics is not concerned with the natural law as it applies to irrational beings in a general sense, but only as it applies to rational man as a moral being. It is in this strict sense of a 'natural moral law' that the term 'natural law' will henceforth be used.

There are no innate ideas in man. Man is not born with a preformed knowledge of good and evil. The human infant

has no moral concepts or principles ready-made in its mind. What it possesses as a native endowment is the *ability* and *disposition* to develop spontaneously through experience the concepts of 'good' and 'evil' and certain practical judgments concerning conduct based on these concepts. When the child arrives at the age of discretion and it begins to use its reasoning powers, this native ability comes into play. In the presence of concrete actions the child now perceives, directly and spontaneously, that some actions are 'good' and other actions 'evil,' and it also forms the practical judgments that 'the good action *ought* to be done' and 'the evil action *ought* to be avoided.' Parental precepts and training may have engendered morally good habits in the child, but the child, before it reached the age of discretion, merely did what it was told; upon the awakening of its reason, however, it makes its own distinction between good and evil conduct and experiences the obligation to do the good and shun the evil. The child has now laid the foundation of its own morals by virtue of its conscious insight into the morality of actions. What the natural law, therefore, presupposes in man is nothing more than this ability and disposition eventually to make the distinction between good and evil and to form the practical judgments that the good should be done and the evil avoided.

So far as the *extent* of the natural law is concerned, it is obvious that the natural law embraces everything which man's natural reason declares to be *obligatory*, independent of any positive law. Much more is contained in the natural law than the mere moral principle that 'the good should be done and the evil should be avoided.' This

principle is self-evident, even to the child's practical reason. Many applications of this fundamental principle, though also contained in the natural law, are not self-evident but must be learned through a process of deductive reason. Changing social conditions require new applications and specifications of this fundamental principle; for instance, in the questions of property rights, of the just relation between industry and labor, and of the permissibility of bombing enemy cities in time of war. The solution to many complicated moral problems can be found through deductions from established moral principles by reason alone, without recourse to the prescriptions of positive law, on the basis of the proximate and ultimate norms of morality; and all such conclusions and solutions pertain to the natural law. Of course, the farther man proceeds from fundamental principles in his deductions and applications to complicated moral situations, the greater is the possibility of error in his judgment, because the conclusions of his reasoning are no longer self-evident; the objectively true answers, however, are implicitly present and are capable of being discovered by man's reason, because they are part and parcel of the natural law. A hundred thinkers may arrive at false conclusions, due to prejudice or the frailty of human reason; the truth, however, would still be there, ready to be discovered. It is the privilege and duty of the ethicist to make the true deductions and find more and more valid applications of the natural law to the manifold new situations which arise in an ever changing world. The natural law is not static, but dynamic. As the problems are

multiplied, the implicit contents of the natural law should become explicit.

Natural Law in History

Before study of the proofs for the existence of the natural law, it will be advisable to see how the doctrine concerning the natural law has fared in the course of the centuries. This history of the doctrine will of necessity have to be brief.

The diversity of laws among nations and the changes effected among the laws of the same nations led to the distinction between divine and human laws, in the sense that human laws are subject to modification and abrogation, while the divine laws remain ever the same. When faith in the tribal and national deities waned, the question of the binding force of law became acute and demanded a solution. Has all law a merely human origin, so that all laws are only positive human laws made for convenience and for the stabilization of order? If so, how can it have any binding power in conscience? It was in the attempt to find a solution to this burning problem that the *philosophy of law* arose, primarily among the Greeks.

Laws are necessary. And they bind in conscience. This fact was universally perceived to be certain. Beyond the changing positive laws, therefore, there exists an unchanging *natural law* which is the foundation for all positive laws and gives the legislators the authority to bind the consciences of subjects to the observance of the law. However, from the very beginning of Greek philosophy, two

divergent conceptions of the natural law were defended, and these distinctive theories exist even to this day.

Heraclitus of Ephesus (about 536—470 B.C.) held the view that nothing abides; everything is in a state of ceaseless change. Nevertheless, *Heraclitus* maintained that above and beyond all change there exists a divine *logos* or universal reason which is the eternal norm and law ordering all phenomena. This eternal law of nature is the source of all human laws and of the moral law. Hence, all persons are bound to obey the laws of the (Greek) city-state, because they are founded on the eternal law of the *logos*.

The *sophists* were mostly foreigners and therefore 'barbarians without rights in the city-state. They lacked the reverence which Greek citizens bestowed upon their laws. To the sophists these laws were artificial regulations made for the benefit of the powerful aristocrats. In opposition to these human laws they stressed the natural law as embodied in man as a human being, irrespective of class or nationality. They defended the doctrine that all men are by nature free and equal, that above the city-state there stands the much superior world community. The city-state and every organization of a political character, they contended, are but the result of convention, of a free contract, and not based on natural law. Originally, and prior to all human laws, man existed in a pure 'state of nature' in which no other law prevailed but the natural law; and man was happy in this state.

Epicurus, the sensist, agreed with the sophists' criticism of the positive laws as having no immutable value. Since

pleasure and utility are the sole principles of conduct, all laws are merely human conventions made for the purpose of preventing mutual injuries. These agreements were necessary, because prior to these laws men in the natural state lived like beasts.

With Socrates, Plato, and Aristotle, a new era began in the doctrine of the natural law. As against the sophists' revolutionistic attack on the positive laws of the Greek city-state and their defense of the natural-law freedom and equality of all individuals in the *civitas maxima* or world community, this trio of great philosophers defended a more conservative view of the relationship between the natural law and the positive laws.

Socrates (469—399 B.C.) identified knowledge with virtue. There exists a world of goodness, beauty, and justice which all who care to learn may know; this world has objective validity and is not a mere human figment. Conscience testifies to the eternal value of goodness, beauty, and justice and to the divinely instituted order present in the world. The laws are the reflection of this order and ought to be obeyed by all.

Plato (about 427—347 B.C.), like Socrates, attacked the sophists' destructive criticism of positive laws and their extreme individualism. The prototypes of all things are eternal Ideas; all things must be patterned after these eternal prototypes as their norms. Laws, too, will be true laws, if they conform to the eternal Idea of law. A law is a true law only if it benefits the community and promotes the common good; if it does not, it is a false law. The natural law

is the ideal law, and it is the norm of the positive laws of the city-state.

Aristotle (384—322 B.C.) finds the norm of moral good not in a supramundane Idea, as Plato did, but in the very nature of man. For him, what is natural to rational man is ethical. Man's essence being unchangeable, what is naturally good and right remains unchangeably so, no matter how much the positive laws may change. Justice is expressed in both the natural law and the positive law, in the former perfectly and in the latter more or less imperfectly. Natural law has its source in reason, the positive law in the legislator; the positive law, however, must always be based on the natural law, because it represents the application of the natural law to the manifold situations confronting mankind.

The *skeptics*, since they repudiated certitude in knowledge, considered all laws to be the result of arbitrary decisions and agreements. As a consequence of their teaching of skepticism, they maintained that natural law does not exist.

By contrast, the *stoics* stoutly defended the existence of an immutable natural law against the sensualism and individualism of the corrupt Roman Empire of their day. The doctrine of natural law is clearly enunciated by such eminent stoics as Seneca, Epictetus, Marcus Aurelius, and particularly Cicero. Cicero,⁴ for example, writes: "True law is right reason in agreement with nature; it is of universal application, unchanging and everlasting. . . . We cannot be freed from its obligations by senate or people, and we need not look outside ourselves for an expounder or interpreter

of it. And there will not be different laws at Rome and at Athens, or different laws now and in the future, but one eternal and unchangeable law will be valid for all nations and all times, and there will be one master and ruler, that is, God, over us all, for He is the author of this law, its promulgator, and its enforcing judge.” The stoics revived the doctrine of the dignity of the human person, stressed so much by the sophists, as a freeman and citizen of the *civitas maxima*, the world community. Through the influence of stoic teaching, Roman jurisprudence accepted ‘natural law’ as the basis of its entire legal structure, especially in its *jus gentium*, the Law of Nations. It became the universal legal practice among jurists, when the positive law contained no definite norm, to decide all litigated matters according to the dictates of the natural law. The natural law became the true norm of all legislation, the fundamental law governing all human relations.

Even among these thinkers of antiquity we thus encounter a twofold interpretation of the natural law. For the sophists natural law is based on *will, authority*; for Socrates, Plato, Aristotle, and the stoics, natural law is based on reason, truth. In opposition to the entire teaching of natural law we encounter the positivistic view of the skeptics and epicureans that natural law does not exist; all laws are merely *conventions, arbitrary pacts, positive laws*.

Christianity became the heir to the treasures of knowledge contained in the Old Law of the Hebrews. Among these treasures was the natural-law doctrine. *St. Paul*⁵ refers to the natural law as the law written by God in the hearts of men. Many of the early Fathers of the Church

used the doctrine of the natural law in order to convince the pagans of the truth of Christianity. *St. Augustine* (A.D. 354—430), in particular, explored the idea of the natural law within the framework of Christian ethics. The Church carried forth uninterruptedly the tradition of natural law. From the beginning of the Middle Ages, scholasticism took over the doctrine and developed the concept of natural law with speculative depth and brilliance. From the days of *Alexander of Hales* (died 1245) and *St. Thomas Aquinas* (1224 [or 1225]—1274), through all the centuries up to the present, the concept of the natural law has been expounded and defended by scholastic philosophy as the cornerstone of natural ethics. St. Thomas, following the lead of Aristotle, saw in natural law an ordinance primarily of reason, not of will. *William of Occam* (about 1280—1349) and his followers reversed this position, but the scholastics in general accepted the position of St. Thomas. It is the common doctrine in the neo-scholasticism of our day. The dissolution of Christian solidarity through the reformation brought in its train a widespread defection from traditional Christian principles and the subsequent rise of deism and secularism. As a result, the concept of the natural law has been attacked in many quarters.

Hugo Grotius (1583—1645) marks the turning point from the metaphysical aristotelian-thomistic view of natural law to the rationalistic view, according to which the autonomous human reason is the sole source of the natural law. Theoretically he is in accord with the scholastic interpretation that natural law is a 'dictate of right reason'; however, in seeking to vindicate the absolutism of King

James I, he maintained that morality is determined by the will of God. In doing this, he grounded natural law on will and not on reason.

From this point on, *individualism* and *rationalism* conspired to formulate a new concept of the natural law. Instead of beginning the examination of natural law with the unalterable essence of human nature as its foundation, it became customary to deduce rationalistically the natural law in detailed form from the supposed, and often merely imagined, 'pure state of nature' in which man existed prior to the establishment of any sort of communal or political life with its positive laws. In the pre-political or pure state of nature, *Hobbes* (1588—1679) contended, men lived merely as individuals, not as social beings, and life was 'a war of all against all'; out of self-interest, for the sake of mutual peace and defense, all had to reduce their wills, through voluntary agreement, to the will of either one man (a monarch) or an assembly of men. Such is the origin of society and the political state, and natural law becomes identified with positive law, so that the positive will of the legislative power is the supreme norm of justice. According to *John Locke* (1632—1704), the primitive state is one of good will and mutual help among individuals; the state is only the utilitarian product of the pooling of individual interests, the result of a voluntary contract among individuals for their mutual benefit. *Jean Jacques Rousseau* (1712—1778) conceived the original state of man as a paradise in which each individual enjoyed fullest liberty and equality. The political state came into existence through a free contract of all concerned; but the political state cannot abolish

individual rights and the right to revolution, if the citizens desire to assert their inalienable individual rights. This doctrine did much to bring about the French revolution. *Samuel von Pufendorf* (1632—1694) maintained that man in his natural state is not an essentially 'social' being, but merely a 'sociable' being, namely, one who has the impulse to live in society with others for his advantage. Once, however, the governmental authority is established by means of a voluntary contract, the government must be obeyed; all positive laws then become a part of the natural law. Natural law is reduced to God's will. For *Christian Thomasius* (1655—1728) the individual's temporal happiness is the basic principle of the natural law. Even Pufendorf's natural impulse for society is abandoned, so that the state is looked upon as the result of a social contract from motives of utility; law and morality are divorced. *Immanuel Kant* (1724—1804) made the freedom of the autonomous human will the sole source of duty and law. Individualism and rationalism here reached its highest peak; the practical reason, or the will, is supreme, and the legal order is deprived of all moral character. Kant's system is the proclamation of *independent morality*.

The rise of *empiricism* and *utilitarianism* on the one side and of *romanticism* on the other now brought on an attack on the very idea of a natural law. Both tendencies opposed the rationalism of the Age of Enlightenment and with it the doctrine of the natural law.

The skeptic empiricism of *Hume* (1711—1776) apparently did away with the very possibility of rational knowledge, because he restricted all cognition to that of the

senses. Man became nothing but a bundle of perceptions, and pleasure and pain the supreme end of conduct. He and his followers could find no place in such a system for a natural law based on the unknowable nature of man. The *utilitarians*, likewise, rejected the concept of the natural law. The *evolutionists* who, like Spencer, looked into the future state of society to find their norms of laws, and who saw man in the past as an evolutionary product of the animal world, had no use for an unalterable natural law as the expression of man's unalterable essence.

Romanticism and its offspring, the *historical school of law*, were a reaction against the arid deductions of the individualistic, rationalistic concept of the natural law. The exponents of the historical theory of law were unaware of the aristotelian-scholastic tradition, because scholasticism had fallen into disrepute and played no role in public affairs and in the secular schools of learning. The historical school turned its attention in a spirit of conservatism to the historical past of peoples. Laws, they contended, do not originate from metaphysical reflections but from the common convictions of the people. Since all law originates in the obscure depths of national consciousness, there is, as *F. J. Stahl* (1802—1861) pointed out, no law but positive law; and this law possesses an absolute binding force, even though its commands be unjust or unreasonable. Natural law, as something over and beyond the positive law, does not exist. The vital questions whether anyone may disobey laws contrary to God's commandments, and whether some higher principle is required as a rational basis for the binding force of positive law, must be referred to conscience

and ethics; in doing this, the romanticists actually conceded, unwittingly of course, the possibility of the existence of a natural law as fundamental to positive law. Their general position, however, was such that the will of the people, not reason, is the source of law.

The empiricism of science led to *positivism*, the doctrine that knowledge gained through external experience is alone true knowledge. Positivism was the logical outcome of the agnosticism of the age of science. Applied to the problem of natural and positive law, it repudiated the concept of natural law as being 'metaphysical,' and therefore unintelligible, and maintained that the philosophy of law must restrict itself to an analysis of positive law as it actually exists in the statutes. The only law is the enforceable law of the state, of the power in authority to enforce its will upon others. It would be useless to look for any norm of the inherent justice or legitimacy of any given law of the state, because that would be, from the viewpoint of agnostic positivism, a leap from the solid ground of reality into the clouds of metaphysics. The moral relativism underlying legal positivism, prevalent in all too many law schools, soon brought forth its poison fruit in the doctrine of *state omnipotence*, as could be seen clearly in nazism, fascism, and sovietism. These pernicious systems of *totalitarianism* represent the final development of the positivistic concept that the will of the state is the sole source of law and morality.

Fortunately, the concept of a natural law, grounded on reason and the natural objective order, cannot be entirely obliterated from the minds of men, nor has it been really

missing in theory and practical procedure. On the theoretical side, many modern philosophers of the theory of law criticize the positivistic doctrine; if they oppose the natural-law doctrine, they mean the natural law as explained by individualism and rationalism. Men like von Jhering, Stammler, Jellinek, Nicolai Hartmann, Hauriou, Duguit, Krabbe, von Gierke, Kelsen, Laski, von Liszt, and others, advocate principles which are a definite approach to the natural law of reason as the objective norm of all positive law. On the practical side, judges and courts often discover gaps in the promulgated law and decide issues on the basis of natural equity and inherent justice; the implied appeal is not to the letter of the positive law, even if such exists, but to the natural law behind the positive law. Another instance of the return to the natural law doctrine can be observed in the efforts to establish equitable legislation of a social nature to take care of social conditions not provided for by existing positive laws. The condemnation of 'aggressor nations,' so pronounced in World War I and World War II, the safeguarding of the right of minority groups and smaller nations to an autonomous existence, the organization of the United Nations for the solution of international problems, the attempts to formulate a code of international laws on justice and right — all are indications that positivism has failed, that the will of the state is no longer considered to be the sole source of law, and that there exists an objective order (natural law) to which both nations and individuals must conform. All the while, the doctrine of the natural law was being taught in scholastic circles. Among scholastics one need but mention

Suarez (1548—1617), Bellarmine (1542—1621), Liberatore (1810—1892), Schiffini (1841—1906), Kleutgen (1811—1883), Gutberlet, Th. Meyer, Gathrein, Lehmen, Donat, Sertillanges, Gilson, Maritain, Mercier (1851—1926), Jos. Rickaby, Cronin, Brosnahan, Miltner, and John K. Ryan.

Existence of the Natural Law

The term ‘natural law’ is taken here as defined above, namely, as ‘the moral law, manifested by the natural light of reason, demanding the preservation of the natural order and forbidding its violation.’ We are now ready to prove the following proposition:

THE NATURAL LAW EXISTS FOR AND IN MAN.

There is an *eternal law*. All beings were ideally present in God’s mind from all eternity, just as the plan of an intended house is present in the mind of the architect before the house is actually built. Among all the possible worlds God’s wisdom selected our world, and His omnipotent will gave it existence. Each creature received its own specific nature from God, and each nature was endowed with definite inclinations and propensities, so as to enable each one to realize the perfection of its being. This perfection of being is the intrinsic end and purpose inherent in each creature, because that is the end toward which each one naturally tends throughout its existence; the means to attain this end are the inclinations and propensities with which each nature is endowed. By

following these natural inclinations and propensities, the creature realizes the perfection of its being according to the plan of God's wisdom and thereby also realizes the ultimate end of the world, namely, the glorification of God. So far as their nature is concerned, creatures have no choice in this matter; they act through the necessity of their given nature, for such is the *law of their being* impressed upon them by the wisdom and will of God. Viewed from the standpoint of God, this plan of His wisdom is the eternal law governing and directing all creatures toward their proximate and ultimate end; viewed from the standpoint of the creatures, this eternal law, embodied in their nature, is the natural law.

Now, man occupies a unique position among the creatures of the world. Many inclinations and propensities of his nature are beyond the control of his reason and free will; their functions are 'acts of man' and belong under the force of the natural law in the same way as do the functions of physical bodies, plants, and brutes. 'Human acts,' however, are subject to the control of his reason and free will; man can perform them or omit them, as he freely wills. Nevertheless, such 'human acts' also have as their *natural end* the perfection of the nature of man and the glorification of God, just as much as the 'acts of man' performed through the irresistible necessity of his nature. While not necessitated to perform his 'human acts' for the perfection of his being and the glorification of God, this natural end of man's free 'human acts' still remains in full force according to the demands of the eternal law as prescribed by the wisdom and will of God regarding all created beings: God

wills that the *natural order*, established by Him for the common good of all, be preserved and realized. Since the free will of man cannot be compelled by the force of physical law to carry out the natural end of his 'human acts,' the free will, enlightened by a reasoned understanding of the dictates of the eternal law, can only be *directed by reason* to carry out the prescriptions of the eternal law concerning 'human acts' by means of a *moral obligation*. He 'can' violate this obligation, but he 'ought' not violate it. On the contrary, he 'ought' to perform all such acts in accordance with the demands of the eternal law; and this moral obligation is a natural obligation, because it flows from his very nature as a creature of God. It is a dictate of our human reason that we conform to the dictates of God's reason, because only in conformity to the eternal law will we find our temporal and eternal happiness. The dictates of God's reason constitute the eternal law; the dictates of human reason constitute the *natural law in and for man*. The natural law, therefore, is neither more nor less than the eternal law as recognized and promulgated by the natural reason of man: the natural law in and for man is simply man's participation in the eternal law of God by means of his reason and free will. Consequently, the natural law exists.

Content of the Natural Law

Since the natural law is an ordinance promulgated by man's natural reason, an important problem arises and must be

solved: What precisely is the *content of the natural law* which the light of human reason makes known to man?

There are *three classes of precepts* in the natural law, some of which are self-evident, and some of which are known with varying degrees of certainty.

The *first class* includes the most general moral precepts which regulate human conduct, without any particular specification of situations or objects. St. Thomas⁶ compares the practical reason of action with the speculative reason of truth and states: "That which first falls under apprehension [i.e., the specific object of the speculative reason] is being, the understanding of which is included in all things whatsoever a man apprehends. Therefore the first indemonstrable principle is that 'the same thing cannot be affirmed and denied at the same time,' which is based on the idea of 'being' and 'not-being': and on this principle [of contradiction] all others are based. . Now as 'being' is the first thing which falls under the apprehension absolutely, so 'good' is the first thing which falls under the apprehension of the practical reason, which is directed toward action (since every agent acts for an end, which has the nature of 'good'). Consequently, the first principle in the practical reason is one founded on the nature of 'good,' namely, that 'good is that which all beings desire.' Hence this is the first precept of law, that *good is to be done and promoted, and evil is to be avoided*. All other precepts of the natural law are based upon this; so that all the things which the practical reason naturally apprehends as man's 'good' belong to the precepts of the natural law under the form of things to be done or avoided." As soon as human reason

understands what is meant by 'good' and 'evil,' it spontaneously perceives as a self-evident precept or principle of action that 'the good ought to be done and the evil ought to be avoided.' Equally self-evident is the principle next in line. Since 'good is that which all beings desire,' it is obvious that the objects of man's natural inclinations, viewed in their hierarchical order, are naturally apprehended by reason as being 'good' for man, while the objects contrary to man's natural inclinations are naturally apprehended as being 'evil' for man. Hence the practical precept, which at bottom is identical with the first precept or principle just mentioned by St. Thomas, that *man should observe the natural order which befits his rational nature.*

To the first class of precepts of the natural law thus belong these most general precepts: 'Do the good and avoid the evil'; 'live in a manner as befits your human (rational) nature'; 'never do unto another what you would not want him to do unto you'; and similar precepts of a very general character.

The *second class* embraces the immediate applications of these most general precepts to the most *basic relations* of man in his life. Man is an individual for himself, a social being living in union with other human beings, and a creature of God; these relations flow naturally and necessarily from his human nature. Hence the precepts of the natural law as prescribed in most of the commandments of the decalogue:

'Thou shalt adore God alone'; 'thou shalt honor father and mother'; 'thou shalt not kill'; 'thou shalt not commit

adultery'; 'thou shalt not steal'; 'thou shalt not bear false witness against thy neighbor'; 'render to everyone his due'; 'be just in all your dealings'; 'observe moderation'; and so forth.

The third class contains all precepts which are applicable to *specific situations* and *individual actions* discoverable by human reason, in so far as they represent valid deductions and conclusions from the principles and precepts contained in the foregoing two classes. The closer these precepts stand to the general precepts of the first and second class, the greater is their certainty; the more remote they are, the less is their certainty and the greater is the possibility of error. For example. It is clear that one must respect another's property; however, what about the person, in danger of death by starvation, who appropriates the surplus food of another? It is clear that the bombing of military objectives is permissible in a just war; but is it permissible to practice 'obliteration bombing'? Workers have the right to strike in order to obtain a just wage; but is a 'sit-down strike' justifiable on that account? A murderer should be punished; however, is private revenge justified? Much deliberation and reasoning by expert moralists will be required to answer such questions.

Whatever can be discovered by natural reason to be obligatory for man; belongs to the natural law. It is the purpose of philosophical ethics to discover as many precepts of the natural law as the frailty of human reason will permit. Subsequent discussions will reveal a large number of them.

Natural Law and Positive Law

A *positive* law is a law enacted by legitimate authority, such as the state, supplementing the provisions of natural law and made in view of the special needs of the community. Although the content of the natural law, strictly as such, embraces all the necessary prescriptions required for good moral conduct, only the general principles or precepts are self-evident to human reason; the detailed prescriptions must be deduced from the general principles by means of a process of reasoning, and most persons are incapable of making the necessary deductions. And yet, these detailed prescriptions are the very things which regulate conduct in everyday life. To remove doubt, uncertainty, misunderstanding, the state often must supplement the general prescriptions of natural law with positive laws which will give a greater *specification and determination* to the contents of the natural law. This is true particularly of the complicated conditions and relations of *social life*; to permit social conduct to be decided by the conflicting opinions of individuals would lead to dissension and turmoil, to endless disorders and disturbances of the peace. Consideration also must be given to the question of *sanctions*, that is to say, reward for the observance of the law and punishment for its violation. Everybody is aware that without proper sanctions, very many persons would not hesitate to violate the law, because they could do so with impunity; that, however, would ruin the very fabric of society. The sanctions of the natural law, such as they are, would be insufficient of themselves to enforce the

observance of the law, and violations would abound. Hence, positive laws, implemented with proper sanctions, are a practical necessity for the preservation of the social order.

Mere advice or counsel would be inadequate to preserve the social order, because there is no obligation to follow an advice or a counsel. To insure the common good of all persons united in society, there must exist a government empowered with the *authority* to make *laws* in the strict sense of the word, *binding the wills* of its subjects to a uniform manner of living and threatening with punishment all who injure the common good.

SINCE ALL HUMAN POSITIVE LAWS ARE ENACTED THROUGH THE WILL of the legislator or of the legislative body, the problem immediately arises: What is the *source of the right or authority* of the legislator to impose an obligation on the wills of other persons? After all, legislators are only human persons, and the mere fact that they represent the government does not make their human nature superior to the human nature of their subjects. Notwithstanding this obvious fact, however, all nations recognize the right and authority of the properly constituted government to impose an obligation on other persons through the medium of positive laws. Whence this right and authority?

It should be clear that the legislators possess *no personal prerogatives* which entitle them to the right and authority of enacting such laws. Their nature is no different from that of other human beings; with respect to human nature, all men are equals. Only *God*, the Creator of the

human race, can lay down the conditions necessary for man to realize his supreme end and purpose, whether as an individual or as a social being. If, then, legislators have the right and authority to make laws which are truly binding (and no one but an anarchist or nihilist doubts their right and authority), then the binding force of positive laws must have its ultimate source in the *authority of God*. The authority of the human legislator is thus derived from the authority of the Supreme Legislator, provided God has promulgated His will that men must submit their wills to the authority of the legislator and of his laws. God did promulgate His will in this respect through the *natural law*. The natural law demands that man, as a naturally social being, live in an ordered society; in other words, it is the will of God, promulgated through the natural law, that man live in an ordered society. An ordered society, however, cannot exist without a properly constituted government and the enactment of positive laws. And since a government, through the legislator, cannot enact laws without the proper right and authority derived ultimately from the authority of God, it is evident that God, through the natural law, conferred the right and authority upon the legislator to enact positive laws. But if the legislator has this right and authority, the subjects have the natural obligation to accept and obey such laws, because a law that need not be obeyed is useless; God, however, does not command anything that is useless. Consequently, the legislator has the right and authority to enact positive laws for the common good of society, and the subjects have the obligation, in virtue of the natural law, to obey.

Legislators do not have the right and authority to enact laws arbitrarily; they, too, must be directed in their legislation by the natural law. In order that laws be genuine laws, with the power morally to obligate the wills of subjects, they must possess the following *qualities*. Human positive laws must not be contrary to the prescriptions of *divine or natural law*; otherwise they exceed the competence of the authority vested in the human legislator. These laws must be *just* and directed to the *common good*, because that is the purpose of the enactments of civil government. They must be of such a nature that it is *physically* and *morally possible* to fulfill them, for laws that cannot be obeyed are senseless and cannot impose an obligation on the wills of subjects.

Unjust and sinful laws are invalid laws, and subjects may not obey them. Human legislators have no right and authority to enact laws contrary to natural or divine law; obedience to them would mean disobedience to God, and in such a case we must obey God rather than man. Unduly restrictive laws and laws enacted in favor of a class are not for the common good; so long as they are not sinful they may be obeyed until repealed, and oftentimes there will be the obligation to obey them until repealed, because of the natural-law duty not to oppose the legitimate authority except for very grave reasons.

Eternal law, natural law, and positive law are closely related. They have their ultimate source in the reason and nature of God. Without the eternal and natural law, positive law would lack a rational foundation and would have no power to enforce obedience on the part of the human will.

Because man is a rational being, a social being, and a creature of God, he has the natural and moral obligation to submit his will to the precepts of the eternal, natural, and positive law.

Summary of Chapter IX

The concept of the norm of morality leads to the concept of the *moral law*.

1. *General Concept of Law*. In its ethical and strictest sense, a 'law' means the rule or norm governing the free actions of man which have a *moral obligation*.

2. *The Nature of Law*. A law is an ordinance of reason directed toward the common good and promulgated by the one who has the care of the community.

3. *Kinds of Laws*. From the standpoint of *obligation*, laws are affirmative, negative, permissive, or punitive. From the standpoint of the *legislator*, there are divine and human laws. From the standpoint of *promulgation*, we distinguish between natural and positive law. From the standpoint of *duration*, law is either eternal or temporal.

4. *The Eternal Law*. The *eternal law* is the plan of divine wisdom considered as directing all actions and movements of creatures to their proper end. As applied to *rational* creatures, the eternal law is the will of God commanding the preservation of the natural order and prohibiting its violation.

5. *The Natural Law*. In a *general* sense, a natural law is a participation in the eternal law on the part of creatural beings, based on the 'nature' of creatures urging them by means of natural tendencies and impulses to realize the supreme end of their being according to the plan of divine wisdom. In a strict sense, as applied to rational man, the natural law is defined as the *moral law, manifested by the*

natural reason, demanding the preservation of the natural order and forbidding its violation.

6. *Natural Law in History.* The Greeks were the first to develop the philosophy of the natural law. Among those who discussed the problem were Heraclitus, the sophists, Epicurus, Socrates, Plato, Aristotle, the skeptics, and the stoics. There existed a twofold interpretation of the natural law. For the sophists, natural law is based on will, authority; for Socrates, Plato, Aristotle, and the stoics, natural law is based on reason, truth. For the skeptics and epicureans all laws are *conventions, pacts, positive laws*; natural law as such does not exist.

Christianity and *scholasticism* generally defended the natural law and developed the doctrine.

After the reformation, *individualism* and *rationalism* conspired to formulate a new concept of the natural law, using as the starting-point the supposed 'pure state of nature' in which man existed prior to the establishment of communal or political life with its positive law. Hobbes, Locke, Rousseau, von Pufendorf, Thomasius, and Kant represent this period.

The rise of *empiricism* and *utilitarianism* on the one side and romanticism on the other opposed rationalism and with it the very idea of a natural law. The empiricism of science led to positivism; it repudiated the concept of natural law as 'metaphysical' and maintained that there is no law but the positive law as it exists in the statutes. Positivism led to the state omnipotence of *totalitarianism*.

Theoretically and practically, however, the doctrine of the natural law remained alive, especially in *scholastic*

circles.

7. *Existence of the Natural Law.* Human acts, though free, have as their 'natural end' the perfection of the nature of man and the glorification of God, and God wills that the *natural order*, established by Him for the common good of all, be preserved and realized. Since 'human acts' are free, the free will, enlightened by reason, can only be *directed by reason* to carry out the dictates of the eternal law concerning 'human acts' by means of a moral obligation. This obligation is a natural obligation, because it flows from man's nature as a creature of God. Man, therefore, has the natural obligation to observe the dictates of the eternal law, and' that is the *natural law*: the natural law for and in man is man's participation in the eternal law by means of his reason and free will.

8. *Contents of the Natural Law.* Three classes of precepts are contained in the natural law. The *first class* includes the most general precepts, without any particular specification of situations or objects. The *second class* embraces the immediate application of these most general precepts to the most basic relations of man in his life. The *third class* contains all precepts which are applicable to specific situations and individual actions discoverable by human reason, in so far as they represent valid deductions and conclusions from the principles contained in the foregoing two classes.

9. *Natural Law and Positive Law.* A positive law is a law enacted by the legitimate authority, such as the state, supplementing the provisions of the natural law and made in view of the special needs of the community.

The source of the right or authority of the legislator to impose an obligation on the wills of subjects cannot be derived from the person of the legislator, because all men are equals; it can only be derived from the *Creator* of man, provided God has promulgated His will – that men must submit their wills to the authority of the legislator and of his laws. God promulgated His will through the *natural law*, because He created man as a social being who must live in an ordered society, and an ordered society cannot exist without a properly constituted government and the enactment of positive laws. Hence, the legislator has the right and authority to enact positive laws, and the subjects have the natural obligation to accept and obey such laws.

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1 St. Thomas, *Summa theol.*, 1a 2ae, q. 90, art. 4: *Ordinatio rationis ad honum commune ab eo, qui communitatis curam habet, promulgata*

2 *Ibid* 1a 2ae, q. 97, art. 3

3 *Ibid.*, 1a 2ae, q. 93, art. x.

4 *The Republic*, III, 22, trans. by C. W. Keyes

5 Rom. 2:14-16

6 *Summa theol.*, 1a 2ae, q. 94, art. a

Chapter 10

OBLIGATION AND SANCTION

LAW AND CONSCIENCE ARE 'DIRECTIVES' OF MORAL CONDUCT; they show how human conduct must be regulated in order to lead man to his ultimate end. Where no law binds, freedom of action is permitted. Where a law binds, however, action is either commanded as good or forbidden as evil. It is a peculiarity of conscience, therefore, that its declaratory judgments often appear as 'dictates' or 'mandates.' In such instances the judgments of conscience are peremptory, so that they impose an 'obligation' on man. And 'obligation' suggests 'sanction.' *Obligation* and *sanction* are important ethical factors worthy of special consideration.

The Concept of Obligation

Obligation is an essential element of law. The 'formal effect' of a law is the imposition of an obligation upon the human will to obey the law and carry out its injunction. Unlike a 'counsel' or a 'wish' or a 'plea,' which merely indicate some proper and appropriate action for the will, the *law* places a *necessity* upon the will to follow a course of action prescribed by the law. 'Obligation' always involves a relation

between a will (person) and some definite action, so that a person is constrained to do something or omit something. This necessity placed upon the will constitutes 'obligation.'

From the standpoint of *language*, obligation is expressed by words like 'shall' or 'ought.' For example: 'Thou *shalt* honor thy parents, thou *shalt not* kill a person without just cause'; 'you *ought* to pay your honest debts, you *ought not* tell a lie.'

Language, of course, is an imperfect medium of communication, and the same words oftentimes are used in diverse meanings. 'Shall' and 'ought' are such words, and they do not always imply a 'moral' obligation of any kind. For example:

'You ought to see this wonderful motion picture'; 'You shall all die.' Obviously, the meaning is not that the persons addressed have the moral obligation to see the picture or to die; the difference *between* the former and the latter sentences is quite apparent. The context will show whether the statement implies the obligation of a law or not.

The necessity of action which the obligation of the law imposes on the will is not that of 'compulsion' or 'coercion.' This necessity, in other words, must not be such as to make it impossible for the will to act contrary to the law, if the will so desires. It is characteristic of moral obligation that it places an 'ought' on the will, but not a 'must.' Moral obligation leaves the will free in its decisions, but furnishes a motive in virtue of which the will feels constrained to follow the prescription of the law with perfect freedom: it can act against the prescription of the law, but it *ought* to

act in accordance with it. The will is thus 'bound' by the law, but not 'forced' to obey the law.

Another term used to designate moral obligation is *duty*. The term 'duty,' however, may be taken in a twofold sense. In one sense it means the inner necessity imposed on the will by the law, which meaning is identical with 'moral obligation.' In the other sense duty means the actions themselves to which the will is obligated by the law; thus we speak of the various kinds of 'duties,' such as the duties toward God or our neighbor. 'Duties' in this latter meaning will be treated later. Here we are interested in the first meaning of 'duty,' as a moral obligation arising out of the prescription of the law binding the free will to a definite action.

In order to have a solid foundation for this discussion, *moral obligation* is defined here, in a provisory fashion, as *the necessity, based on intelligent motivation, of obeying the prescription of a law*. Only after the origin of obligation has been determined will it be possible to define its nature in a more accurate manner.

Theistic Origin of Obligation

Very few persons have seriously doubted the *existence* of moral obligation as an observable fact. The fact is established by each individual's personal *experience*. Each one of us is aware of the fact that he feels bound to perform certain acts and omit others, while many acts are of such a nature that they are neither commanded nor prohibited. That this experience is universal among men is clear from

the *history* of all peoples, whether civilized or uncivilized. The undeniable fact that we cannot rid ourselves of this conviction of moral obligation, but feel bound to the observance of the moral order *against our natural inclinations*, is a cardinal fact of ethical experience which demands an adequate explanation. Any theory which cannot give a rational account of the origin and existence of moral obligation is thereby branded as an inadequate system of moral philosophy. The age-old system of theism derives the origin of moral obligation from God; modern non-theistic systems derive it from some other source.

A comparison of the theistic and non-theistic systems will show that *theism alone* can furnish us with an adequate explanation of the origin and existence of moral obligation. We accept the existence of God, the Supreme Being, as a postulate. An atheist, of course, will be forced to deny the cogency of the argument, but he will also be forced to find a substitute for it.

MORAL OBLIGATION DERIVES ITS ORIGIN FROM GOD.

Moral obligation denotes a certain necessity imposed on man's will. This necessity can conceivably be one of two kinds: 'physical' necessity, which has its source in external compulsion, or 'moral' necessity, which has its source in the binding power of a precept.

That the obligation to moral action is not the result of *physical necessity* or external compulsion, is clear. Man is not driven to perform moral acts through blind impulses and instincts like the brute animals. He is a rational being,

endowed with intellect and will. His will is free and cannot be forced to act through external compulsion. Hence, the necessity imposed upon the will to perform certain moral acts is not a physical necessity resulting from external compulsion. Consequently, moral obligation does not have its source in external compulsion. This conclusion is confirmed by the universal conviction of men that they cannot be held responsible for acts which they were forced to perform by coercion; responsibility is present only when an act is performed through the free decision of the will.

Since compulsion is excluded as the source of obligation, it follows that the necessity involved in obligation is of the second kind, namely, a *moral necessity* which has its source in the *binding power of a precept*. The intellect proposes a good to the will, together with the implicit or explicit declaration that the will must decide in favor of a certain action *if* it would attain to this good. The intellect perceives that the will *should* (ought to) strive for this good, although it lies within the free choice of the will to reject it. Now, every good is the 'end' of an action in conformity with the rational nature of man. Hence, the necessity in question consists in this, that man becomes aware through his intellectual knowledge that the observance of the order befitting his rational nature is necessary *if* he is to attain a certain good, or end, demanded by his nature. This good, or end, being a *practical demand* of his rational nature, the attainment of this good, or end, is not a matter of convenience or discretion, but presents itself through the intellect to the will as a precept, or law, which ought to be complied with. The *precept, or law*, therefore, exerts its

influence on the will, not as compulsion or physical necessity, but by binding it to the voluntary observance of the moral order. And it is this binding power of the precept or law which is the essence of the moral necessity called *obligation*.

The question then arises: What is the *nature of the good or end* for which the will must strive through the observance of the moral order? It is not a good which depends on our whim or a good of our own choosing. Such a good would exert its binding influence only so long as we decided to make it the object of our decision and desire. Moral obligation, however, as we all know from personal experience, often runs counter to our inclinations and impulses. Moral obligation is independent of our will, because we are subject to the binding power of the precept or law under all conditions and circumstances, whether we will it or not: we simply cannot shake off the domination of the precept or law, no matter how much we try. Moral obligation is *all-embracing* in its power, and no single earthly good or type of goods is so extensive. The good which is the end of moral action cannot be a merely earthly and temporal good. The reason is simple. Under the pressure of moral obligation, man must, at least in exceptional circumstances, be willing to sacrifice every earthly and temporal good, even *life itself*. Such instances occur when a police officer dies in the defense of the life and property of the citizens, when a virtuous girl gives up her life in the attempt to preserve her chastity against the assault of a rapist, when the martyr permits himself to be tortured and killed rather than deny his religious

convictions, and when the soldier attacks the enemy of his country out of devotion to duty with the certain knowledge that his life must be forfeited. In such and similar cases the highest earthly and temporal good, namely, life, is sacrificed to duty. There must, then, be a good as the object of duty or obligation which lies *beyond life and time*, a good greater than life and all other goods to be found on earth and in time. This good can only be God, the supreme objective good, or eternal *happiness*, man's supreme subjective good. Moral obligation, therefore, which imposes on the will the necessity of observing the moral order, is inextricably linked to man's ultimate *end and good*. Nothing less can explain the universality and inexorable stringency of moral obligation or duty.

Does obligation consist formally in the necessary connection with man's *subjective* ultimate end and good (complete and eternal personal happiness) or *objective* ultimate end and good (God, the supreme good)? Either one could apparently serve as the foundation for an all-embracing obligation to observe the moral law.

Some authors, among them Tongiorgi and Taparelli, seem to favor the *first* view. This opinion, however, confuses *obligation and sanction*. Man will obtain his eternal happiness if he observes the moral order, and lose it if he neglects to live according to the dictates of the moral law. But the gain or loss of eternal happiness as a result of the observance or nonobservance of the moral law is tantamount to reward or punishment, and that is of the nature of 'sanction.' Why the sanction? Because man either fulfills or does not fulfill his 'obligation' to observe the moral

law. Sanction, therefore, presupposes obligation as prior to sanction. Hence, man's subjective ultimate end and good is not the foundation of obligation.

The *second* view, that obligation consists formally in the necessary connection with man's *objective* ultimate end and good, solves the problem of the foundation of obligation adequately. The binding force of any law comes from the *will of the lawgiver*. Only if the lawgiver intends to impose an obligation on the will of his subjects, does obligation exist. Since all men possess a nature which is essentially the same and equal, it is clear that no human authority is competent *of itself* to impose an obligation upon all individuals and all generations of men. The binding power of human positive laws proceeds from the natural law, and the natural law has its binding power from God, the eternal *Lawgiver*. God created all things, man included, for Himself and His glory. Having done so, He could not be indifferent to the promotion of His glory or to the welfare of man. Hence, the eternal law and the natural law were decreed by His will. The observance of the moral law thus became a moral necessity for man, because God, the eternal Lawgiver, willed that man should achieve his supreme end through the observance of the moral law. Man, in observing the moral law, promotes God's glory (man's objective ultimate end) and thereby obtains his own eternal happiness in union with God (man's subjective ultimate end) at the same time.

Only *God's will* has the requisite *authority* to decree laws whose binding power imposes an obligation on the wills of *all men* at all times and under all circumstances, even

demanding the sacrifice of life, so that every individual is conscious of the inviolable necessity, notwithstanding the freedom of his will, to obey the natural moral law.

The eternal law, decreed by God in creating the world, controls all creatures. The natural law is the eternal law applied to rational and free man. The irrational world is regulated by the 'physical' necessity of mechanical and biological laws; rational man, because he has a free will, is regulated in his human acts by the 'moral' necessity of duty or obligation. God's will decreed the moral law for man and with it the obligation to obey the moral law. Since the natural law would be ineffective without obligation, God in decreeing the natural law also gave it binding power or obligation. Hence, obligation is the formal effect of law. Without God there could be no universal law, and without universal law there could be no *universal obligation*.

Duty or moral obligation thus derives its *origin from God*.

Rationalists and Obligation

Immanuel Kant divorced morality from religion and God. He was the great protagonist of modern independent or *autonomous morality*.

Kant admits the existence of a natural law and of the unconditional obligation of obeying the natural law. His entire moral philosophy is based on the unconditional character of moral obligation. He denies, however, that God is the source of the law and its obligation.

According to Kant, man's practical reason or will (for Kant both are identical) is *nomothetical* and *autonomous*; that is to say, man's practical reason or will is the sole author of all moral law, and it is independent of any and all external authority. An action is morally good only then, when it is performed out of *pure respect for the law* and not merely in conformity with the law.

To maintain that God is the source of natural law and its obligation, would be 'heteronomy.' To obey the law out of love of God or out of obedience to His will would destroy the 'autonomy' of man's practical reason and make him subject to external authority; and that, Kant contends, is contrary to the very essence of true morality. The life and death of Christ, motivated as it was by love of man and obedience to God, would not, according to Kantian principles, be 'morally good' in any true sense of the word.

Since *obligation* or *duty* belongs to the very essence of the law, Kant was forced to place the *origin* of obligation or duty in the *practical reason* of man, because practical reason is the sole lawmaker for human conduct. Obligation finds its expression in the *categorical imperative*.

Many modern authors, following in the footsteps of Kant, have advocated an autonomous and independent morality. Among them one might mention E. von Hartmann, A. Dorner, Th. Lipps, and A. Adickes. The Societies for Ethical Culture, founded by F. Adler and W. M. Salter, are based on the fundamental principle of an independent morality.

Evaluation. Kant's theory, that duty or obligation derives its origin from man's autonomous practical reason, is indefensible.

For one thing. The practical reason or will, says Kant, is *nomothetic*, meaning that the human will is the maker of its own laws. Obligation, Kant admits, flows from law. It follows, then, that the human will imposes obligations upon itself by making its own laws. Such a doctrine destroys the very *concept of the moral order*. Morality, then, is not objective but purely subjective. If the practical reason can make a law, it can also abrogate it; and if the law is abrogated, there is no obligation. Then why should man restrict his freedom of action by making any laws at all? Or, if he was foolish enough to make laws, why does he not abolish them when they turn out to be contrary to his convenience and pleasure? It is a plain matter of fact that we are not conscious of having made the laws of our moral conduct through the free decision of our own will; on the contrary, we feel *subject* to the law as something *beyond our control*. We may desire to be free from laws and obligations, but we are incapable of escaping their binding force; and this fact would be inexplicable, if Kant's doctrine were true. On the other hand, if it were claimed that man's will is *not free* to make and unmake its own laws, man's will would be determined by an *inner necessity* to make its laws and abide by them. Whence this necessity? Certainly not from the free will of man, because where there is freedom there is no necessity, and where there is necessity there is no freedom. Hence, this necessity could only originate through some *outside agency*. This agency would have to be a rational being, because moral law and moral obligation belong to the rational order. Only God, the Creator of rational beings, could impose such a necessity upon the

wills *of all men*. In that case, however, law and obligation derive their origin, not from the will of man, but from God. According to Kant's teaching of the nomothetic will, obligation is eliminated.

Moreover, if Kant's theory of the origin of law and duty were true, the *foundations of the social order would be destroyed*. Society is the union of a number of individual persons forming an organized group for the purpose of pursuing common interests and ends. It is characteristic of human society that it consist of a governing body which has the authority to rule and impose obligations and also consist of subjects which are ruled and have the duty to obey the laws laid down by the governing body. Some, therefore, have the authority to rule and others the duty or obligation to obey. But *whence this authority*? Kant's theory of personal autonomy cannot account for social authority, and as a consequence it cannot account for social obligation. The mere fact that a majority has the power to impose its will on others does not constitute legitimate authority; otherwise a mob of bandits would have the legitimate authority to rob and plunder. Might is not necessarily right. According to Kant, each person's will is autonomous and nomothetic and each person's will is its own end; an action is not morally good if directed toward an end outside the person's individual will, because the laws which each one must obey originate in his own will. Each individual is supreme in his own right and each is autonomous. No individual, therefore, can make laws for another and demand obedience from him; obedience to another would serve an outside interest and end and that would be

immoral. That such a doctrine undermines the foundation of the entire social order is clear, because it *destroys the authority of society* to make laws and demand obedience. Just as a series of zeros, no matter how many they may be, will never result in a positive number, so the mere summation of mutually autonomous wills can never give rise to authority in society where the will of the majority would have not only the might but the *right* to impose laws on the rest. The social order rests precisely on this, that the individual feels *bound in conscience to obey* the superior will of society because society has the *inherent right* to demand obedience to its legitimate authority. Such authority can originate in natural law, and natural law can have its authority from God as the author of the natural law, but Kant does not admit that natural law or any law derives its binding force from God. Under the conditions set forth by Kant, no rational account can be given of 'social obligation,' because the autonomy of the individual wills is not the adequate source of social rights and duties.

In dissociating duty from God and religion, the defenders of an independent morality committed a grave error. *Ethical culture* may appear inspiring in polite debating societies, but it will never succeed in assisting men to lead a moral life in the hard reality of a temptation-filled world.

Empiricists and Obligation

Kant and his followers sought to explain moral obligation deductively from the nature of human 'reason'; for this reason the painful consequences of acts. Spencer merely

pushes the origin of duty by means of association into the dim past of evolutionary development, while Mill placed the origin in present associations. The principle is the same. At first, certain acts became associated with definite consequences, because the consequences always followed the acts. The maxim of conduct then was: 'Do (omit) this act or you will suffer these painful consequences.' Conduct was thus originally based on a disjunctive 'either — or.' Man became habituated to the idea, through association, that dire penalties would follow the performance or omission of certain untoward acts. Later on, the penalties dropped out, and the second half of the 'either — or' no longer prevailed, leaving only the first part of the disjunction, namely, 'Do (omit) this act.' Because of the previous association, however, the memory of the acts as 'forbidden' still remained in full force. From their 'authoritativeness' and coerciveness arose the 'dread' and 'vague sense of moral compulsion' which is *obligation*. Such is the empiricistic, positivistic origin of duty or obligation according to Spencer and the evolutionists — a compound of the elements of *authoritativeness* and *coerciveness* derived through evolution by means of the *association* of the ideas of penalties with the ideas of the performance or omission of certain acts.

Evaluation. First. When Spencer describes the origin and genesis of duty from external and internal restraints, he merely gives a picture of what might or could conceivably have been the process of developing moral consciousness and moral obligation. Analysis is not proof. No one knows what the original condition of prehistoric

man actually was like; the far-distant past is shrouded in impenetrable mystery, so far as science is concerned. Yet Spencer confidently *assumes* that his imaginary description pictures the factual process. This procedure is another instance, so common among evolutionists, of the *genetic fallacy*.

Furthermore. Materialistic evolutionists, like Spencer and his positivist followers, talk continuously about 'morality,' 'moral consciousness,' 'duty,' 'obligation,' 'justice,' 'social virtue,' etc. One naturally presupposes that these and similar terms are used by them in the same sense that they are used by the generality of men and moralists. Such, however, is not the case. According to evolutionary principles, an unbroken line of *genetic descent* exists from the lowest forms of animal life, such as the protozoa, through the higher forms, such as the mammals, up to man in the highest stage of civilization. Man differs from the brute only in degree, not in kind. In fact, most evolutionists claim that the primitive savage is closer to the brute animal than he is to the civilized human. In no case is there an essential difference between man and brute; there is, and can be, no clear-cut line of demarcation between the two. Man, therefore, does not possess a nature which is in any way radically different from that of a brute. The conclusions from such premises are inevitable. The distinction between the *physical* and *moral orders* is wiped out completely. Man has no spiritual soul with spiritual powers. All that he possesses is a more highly organized brain; man is completely and solely a physical-vegetant-sentient organism. He stands merely one degree higher in the scale

of organic beings than other social animals, like the bees and ants, horses and elephants. Human conduct is a product of the social habits and instincts found among such animals in a more undeveloped stage; there is no radical difference between them, and animal conduct and human conduct is essentially the same. Man and the animals are controlled by the same physical and biological laws throughout their entire being, and these are the only laws that control their conduct. Obviously, then, either real morality must be attributed to the higher types of animals, if it is found in man, or real morality must be denied in man, if it is not found in the higher types of animals. And on what valid grounds should a distinction be made between higher and lower types of animals, from protozoa to man? Where should a line be drawn between them? Bees and ants manifest social instincts of a much more specialized character than are found in many types of mammals. Such being the case, we should apply to the animals the same code of morals regarding theft, assault, adultery, murder, etc., which we apply to man, or, if it cannot be applied to them, then man also should be exempt from this code. Ridiculous? Perhaps, but such is the conclusion which inevitably follows from obliterating the distinction between the physical and moral orders.

Finally. According to the principles of evolutionism, man is but a small segment of nature, the product of genetic descent from the animal kingdom. The only forces at work in his entire being are the general forces operative throughout the universe. Now, the forces of nature operate with necessity; determinism rules the world in every phase

of its activities, including the actions of man. Evolutionists are very insistent on this point. Hence, there is *no free will in man*. Such a doctrine, however, if consistently maintained, means the collapse of morality. The moral order consists of certain definite laws expressed in commands and prohibitions, which are supposed to be binding on the human will. But such commands and prohibitions imply that man can either obey or disobey them; in other words, they *imply freedom of action* dependent on the choice of the will. They presuppose that man does not necessarily have to act as they prescribe, but can act in accordance or not in accordance with their prescriptions, as he desires and chooses; without freedom of the will such commands and prohibitions would be senseless and superfluous, because, if man is 'determined' in his actions, he simply must do as he does and cannot do otherwise. The moral order, therefore, is based on the proposition that man 'ought' to observe the law, but that he 'can' violate it; it lies completely within his power to do the one or the other. It follows, too, from the premises of evolution that there can be no such thing as *imputability* and *responsibility*. How can one be responsible for an act that one could not possibly avoid? Imputability is incompatible with necessity, because acts are imputable only if one has free control over them. But without imputability and responsibility there can be no moral order.

Hence, the principles of evolution, as expounded by Spencer and his followers, *destroy the foundations of morality*.

When confirmed evolutionists of the materialistic type speak of 'morality' and 'moral obligation,' they do not use

these terms as they are understood and used by men in general. They realize, of course, that they cannot contradict the universal conviction of mankind openly; so they use the same terms, but substitute meanings which nullify the terms completely. Their language is simply camouflage. Their 'morality' is a glittering sham.

The Nature of Obligation

Independent morality, whether rationalistic or empiricistic, cannot survive the acid test of reason. It cannot sustain man in his endeavor to lead a moral life. When passions clamor for satisfaction, no one will hesitate to ignore the 'categorical imperative' and break the law made by his own will as the sole legislator. And when present desires demand fulfillment, no one will resist them for the sake of the problematical good of an evolutionary utopian state that may or may not come into existence in the millennia of the future. Without God and His will as Supreme Legislator of the eternal and natural law, morality has no solid foundation and obligation has no lasting binding power. Obligation or duty has its source in God who created man and gave him a destiny which extends beyond the limits and limitations of this earthly life. Nothing else can give an adequate explanation for the origin and universality of obligation as experienced by all men at all times.

God created man, so that he might know Him, love Him, and serve Him through the conscientious observance of the moral order. Whoever fulfills the will of God faithfully and devotedly, through free choice and free decision, becomes

an object of God's infinite love and he will, upon the completion of his time of preparation here on earth, be united to Him most intimately and blessedly as the *summum bonum*, the Supreme Good. But whoever consciously and deliberately fails to do this, deprives himself of the love of his infinite Father, becomes an object of God's infinite displeasure, and thereby frustrates the purpose of his existence and runs the serious risk of remaining separated from his ultimate end and goal in the life to come.

We are now in a position to give an exact *definition of obligation or duty*. *Obligation is the moral necessity to do the good and avoid the evil, based on the knowledge that God, our Supreme Good, demands the observance of the law and forbids its deliberate violation.*

Sanction

The term 'sanction' has a number of meanings. In popular parlance it means 'approval' or 'ratification,' as in the statements, 'The board of directors sanctioned the sale of the bonds,' or 'President Truman gave his sanction to the dropping of the atom bomb on Hiroshima.' In ethics the meaning is different. In connection with the natural law and moral obligation, sanction is used in the *sense of the rewards or punishments ordained by a legislator for the observance or transgression of the law.*

A law is a restriction of man's freedom of action. By nature man has a free will, and freedom of action is a natural prerogative of free will. 'Obligation' is the moral necessity to do the good and avoid the evil, according to the

prescriptions of the law, because God demands that we obey the law; to disregard the law is to disregard God's authority. Sanction presupposes obligation. The two are quite distinct. Sanctions are added to the law, so that, if the mere fact of the obligation itself is not sufficient to impel man to observe the law, the hope of reward and the fear of punishment will act as *effective motives* for its observance. Rewards are an incentive for virtue, punishments a deterrent against vice.

A sanction is *adequate or inadequate*, depending upon whether or not it affords a sufficiently powerful motive for observance of the law. A slap on the wrist for assault with the intent of inflicting great bodily harm, a fine of one dollar for highway robbery, or a month's imprisonment in jail for murder are obviously inadequate sanctions. An adequate sanction is *absolutely or relatively adequate*. It is absolutely adequate if it furnishes a truly effective motive for all persons at all times, in all places, and under all conditions; otherwise it is only relatively adequate. If a sanction is absolutely adequate, the reward is such that it outweighs all the sacrifices and inconveniences attached to the observance of the law, and the punishment is such that it surpasses all the pleasures derived from transgressing the law.

The Need of Sanctions

Since both the natural law and its obligation have their source in God, the Supreme Lawgiver, it would seem that knowledge of the law and its obligation would be a

sufficient incentive for man to obey the natural law and that sanctions are therefore superfluous. On the face of it, this view seems to express a profound truth. What it really expresses is an ideal which, unfortunately, does not correspond with reality. Man knows the natural law in many of its prescriptions, and he also recognizes his obligation to obey the law. Yet violations, as we are all aware, occur frequently. It is, therefore, by no means sufficient for man to know the natural law and its obligation in order to induce him to live in accordance with its prescriptions. More is needed, namely, *sanctions*, rewards and punishments, if the purpose of the natural law is to be fulfilled. The reason is plain.

The natural law was given to man by God, not as an end in itself, but as a means for him toward the realization of his ultimate end. God, being infinitely perfect, created all things, including man, for His glory. The supreme purpose of man, therefore, is to live in such a manner that his conduct will promote God's glory, and it is the purpose of the natural law to assist man toward this ultimate end of his being. God cannot be indifferent in this matter, because He loves His infinitely perfect nature with an infinite love. God must, therefore, efficaciously will that man live in accordance with the precepts of the natural law, so that he will actually strive for the glorification of God and thus achieve his ultimate end. But if God's will is really efficacious, the realization of this ultimate end must be *unconditional* and could not be made dependent on man's decision or caprice. Now, it is obvious that those who transgress the law with malice aforethought, flout God's

authority and do not promote His glory. Such persons, as far as they are concerned, frustrate God's will and their own ultimate end. If they could do so with impunity, God's will would not be really efficacious. In giving man a free will, however, *God cannot force the will of man to do His bidding*. So long as man is man, his will is free: freedom and compulsion are incompatible. Hence, the only way in which God can induce man to observe the natural law is to place adequate sanctions on the observance or violation of the law. In this manner the glorification of God will be realized both by the just and the unjust — by the just through their good life and its reward, by the unjust through the punishment meted out to them for their wicked life. Sanctions, therefore, are necessary.

And still the question persists: Why the *necessity* of sanctions? Could not God have made man so good that he would feel more inclined to observe the natural law than violate it? Why does man find it so difficult to lead the good life? We are here face to face with one of the major mysteries of human existence. The Christian theologian has the answer to these questions. God did create man good. In the beginning man felt more inclined to observe the law than to violate it. A complete harmony existed between man's sentient and rational powers, so that the former did not rebel against the latter. But then came the Fall. Man succumbed to a temptation directed toward his intellect and will by an outside intelligence. As a result of his sin, the harmony of his being was disturbed: his intellect was darkened, his will was weakened, and his passions made imperious demands for satisfaction. Man is a fallen

creature. The philosopher, of course, is not a theologian, and he cannot take direct cognizance of the truths of Revelation for the solution of his problems; he must attempt to find the solution on the basis of reason alone, without having recourse to revealed religion. Taking all things into consideration, however, the moral philosopher marvels at man's proclivity to evil and leans strongly toward the view that man in his present tendencies might not be the being he was when he issued from the creative hand of God. Be this as it may, the moral philosopher, taking man as he is, gives the following explanation of man's proclivity to evil. Man is a *composite of body and soul*. All knowledge begins in the experience of the senses. Sense knowledge is immediate, direct, intuitional. Intellectual knowledge is acquired through abstraction from sense knowledge; it is mediate, indirect, abstractive. It is natural, therefore, that the objects of the senses and passions will have a greater and more vividly emotional appeal than the objects of purely intellectual and moral worth. The objects of the senses and passions will, therefore, exert a powerful attraction on man's desires, whether they agree or disagree with the moral law; and quite frequently they disagree, so that they are physically good but morally evil. Hence man's proclivity to evil and the perennial conflict between the things of sense and the things of the spirit.

Without a doubt, it would be more proper for man, as a rational and moral being, to observe the natural law from a sense of duty and out of love of God. Many persons do just that. But the bulk of mankind does not seem capable of elevating itself to the height of this ideal. The average

person is a frail vessel indeed. He needs more than just the law and God's decree to keep him on the straight and narrow path. He finds it so hard to walk the stars and so easy to slip into the mire. Man, being what he is, requires an incentive for doing the good and a deterrent from doing the evil. The natural law is given *for all* without exception; not only for the few who would follow its prescriptions for the love of God, but also for the many who would neglect their remote ultimate end for the sake of the ever present enjoyment of pleasure.

God must will that man strive for his ultimate end. The natural law was given as a means to achieve this end. God must insist, therefore, that man observe the natural law. Knowing man's natural weakness, like a wise father he attached sanctions to the natural law to insure its observance on the part at least of those who have a general good will, so that the hope of reward and the fear of punishment will aid them in overcoming their natural weakness and in making the necessary sacrifices which the law demands. Obviously, these sanctions must afford an *efficacious motive* to obey the law; otherwise they would be disproportionate to the effect intended. God, however, never uses disproportionate means. The sanctions, therefore, must be adequate.

Imperfect Temporal Sanctions

Sanctions are of two kinds: temporal and imperfect, and eternal and perfect.

In order that sanctions be 'absolutely adequate,' they must be adequate for all persons, at all times, in all places, and under all circumstances. If any of these elements are missing, the sanctions are only 'relatively adequate.' The sanctions attached to the natural law here on earth are 'relatively adequate' because they are *temporal and imperfect*. What are some of these temporal, imperfect sanctions?

It is a matter of common experience that the habitual observance of the natural law brings in its train many *natural benefits*. Among these are the consoling knowledge of good deeds well done, an undisturbed conscience, enduring peace of mind, and the constant inclination and facility of performing good acts. These are personal benefits which those who have experienced their possession esteem more highly than health, wealth, honor, and fame. The faithful observance of the law is the solid foundation of family happiness, because, when parents and children are virtuous, there is peace and harmony, understanding and tolerance, love and joy. The faithful observance of the law is also the best guarantee for the preservation and perfection of society, because the citizens live together in order and tranquillity, with respect for the rights and duties of others, for mutual advancement and prosperity. On the other hand, it is also a matter of common experience that the habitual violation of the natural law produces *dire evils*. The consequences for the individual are the rebellion of the passions against the rule of reason, dissatisfaction of the soul, remorse of conscience, and the ascendancy of vice in every direction. One profligate member in the family is

usually the cause of much discord, grief, and misery. A lawbreaking citizenry and a corrupt officialdom loosen all the bonds of society, while the excessive ambition and pride of governments frequently plunge nations into war and immeasurable suffering. These benefits and evils are the *natural* consequences which result from the observance or violation of the natural law. Since they are natural, they must have been intended by God as sanctions. Virtue is indeed its own reward, and vice its own punishment.

That the sanctions just mentioned are *temporal and imperfect*, is all too clear. They are neither permanent nor universal. Many temporal evils befall those who observe the law, while evildoers often meet with comparative success. The wicked, through their very violations of the natural law, frequently amass fortunes and achieve honors which the just people, because of their conscientious regard for the rights of others, must forego. The observer of the natural law must sacrifice many illicit pleasures and suffer many inconveniences which the wicked in following the bent of his perverse inclinations enjoys. Life is not all happiness for the good, nor all misery for the evil. Consequently, the sanctions of the natural law here on earth, though they afford a powerful motive for the faithful observance of the law, are by no means perfect and absolutely adequate. More is needed for the observance of the total law; the ultimate sanction must be meted out in the life after death.

Perfect Eternal Sanction

Since every wise legislator adapts his sanctions to the purpose which he intends to achieve by the law he passes, it is evident that God attached an 'adequate' sanction to the natural law. And since the natural law is such that God intended it to be observed by all men, at all times, in all places, and under all circumstances, the sanction of the natural law had to be 'absolutely adequate,' or it would not fulfill its purpose. In other words, the sanction of the natural law has to afford an *efficacious motive* which will be an inducement powerful enough for all men, at all times, in all places, and under all circumstances, to observe the natural law faithfully and refrain from violating its prescriptions. But it has just been shown that the sanctions of the natural law during man's life here on earth, though real, are only temporal and imperfect; that is to say, these sanctions are only 'relatively adequate,' not 'absolutely adequate.' Consequently, the perfect or *absolutely adequate* sanctions of the natural law must find their final application in the life after death, *in eternity*. This is particularly true in the case of those who sacrifice their life out of love of God in the performance of duty.

As pointed out in a previous chapter (Chap. 6), the ultimate objective end of all human conduct is the glorification of God, and the *ultimate subjective end* of man is *beatitude* or supreme happiness resulting from the intimate union with God, the absolute good. But man achieves his ultimate end by living in accordance with the moral order or natural law. Hence, beatitude or supreme happiness will be the reward for living in accordance with the moral order or natural law. It was also pointed out there

that beatitude must necessarily be eternal in duration, or it would not really be 'beatitude.' Consequently, *eternal beatitude* is the reward or sanction for the just in the life to come. That eternal beatitude is a perfect, absolutely adequate sanction for living the good life, is clear, because it far outweighs any and all sacrifices, inconveniences, and discomforts which the faithful observance of the divine law entails. Whoever, therefore, dies in the friendship and love of God will receive eternal beatitude as a reward.

WHAT WILL HAPPEN TO THE WICKED WHO FLOUT GOD'S AUTHORITY and die in their wickedness? Unless they have renounced their wickedness before death, they enter eternity in the displeasure and enmity of God. What will be the sanction for them?

The theologian, following revealed truth, gives the definite answer that the wicked will be condemned to an eternal life of misery, just as the good will enjoy an eternal life of beatitude. Here again, however, the moral philosopher must forego the definite answer of the theologian, because he is restricted in his research to the truths attainable by human reason alone. There are four *possibilities*: the wicked might obtain immediate eternal beatitude; they might be punished temporarily and then obtain beatitude; they might be annihilated; they might be condemned to eternal misery.

Will the wicked obtain *immediate eternal beatitude*? Assuredly not. If they did, the just and the wicked would be treated alike; both would enjoy supreme happiness for all

eternity. Under this supposition, God would place a premium on the violation of the law, for the wicked person could indulge in the perverseness of his evil desires to his heart's content on earth and still attain eternal happiness after death. In that case, the natural law would be useless. God's justice certainly cannot reward both the faithful observance of His law and the iniquitous indulgence in debauchery with eternal beatitude, as if it made no difference to Him whether man strove to achieve his ultimate end or not. The very thought is blasphemy.

Will the wicked suffer *temporary punishment* after death and then finally obtain beatitude? At first, this seems a satisfactory solution of the problem of sanction after death for the wicked. After all, their life of wickedness was comparatively short, and a temporary punishment would seem sufficient to atone for their temporary waywardness. This view deserves serious consideration.

God is a wise legislator. A wise legislator, however, must implement His law with an adequate sanction. That is to say, God must supply man with a motive so powerful that, upon due consideration of this motive, man will clearly understand the imperative necessity of observing the law under all conditions and the utter futility of violating it for the sake of any advantage to be gained therefrom. Now, temporary loss of beatitude would not be a sufficiently powerful motive to accomplish this purpose. For the following reasons. The good life, though it has many compensations, is a continuous struggle against the allurements of pleasure and passion, a ceaseless privation of comfort and convenience, a never ending resistance

against the enticements of a world that promises riches and honors and every type of advancement. To preserve virtue is difficult at all times; to succumb to vice is delightfully easy at any time. Nor is this all. It not seldom happens that the will to observe God's law demands the sacrifice of very important earthly goods and advantages, perhaps even of the most precious of all earthly possessions, life. And the fact must not be overlooked that earthly pleasures and pains press with vivid clarity upon the senses and imagination, while beatitude and punishment after death seem extremely remote and nebulous. Besides, the temporary loss of beatitude, as the result of sin, might possibly be only of short duration, with an eternity of joy and happiness to follow. In view of man's frailty, the temporary loss of beatitude would hardly be a sufficiently powerful motive for all men, at all times, in all places, and under all circumstances, to sacrifice everything, even life itself if required, in order to live the good life in accordance with the strict demands of God's law.

Will the wicked be *annihilated*, either immediately at death or after some temporary punishment? Let us analyze this possibility. God does not create a thing without a purpose to its being; and the purpose of a being is revealed by the kind of 'essence' which God has given it. Now, the essence of man's soul is spiritual, incorruptible, indestructible. Only God can create and only God can annihilate the spiritual soul of man. The very fact, however, that God created the soul as a naturally indestructible essence, shows that it was His purpose that the soul should live on forever after death. Since the purposes of God are

infallible in their power of execution, He had the intention that the soul should not cease to exist but live eternally. Of course, God could *annihilate* any of His creatures; He gives existence, and He can also take away existence. No creature has an indisputable and absolute right to existence. God, however, is not fickle and capricious. If He chose freely to create man's soul as an indestructible essence, so that by its very nature it is capable of living forever, the conclusion is justified that it is His *will* that the soul live eternally. That a man be just or wicked, is incidental to the essence of his soul and does not change it in any way. Hence, the conclusion is justified that the soul of the wicked will not be annihilated, even though, absolutely speaking, God has the power to do so. Would perhaps the *mercy* of God prompt Him to annihilate the soul of the wicked, so as to save it from being forever deprived of eternal beatitude? God is, without question, infinitely merciful. However, the mercy of God merely requires that He make it possible for man to follow the precepts of the natural law, so that he can achieve his ultimate end and attain beatitude; but the mercy of God does not require that He save the soul of the wicked from the disaster which he has deliberately and voluntarily brought on himself. God gave man a free will. If man decides of his own accord to use his free will for his own destruction, the fault is entirely and solely man's, not God's. God merely brings man's free decision to its logical and inevitable result. The appeal to God's mercy is inadmissible also for this reason that His mercy is identical with His holiness and justice, and His holiness and justice demand that the sanctions of the divine

law be 'absolutely adequate.' In the interests of an absolutely adequate sanction, therefore, God will not annihilate the soul of the wicked. The thought of complete annihilation is a rather welcome one to many persons steeped in iniquity, because they can do as they please on earth, and the loss of eternal beatitude will not be felt in a state of non-existence. We must conclude, therefore, that annihilation would make an absolutely adequate sanction, so necessary for the observance of the natural law, impossible.

Will, then, the wicked be condemned to *eternal misery*? The philosopher is always somewhat hesitant about attempting to pierce the veil of eternity and to plumb the depths of God's designs. The light of human reason is rather feeble in lighting up the labyrinthine ways of God in His dealings with men. It is difficult to gauge the influence of revealed truth and faith on philosophical judgments. From the standpoint of philosophy one must say that it is logical to conclude that God will leave the wicked in their state of voluntary separation from their ultimate objective and subjective end for all eternity. And this separation involves the eternal loss of beatitude. And the eternal loss of beatitude involves eternal misery. If there is to be an absolutely adequate sanction to guarantee the observance of the natural law, no other alternative seems possible. It is a terrifying thought — but that is what it is supposed to be. Man should simply not risk the eternal loss of beatitude for the sake of a passing, ephemeral, deceptive life of pleasure here on earth. Too much is at stake.

Total and Partial Frustration

The complete loss of eternal beatitude means the total frustration of a person and his life's destiny. The very purpose of his creation, according to the design of God, is nullified. This happens when a person separates himself altogether from God and enters eternity in that state of separation.

Does every violation of the natural law and its precepts involve complete separation from God and consequent total frustration? Or, are there violations which do not involve ultimate disaster? In other words, is it permissible to make a distinction between 'grave' and 'slight' derelictions of duty? The former would entail complete separation from God, deprivation of one's ultimate end, loss of eternal beatitude, and total frustration of life's destiny; the latter would involve the displeasure of God in a minor degree and merit some temporal punishment, but would still preserve the love and friendship of God and entitle a person to union with God in eternal beatitude after death. If the distinction is permissible, we must distinguish between *grave and slight matters in the precepts*, because reference is had here to 'voluntary' derelictions of duty.

The distinction is not only permissible, but *natural and necessary*, according to the universal conviction of all normal persons. Such is the distinction made between a white lie and perjury, between a slap given in peevishness and murder committed in cold-blooded malice, between the theft of a penny and a bank robbery, between a person starting a petty quarrel and a dictator engineering an

aggressive invasion, between one drink in excess and sottish drunkenness, between a mild flirtation and deliberate adultery, between luke-warmness in prayer and flagrant blasphemy, and so forth. A comparison of these alternatives shows clearly that the distinction is not arbitrary, but natural and necessary. Stealing a penny represents only a slight turning away from one's ultimate end and certainly does not merit the designation of 'total frustration' with eternal loss of beatitude and eternal separation from God. Love of God is still essentially present in the will guilty of violation of the law in a minor matter. Perjury is a serious dishonor toward God, but a white lie is obviously only a slight infraction of the law of truthfulness. The same is true of the other and similar cases. And since man has a free will, he can repent of his misdeeds during his life and return to God at any time before death, thereby restoring the proper moral order between himself and God.

Obligation and sanction are necessary elements of the natural law and reveal God's kindness and justice. They are intended for the benefit of man, to lead him to the attainment of his ultimate end.

Summary of Chapter X

Obligation and *sanction* are two important ethical factors involved in the natural law.

1. *The Concept of Obligation.* The law places an 'obligation' upon the will to follow a course of action prescribed by the law. In a provisory fashion, 'moral obligation' is here taken in the sense of 'the necessity, based on intelligent motivation, of obeying the prescriptions of a law.'

2. *Theistic Origin of Obligation.* The source of duty or obligation is not physical compulsion or necessity, but the *binding power of a precept*. Law prescribes an action, and the end of an action is some good. Moral obligation is all-embracing in its power and scope, and no single earthly good or type of good reaches so far in its power and scope. Even life itself must at times be sacrificed to duty. There must, then, be a good as the object of obligation which lies beyond life and time and is greater than life and all earthly goods. This supreme good can only be God or man supreme happiness.

3. *Rationalists and Obligation.* Kant is the protagonist of 'autonomous morality.' According to his teaching, man's will is *nomothetical and autonomous*. The will of man is the sole legislator and its own end. For the will to strive for external ends outside itself would be 'heteronomy,' and such actions are not morally good.

Evaluation. Kant's theory is untenable. For one thing. Kant's doctrine of the *nomothetic* character of the will

destroys the concept of the moral order. If man can make a law, he can also abrogate it; and if he can abrogate a law, there is no obligation. Moreover, Kant's theory destroys the *foundations of the social order*. The individual can make laws for himself, according to Kant, but not for others. In that event, society has no authority to make laws, and might becomes right. Kant, therefore, gives no rational account of the origin of obligation or duty.

4. *Empiricists and Obligation*. Empiricists attempt to derive the origin of obligation from experience, particularly through *evolution*. Spencer finds the factors, which originated duty, in certain political, religious, and social restraints (external factors) and in the natural consequences of actions (internal factor). The *authoritativeness* and *coerciveness* of these restraints gave rise to the feeling of obligation or duty through association.

Evaluation. Evolutionists are guilty of the genetic fallacy when they assume their description of the evolution of moral obligation to be a factual process. Again, since there is no essential difference between man and brute, evolutionism wipes out the distinction between the *physical and moral orders*. Finally, evolutionists destroy the foundations of morality, because determinism rules the world; where there is determinism, there is no free will and no imputability.

5. *The Nature of Obligation*. Obligation is the moral necessity to do the good and avoid the evil, based on the knowledge that God, our Supreme Good, demands the observance of the law and forbids violation of it.

6. *Sanction.* Sanction means the *rewards* and *punishments* ordained by a legislator for the observance or transgression of the law. They are in the nature of 'effective motives.' A sanction is either 'inadequate' or 'adequate'; the latter is either 'absolutely' or 'relatively adequate.'

7. *The Need of Sanctions.* Since God will not force the free will of man, He must, if His will is efficacious, place *adequate sanctions* on the observance of the law, because man is by nature weak and will not, as a rule, observe the natural law simply because he has the 'obligation' to obey it.

8. *Imperfect Temporal Sanctions.* Some sanctions are 'temporal' and 'imperfect.' The habitual observance of the natural law gives man many natural benefits in this life, just as the habitual violation produces *dire evils*. However, many evils are also the lot of the just here on earth, while the wicked often meet with success. These sanctions, therefore, are by no means perfect and absolutely adequate.

9. *Perfect Eternal Sanction.* Since God intended that the natural law be observed by all men, at all times, in all places, and under all circumstances, the sanction had to be *absolutely adequate*, or it would not afford an effective motive for man to observe the law and avoid its violation. But the sanctions here on earth are not absolutely adequate. Consequently, the absolutely adequate sanctions must be applied in *eternity*, where alone man achieves his ultimate end. By realizing his ultimate end, God's glorification and the possession of God, the *just man* receives eternal beatitude as his reward.

The status of the *wicked after death* admits of four possibilities: they might obtain immediate eternal beatitude; they might be punished temporarily and then obtain beatitude; they might be annihilated; they might be condemned to eternal misery. Since the wicked separate themselves voluntarily from God, it is logical to conclude that God will leave them in their state of voluntary separation from their ultimate objective and subjective end for all eternity. In this manner, the sanction for the just and the wicked would be *absolutely adequate*.

10. *Total and Partial Frustration*. The distinction between *grave* and *slight* matters in the precepts of the law is not only permissible, but natural and necessary.

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Chapter 11

VIRTUE AND VICE

TO DESIGNATE A *PERSON* AS 'GOOD AND JUST,' OR AS 'BAD AND wicked,' more is required than one or the other good or evil act. Even a 'good person' may at times perform an evil act without thereby becoming a wicked person, just as a 'wicked person' may occasionally perform a good act and still not be a good person. We speak of a 'good and just person' only if his will is directed toward the morally good life in a constant and habitual manner; and we speak of a 'bad and wicked person' only if his will is directed toward the morally evil in a constant and habitual manner. Morally good or evil *habits* make the morally good or wicked person.

Morally good habits are *virtues*; and morally evil habits, vices. Virtues and vices play an important role in every individual's moral life.

Concept of Virtue

All virtues are habits, but not all habits are virtues.

A *habit* belongs to the general category of 'quality' and is defined as a comparatively permanent quality disposing a

thing well or ill in its being or operations. When it is stated that a habit is 'comparatively permanent,' the meaning is that it must be stable relative to the nature of the thing which has this habit. Stability of habit, of course, varies with different beings. The life, for instance, of some insects lasts but a week or even a day. Something may be relatively permanent in its short life, which would be relatively transient in the much longer period of life of some other being.

Habits are either entitative or operative. An *entitative* habit is one which disposes the general condition or entitative states of a being well or ill. Beauty and health affect the general condition of a being, and so do deformity and chronic illness; they are entitative habits. *Operative* habits are 'habits' in a stricter meaning of the term. They are stable qualities disposing a thing well or ill in the *operations* of its faculties. Such a habit gives a definite direction to the acts of a faculty, a determination in virtue of which the faculty *tends* to act in one manner rather than in another. Every repetition of the act increases this tendency and makes the subsequent operation of the same kind easier. What was done in the beginning as the result of conscious effort, now becomes almost automatic, and the faculties carry out their respective acts with little external stimulation or none at all. We perceive the working of operative habits in the complicated acts of walking, speaking, typewriting, playing a musical instrument, memorizing, etc.

Not all faculties are capable of being determined by habits. The very nature of habit as a quality 'determining' a

faculty to a definite mode of operation shows that habit presupposes a faculty which is *indifferent to a variety of actions*. It is only when a faculty is by nature indeterminate to various kinds of actions that it is capable of further determination from a habit. A faculty which is already determined by its very nature to act in such or such a manner can receive no further determination from a habit, because no inclination or tendency is as strong as one given through the necessity of a being's nature. Thus, the natural forces of inorganic bodies work forever in the same manner. Gravity, for instance, attracts the stone with the same force after the thousandth time as at the very first time; it gains nothing by repeating the action. So, too, plants and animals are determined in their operations by their very nature; under the same conditions they will, if left to themselves, act in the same way.

Hence, only such things can properly be the subjects of operative habits as are *free in their activities*, because they are intrinsically indeterminate. The *free will* is primarily capable of habits. The intellect is also capable of habit, in so far as the will can apply it in different ways to its object; we see this in the habit of knowledge. The sensitive powers of man, considered in themselves, are incapable of habit, because they have a necessary direction toward their respective objects. Since, however, they are under the control of the will to a great extent, they are, indirectly, capable of being perfected by habit. Through intensive exercising along certain lines, man can 'train' his eye, his ear, his imagination, his sense memory, and so forth.

Some habits are *given by nature* itself. It would be more correct to say that nature gives the 'beginning' of habits, rather than habits themselves. Such is the *habitus principiorum*, the 'habit of principles,' as present in the mind from the start; man's mind has a natural facility and inclination to understand and form fundamental *theoretical* principles of thought, like the Principles of Identity, Contradiction, Excluded Middle, and Sufficient Reason. Such also is *synderesis*, the native ability and inclination to understand and form fundamental practical principles of moral action, like, 'The good is to be done, and the evil is to be avoided.'

Other habits are *acquired* through the *frequent repetition* of the same acts. Once acquired, such habits are relatively stable. Examples are the habit of knowledge, language, writing, walking; in the field of human conduct we have the virtues, like kindness and temperance; and vices, like cruelty and drunkenness.

Among the natural habits, the moral virtues occupy a preeminent place. Since they are concerned with morally good actions, they are *operative habits*. Aristotle¹ gives the following definition of virtue: "The virtue of man will be the state of character which makes a man good and which makes him do his own work well." By "the state of character" Aristotle indicates the habit of virtue as being something relatively permanent. And virtue is a habit which "makes a man good," because man is a 'good man,' not through an occasional good act, but through virtue as a constant and habitual inclination toward the morally good life. At the same time, virtue "makes him do his own work

well”; this means that virtue is an ‘operative’ habit which disposes him well toward the performance of morally good acts. St. Thomas Aquinas² adopts the definition of St. Augustine: “Virtue is a good quality of the mind, by which we live righteously, of which no one can make bad use.” These definitions differ in their wording, but the meaning is the same. We can, therefore, define virtue as the *permanent inclination and facility to perform morally good acts*; or, more briefly, as the operative habit to perform morally good acts.

Virtue is not a habit given by nature, but is an *acquired* habit, the result of repeated actions which produce in man a permanent inclination and facility toward the good. The ‘habit of principles’ and ‘*synderesis*’ are not virtues in this sense, because they are not operative habits. Prolonged repetition is necessary to acquire virtue; once the habit is formed, prolonged neglect of the habit or repeated actions contrary to the habit are necessary to lose or destroy virtue.

The Subject of Virtue

Moral virtues are acquired habits. As such they demand a *subject* or *bearer* in which they reside. Since the moral virtues are operative habits directed toward action, they must reside in an operative power (or powers). Which operative power (or powers) is the subject or bearer of the moral virtues?

St. Thomas³ gives the answer when he says:

“The subject of a habit which is called a virtue absolutely can be only the will, or some power in so far as it is moved by the will. And the reason for this is, that the will moves to their acts all those other powers that are in some way rational... Therefore, if man do well actually, that is because he has a good will. Therefore, the virtue that makes a man do well actually, and not merely the aptness to do well, must be either in the will itself, or in some power as moved by the will.”

All moral virtues, being operative habits directed toward morally good conduct, are acquired through the repetition of good acts. But only *human acts* can be morally good acts, and human acts are only such acts which are performed either by the will itself or under the control and direction of the will. The reason for this is obvious. Human acts are essentially *free* acts. Now, only the will is in itself free; other powers participate in freedom only in so far as they participate in the freedom of the will. The will is the directing agency controlling all the powers subject to the will in any way. Hence, if man, as a rational being, performs morally good acts, the reason is to be found in the fact that his *will* is good. That is why St. Thomas⁴ says: “If a man do well actually, that is because he has a good will.” Consequently, the moral virtues reside either in the will itself or in some other power controlled by the will.

The *sensuous appetency*, considered strictly as such and independent of the will, is incapable of virtue in the strict sense of the term. Virtue, as distinct from vice, is always

directed toward that which is 'morally good.' Sensuous appetency, however, is directed toward the physical or sensuous good, and such a good may be in agreement or disagreement with the norm of morality; that is to say, the sensuous good may be morally good or morally evil. Hence, the aptitudes or permanent inclinations of the sensuous appetency are in themselves not virtues, independent of the will, even if they are in agreement with the norm of morality; they become virtues only when directed by the good will toward that which is morally good. Thus, a miser may be habitually temperate in food and drink; this temperance, however, is not a virtue because he is abstemious only out of miserliness, and miserliness is a vice. On the other hand, the habitual temperance of a saintly person is the result of a morally good motive on the part of his will seeking to curb the sensuous appetites and subject them to the control of reason, and that is a virtue. With regard to the aptitudes of sensuous appetency, therefore, everything depends on the will: if the will is morally good in their regard, they are virtues, and if the will is morally evil in their regard, they are vices. Taken by themselves, it is clear, they are not virtues in the strict sense of the term, because virtues can never be directed toward moral evil; if they are directed toward moral good, as is the case with the virtue of temperance, they are directed by the will acting in conformity with the moral law. Hence, even when the aptitudes of non-free faculties have an essential part in moral virtue, for example, in temperance, they receive their *moral character* only from the direction of the will.

Nothing, therefore, in the non-rational part of man's nature has, of itself, *moral worth*. Moral worth is derived from the good will which *loves* the moral good and directs all actions and natural aptitudes toward the moral good. The good will's love of the moral good is the key to all virtue, whether this virtue be in the will itself or in some other power under the control of the will.

The Cardinal Virtues

The primary subject or bearer of virtue is the will. However, other powers of man are also involved in virtuous conduct. All must be habituated to the good before anyone can be said to be a truly good person. There are, then, various kinds of virtue.

Among all the virtues, four are considered to be the principal ones, the chief among several groups of virtues. For this reason they are called cardinal virtues, and they are prudence, justice, temperance, and fortitude. The Greek philosophers, notably Plato and Aristotle, mention and discuss them. That their knowledge was the common heritage of antiquity, is clear from the fact that the Hebrews made the same enumeration.

We read, for example, in the Book of Wisdom (8:7): "She [Wisdom] teacheth temperance, and prudence, and justice, and fortitude, which are such things as men can have nothing more profitable in life."

Prudence is the intellectual virtue which enables the intellect to judge correctly in matters pertaining to the moral order. *Justice* is the moral virtue which inclines the

will to render unto each one his due. *Temperance* is the moral virtue which makes a person ready to submit the desires for sensible pleasure to the control of reason. *Fortitude* is the moral virtue which regulates man's sensible nature to the demands of reason in the face of obstacles which endanger the moral good.

If we inquire into the *grounds* of this fourfold division of the moral virtues, St. Thomas⁵ gives the following explanation: "Things may be numbered either according to their formal principles or according to the subjects in which they are; and in either way we find that there are four cardinal virtues.

"For the formal principle of the virtue of which we speak now is the good as defined by reason. The good can be considered in two ways. First, as existing in the consideration itself of reason, and thus we have one principal virtue called *prudence*. Secondly, according as the reason puts its order into something else, and this either into operations, and then we have *justice*, or into passions, and then we need two virtues. For the need of putting the order of reason into the passions is due to their thwarting reason; and this occurs in two ways. First, when the passions incite to something against reason, and then they need a curb, which we thus call *temperance*; secondly, when the passions withdraw us from following the dictate of reason, e.g., through fear of danger or toil, and then man needs to be strengthened for that which reason dictates, lest he turn back, and to this end there is *fortitude*.

“In like manner, we find the same number if we consider the subjects of virtue. For there are four subjects of the virtue of which we now speak, *viz.*, the power which is rational in its essence, and this is perfected by *prudence*; and that which is rational by participation, and is threefold, the will, subject of *justice*, the concupiscible power, subject of *temperance*, and the irascible power, subject of *fortitude*.”

Each of the cardinal virtues represents the *most important* of a group of similar virtues. These latter are related to their respective cardinal virtue as *parts*, forming a dynamic unit of moral action along a certain line. St. Thomas⁶ distinguishes *three types* of such parts, depending on the relation of a particular virtue to the cardinal virtue to which it belongs. Some virtues are *subjective* parts; they are species under the cardinal virtue as a genus. Some are *integral* parts; they lend assistance to the cardinal virtue and complete its activity in some way. Some are *potential* parts; they are derived, cognate, annexed virtues that regulate certain activities regarding which the cardinal virtue cannot develop its full activity because of the peculiar character of the object involved.

Having considered the cardinal virtues as to their position in the general scheme of moral conduct, we must now turn our attention to each one in particular.

Prudence

Prudence is defined as that *virtue of the intellect which enables man to judge correctly in each individual case what the moral order demands of him.*

Prudence is a habit of the practical intellect. Prudence shows the will how it must regulate its activity here and now, so that it will be morally good. The object of prudence is exclusively that which is morally good and evil. It is concerned with the adoption of the proper means required to realize the ends of man *as man* in all his relationships, particularly in his relationship to the 'ultimate end' of his existence. With regard to the means to be used, it is always a question of selecting among a number of means the one best suited to realize the end desired; only when the means are not determined and necessary, but *manifold* and *contingent*, does the virtue of prudence exert its influence in making a proper selection. Prudence, therefore, *inquires* into the nature of the end sought and the various means capable of realizing it, *judges* as to the best means under the concrete circumstances of the case, and then *commands* the will to employ these means with precision and promptitude for the realization of this end. Of these three characteristic acts of prudence, the commanding or moving of the will to adopt the proper means is obviously the most important for moral living, because only that man is prudent who not only knows what he is supposed to do but is ready and willing to do it.

The term 'prudence' has, of course, a much wider application in human affairs than is here assumed in its ethical definition. A man, for example, is prudent in business matters, if he is well versed in business

transactions and knows how to use the proper means to make his business a success; a builder is prudent, if he is shrewd in employing labor and materials to the best advantage in erecting a building. Such instances of prudence have nothing to do with the *virtue* of prudence. The latter is concerned with the morality of human life. A morally prudent man may be a very imprudent businessman, and a prudent businessman may be a morally very imprudent human being. Worldly prudence must often be condemned by moral prudence as being in opposition to moral principles of justice.

Since prudence is an *intellectual* habit or virtue, one might wonder why it is numbered among the moral virtues of justice, temperance, and fortitude. The reason is that prudence is directed toward moral action and as such is a virtue which has as its object, not simply truth, but the proper ordering of human life in relation to man's ultimate end. Hence, prudence is a virtue of the 'practical' reason, not of the 'theoretical' reason. Even the moral virtues of justice, temperance, and fortitude need regulation on the part of prudence, so that they may not go astray either through excess or defect. Prudence, therefore, is the most important of the cardinal virtues.

Following the lead of Aristotle, Cicero, and other philosophers, St. Thomas gives a list of the subordinate virtues or *parts* of prudence.

The *subjective* parts, or *species*, of prudence are personal prudence and prudence in the direction of others, depending upon whether prudence is concerned with individual good or the good of others.

There are a number of *integral* parts or auxiliary virtues relative to prudence. *Remembrance* (*memoria*) recalls past items which contribute to the judgment of a moral action. *Intelligence* (*intelligentia*) pertains to present items which contribute to the judgment. *Docility* (*docilitas*) is responsiveness to outside instruction concerning right means. *Sagacity* (*solertia*) helps a person in making a quick perception of the proper means. *Reason* (*ratio*) assists a person in the comparison and valuation of different things. *Foresight* (*providentia*) arranges everything necessary for the attainment of the end. *Circumspection* (*circumspectio*) considers the circumstances attending an action. *Caution* (*cautio*) avoids difficulties and obstacles. These virtues serve the purpose of preparing the way for a prudent judgment and of assisting in its execution.

Prudence also possesses *potential* parts, or cognate, annexed virtues. *Eubulia* is proficiency in discovering the proper means to the end. *Synesis* is proficiency in clear, decisive judgments, following the inventive reflection of eubulia, in those common cases where ordinary principles are sufficient for prudence to arrive at a practical decision. *Gnome*, or higher judgment, is proficiency in finding the proper solution in extraordinary and difficult cases according to principles of a higher order which demand exceptional insight or perspicacity of judgment.

There is considerable dispute among the erudite as to whether and in how far these various virtues differ in reality from prudence and among themselves. Some consider the distinction between them to be real, others admit only a virtual distinction. In as much as these habits

or proficiencies do not reach the same point of development in all persons, there is probably a real distinction between at least some of them.

This observation is valid also for the cardinal virtues that follow.

Justice

Justice is that moral virtue which *inclines man's will to render unto each one his due*. Considered in its widest sense as rendering unto every one without exception all that is his due in every conceivable respect, justice embraces all virtues and means 'perfection' or 'sanctity.' The term is often used by the Sacred Scriptures in this sense. As a cardinal virtue, however, the term 'justice' is here used in the *restricted sense* of rendering unto *other* rational beings that which they have the right to demand of us as their due, such as life, health, bodily integrity, reputation, and property.

Even in this restricted sense, 'justice' can be taken in two meanings. In one meaning justice is the virtue which extends to all cases where something is rendered that is due to another. In this meaning, justice would include, for example, worship due to God, obedience due to parents, gratitude due to benefactors. In the other meaning, justice as a *special* moral virtue has as its object the due which can be rendered in the equivalent of value. The latter is justice properly so called.

General or legal justice regulates the actions of the individual in his relations to the *commonwealth* or

community to which he belongs as a member. Every person, as a member of society, owes to society that which is necessary for the common good, and the virtue of general or legal justice inclines the person's will to render unto society its due. Justice in this sense is termed 'general,' because the common good of all members may require practically all virtues from its members, depending on conditions and circumstances. It is termed 'legal,' because it is a matter of legislation to determine and prescribe what the individual members shall render unto society toward the realization of the common good.

Particular justice regulates the actions of an individual in his relations to *private* persons and inclines his will to render unto everyone his due in the equivalent of value. Here debt and payment form a sort of equation — so much for so much. There are two kinds of particular justice, commutative and distributive. *Commutative* justice orders the dealings of one individual with the other individual and sees to it that each one receives strictly what is his own. A purchaser, for instance, who agrees to pay one dollar for an article, is bound by commutative justice to pay the dollar; a person who has stolen one hundred dollars is bound to make restitution in that exact amount to the one from whom he has stolen the sum. *Distributive* justice orders the dealings of society toward its members and inclines those in government to distribute equitably the common goods and burdens among the members of the commonwealth and inclines the latter to be contented with their share of the social goods and burdens assigned to them. It would not, for instance, be in accord with distributive justice to exempt

the rich from the burdens of taxation and place the burden of main taxes on the poor; nor would it be just to derive the bulk of tax money from the necessities of life and exempt luxuries from taxation.

Commutative justice seeks to give each his due in *arithmetical* equivalence, article for article and penny for penny or their equivalents, according to a strict valuation. Distributive justice, on the other hand, aims to distribute common goods and burdens in *geometrical* equivalence, i.e., seeks the equality of two ratios or proportions, by giving public honors and offices to citizens in proportion to their services rendered to the commonwealth and by placing the public burdens on the citizens in proportion to their ability to carry these burdens. The immediate measure of justice rests on the equality of *things* which are due to someone. But if we ask why morality demands particular justice, the deeper reason is found in the fact that man is by nature a 'social being' and the norm of morality, based on man's *social nature*, demands that he give to each his due, otherwise social life would be impossible.

In the strictest sense of the term, only particular justice can be considered a *cardinal* virtue, because only in particular justice is perfect equality possible between person and person and thing and thing. According to common teaching, every cardinal virtue has a special, determinate object, one which meets a special, determinate need or difficulty. General or legal justice, however, demands many types of virtues from the members of the commonwealth. Hence, since general or legal justice lacks a

special, determinate object, it is not a cardinal virtue. It is only fair to remember, however, that many authors reckon legal justice as a part of the cardinal virtue of justice.

Although both commutative and distributive justice are subjective parts or species of justice in the strict sense, *commutative* justice embodies the concept of justice in a *more perfect degree*. A person acts justly or unjustly toward another person, not toward himself. This complete separation of person and person does not occur in distributive justice, because the relation of the commonwealth to its members is not that of one private person to another private person, but rather that of the whole to its component parts; justice is not so rigorous between whole and part as it is between person and person.

In cases where injustice has been done, only *commutative* justice imposes the obligation of *restitution*. Justice demands that each be given his due. What belongs to a person is his, and others must respect his right to what is his. If, then, someone deprives him of what is his through theft, he still retains the right to his property, and the thief is bound to restore the object or, if the object no longer exists, its equivalent. Similarly, if someone unjustly damages another in his property, the damaged property must be restored in full. Justice remains violated until restitution is made, because the owner is deprived of his due so long as the damage is not repaired and equality restored.

Restitution is impossible in *distributive* justice, when it is a question of the proper distribution of public goods, be they honors or offices. The goods in question become the

property of those to whom they are given, even if they were not properly merited. The injustice occurs in their being given to undeserving persons; however, since they are *public* goods, they do not belong in strict right to any individual, and so no individual is damaged in his own individual ownership. It is presupposed, of course, that only distributive, not commutative, justice has been violated in the case; if commutative justice has also been violated in the transaction, then restitution must be made in this respect. An official, therefore, who is guilty of the violation of distributive justice alone, commits an immoral act; he must, of course, repent of his unjust act and resolve to conform to the precepts of distributive justice in future transactions, but no restitution need or can be made.

In a similar manner, no restitution can be made in violations of legal justice considered strictly as such. Whoever does not render to the commonwealth what is its due under the given circumstances, cannot make restitution for the injustice done on the basis of legal justice, because the opportunity is past and will not occur again as the same opportunity. Duties of legal justice are determined by the law according to time and circumstance; once they are violated, they no longer exist, and so strict restitution is impossible. A draft-dodger, for example, violates his duty as a citizen; he can and should repent of his action, but he cannot recall the opportunity which is past.

Due to the complexity of present-day social life, ethicists frequently include in this classification the division of 'social justice.' *Social justice* is justice with particular reference to

the economic and social welfare of society in the co-operation of the various social groups and classes active within the framework of the state. The obligations of such groups and classes pertain to natural justice, not merely to legal justice, and such obligations have as their goal the due share of all in the fruits of their socio-economic co-operation. In particular, social justice should guide all employers and workers in the negotiations and conclusions of collective labor agreements. The object of social justice is the ordering of the social economy.

The *subjective* parts or *species* of the cardinal virtue of justice are *commutative* and *distributive* justice. Those who consider 'general' or 'legal' justice to be a part of justice proper will, of course, add it as a third part.

There are *no integral* parts or auxiliary virtues of justice in the strict sense of the term.

Justice has a number of *potential* parts or cognate, annexed virtues which resemble it in some, though not all, of its characteristic features. *Three things* are required for justice. The virtue must be directed toward another person; must render unto this other what is strictly his due; there must be a real equivalence between what is due and what is rendered. Many virtues approach, but do not meet, these requirements in full measure.

Because the *second* requirement is not fully met, the following virtues belong to justice only as potential parts or cognate virtues. *Love of moral truth* inclines the will to act toward others in word and deed as we actually are. Love of truth manifests itself in 'truthfulness' and 'faithfulness.' *Gratitude* inclines the will to be mindful of favors received

and to seek to render favors in return. *Liberality* inclines the will to give gladly of one's earthly goods to others. *Affability* regulates man's external conduct with others, so that he behaves toward them in a becoming manner. Fairness, similar to gnome or superior judgment, inclines the will to overlook the mere letter of the law in man's dealings with others, whenever higher considerations of justice so demand. The natural virtue of *neighborly love* inclines the will to be benevolent toward one's fellow men because they have the same human nature and ultimate end.

The following cognate virtues lack the *third* requirement of real equivalence. Three virtues are based on the relation of man to God. *Love of God* inclines the will to love God for His own sake and to prefer Him as the Supreme Good to all temporal goods. *Hope* in God enables man to expect confidently that he will always obtain the means necessary to achieve ultimate happiness. The virtue of *religion* inclines the will to render honor unto God and to submit to the yoke of His commandments. *Piety* or *dutifulness* (*pietas*) urges proper respect and obedience unto parents (including relatives) and *country*, because they give existence and sustenance. Those who do not consider 'legal justice' to be a part of the cardinal virtue of justice in the strict and proper sense, place it under love of country or parallel to it. *Observance* (*observantia*) inclines the will to render honor and submission unto those who occupy positions of authority in the commonwealth.

Justice, it will be noticed, covers an extensive portion of moral conduct, especially in the field of human relations.

Temperance

Temperance is the moral virtue which *orders the desire for sensible pleasure within the limits of right reason.*

Man is a composite of body and soul, a rational animal. He has his animal nature, with all its sensuous capacities and tendencies, in common with the brute. But he has also a rational intellect and a free will, and these powers are distinctively human and represent a higher level of being. The rational part of man's nature lifts him above the instincts of the brute. Man, therefore, has the obligation to live primarily as a rational being, not as an animal; or, rather, as a human being whose animal appetites must be regulated and moderated in such a manner by reason that they do not conflict with his ultimate end. It is the purpose of the cardinal virtue of temperance to do this.

Sensible pleasures are not in themselves morally evil. They are part and parcel of man's organic being as created by God in His infinite wisdom and goodness. The theory of the Stoics, that it is unworthy of man to indulge at all in pleasure, is totally wrong. God had a definite purpose in uniting pleasure with many natural activities, especially with the activities necessary for the *preservation of the individual and of the race*. Pleasure should act as a stimulus inducing man to perform these acts. If food and drink were not accompanied by pleasure, man would curtail the nourishment of his body and his health would suffer. And if the function of sex were not pleasurable, few people would feel inclined to accept the duties of parenthood, and the race of man would inevitably die out.

Pleasure, therefore, is not to be despised. Under circumstances it should even be desired and sought. It must not, however, be made an end in itself, because to do so would be a distortion of the proper order. Man must use pleasure only as a means to a higher end, as is befitting a rational being, so that *reason*, and not instinct and impulse, is the guide for human conduct. Not suppression, but moderation and regulation are the keys to the proper use of sensible pleasure. And *temperance* is the virtue which inclines the will to curb the excessive desire for pleasure and place it within the limits dictated by right reason.

The pleasures of the *palate*, namely, of food and drink, and the pleasures of *sex*, are the ones which have the greatest natural attraction for man and which easily lead him to excesses. They must be brought into reasonable subjugation. A number of virtues assist temperance in this difficult task.

On the basis of the threefold pleasures just mentioned, temperance consists of three *subjective* parts or species. Temperance in the use and enjoyment of food and non-intoxicating drink is *abstinence*. In the use and enjoyment of intoxicating drink, it is *sobriety*. In the use and enjoyment of the legitimate functions of sex, it is *chastity*. Chastity also includes the virtue of natural reserve, but 'reserve' is in all probability nothing more than chastity in its phase of external behavior.

The *integral* parts or auxiliary virtues of temperance are two in number. *Propriety* (*honestas*) is love of the beauty which is found in the temperate use of pleasurable things. The *sense of honor and shame* (*verecundia*) is the anxiety to

avoid the personal shame and disgrace which follow the unbecoming and excessive enjoyment of pleasures. Propriety and the sense of honor and shame, however, hardly seem to be virtues in the true sense of the term; the former is more in the nature of an inclination than a true virtue, and shame is an emotion rather than a habit.

There are a number of *potential* parts or cognate, annexed virtues which assist temperance, such as self-restraint, humility, meekness, clemency, and modesty. *Self-restraint* is the virtue which enables the will to resist the most powerful emotions of sensible desires for pleasure which run counter to the norm of morality. Some persons are naturally disposed to restrain their passions, so that they find it easier than others to control themselves. But this is a disposition, not a virtue. The disposition becomes a virtue only then when the 'habit' of self-restraint is acquired through the repeated exercise of controlling the more powerful urges of instinct. *Humility* inclines the will away from seeking greater honor and estimation than one deserves. Humility recognizes the fact that of ourselves we are nothing and that everything we possess comes from God; as a consequence of this fact, the humble person will not exalt himself unduly over his fellow men, but will curb his ambitions within the limits of what is just and proper. *Meekness* moderates anger and the desire for revenge, so that we may avoid vindictiveness. *Clemency* inclines the will to forgive the faults committed against one's self by others and to exact a lesser punishment (within the demands of reason) than the strict letter of the law requires. *Modesty* regulates our external deportment and makes us strive for

becoming behavior in movement, speech, posture, dress, and amusements.

Temperance is directed mainly against gluttony, drunkenness, and lust; but its general purpose is to moderate the inner emotions and the personal actions of man in such a way as to avoid the extremes of both deficiency and excess. Temperance, as a cardinal virtue, thus stresses moderation in all things and has a much wider significance than is frequently associated with the term as denoting moderate usage of, or complete abstention from, intoxicating beverages. It is not the use, but the abuse, that is wrong. Ordinarily, moderation will suffice. Hence, people should be educated to bring their appetites under the control of reason and to practice moderation in the legitimate use of all pleasure, thereby forming the habit and virtue of temperance.

Fortitude is the moral virtue which inclines the will *to overcome grave danger and sustain severe hardship in the pursuit and maintenance of the moral good*. It enables a person to remain firm, for the sake of the moral good, in the presence of great fear, especially when in danger of death. The danger of death makes the greatest demands on the courage of an individual; conspicuous examples are combat service in time of war and martyrdom as a testimony of faith.

The moral life of man is a continuous battle against evil in all its forms; it goes on uninterruptedly from the age of discretion in childhood until the last moment of life. Since he is by nature weak and inconstant in the struggle for moral supremacy, and since many and grave dangers beset

his moral life both from within and from without, man needs the strength of the virtue of fortitude to overcome all difficulties and gain final victory.

Fortitude is opposed to rashness and cowardice. *Rashness* is false courage which presumptuously takes unnecessary and dangerous risks, contrary to the counsels of prudence and right reason; it is an excess of fortitude, prompted by too much reliance on one's overestimated natural strength in the face of very grave difficulties. *Cowardice* is the lack of proper courage in the presence of danger and difficulties; it is a defect of fortitude, resulting from underestimation of one's powers of resistance. Cowardice shows itself even in the ordinary affairs of daily life, when a person is afraid to defend his moral and religious principles from the attacks of scurrilous and vociferous adversaries. God gave man definite, though limited, powers to do the good and avoid the evil, and He will not permit anyone of good will to be tested beyond his strength in his endeavor to observe the moral order. Hence, there is no reason for cowardice, nor is there any place for rashness. Fortitude befits both our weakness and our strength. When fortitude is required in our struggle for moral goodness, provided we have practiced it constantly and faithfully in the smaller affairs of life, it will not be lacking in the graver dangers and difficulties.

Fortitude has *no subjective* parts or subordinate species; and it has also *no integral* parts or auxiliary virtues in the strict sense.

There are, however, a number of *potential* parts or cognate, annexed virtues which support fortitude.

Confidence inclines a person to be calm and collected in approaching dangers and difficulties. *Magnanimity* inclines a person to be generous-hearted in undertaking difficult assignments. *Magnificence* inclines the person of wealth to carry out large projects for the alleviation of distress and the promotion of human welfare, such as the establishment and support of charitable, religious, and educational institutions. *Patience* inclines the will to accept with resignation the existing trials and sufferings. *Perseverance* inclines the will to go steadily forward in an undertaking, notwithstanding all the difficulties which endanger it from without. *Endurance* inclines the will to steel itself in the struggle for the moral good by faithfully overcoming all the difficulties which arise from the very nature of the struggle.

The cardinal virtues of temperance and fortitude have as their object the regulation of the tendencies and emotions of man's sensuous nature; temperance in the sphere of pleasure, fortitude in the sphere of pain. Both together seek to subject man's lower nature to the control and direction of reason in accordance with the norm of morality.

Vices

A *vice* is an *operative habit inclining the will to acts at variance with right reason*. Vice is the opposite of virtue. Much of the analysis of virtue can be applied to vice by a reversal of concepts. Our discussion of vice, therefore, can be brief.

Many people labor under the impression that vices and passions are identical. While the passions contribute in

great measure to the formation of vices, they are by no means, in themselves, vices. Passion, or emotion, is an affective state of the animal organism, following the cognition of an object or situation, characterized by strong feeling, by an impulse to action, and by physiological changes in bodily function. The objects and situations occasioning them on the 'objective' side, the cognitive and appetitive factors, both sensory and rational, and the bodily resonances accompanying them on the 'subjective' side, are manifold and variable in kind, quality, and degree. The passions are the result of the activity of the *concupiscible* and the *irascible* sensuous appetency; in other words, they are the result of man's propensity to enjoy and his propensity to fight. The concupiscible appetency gives rise to the passions of love, hatred, desire, aversion, joy, and sadness; the irascible appetency, to hope, despair, courage, fear, and anger. The former refer to normal situations, while the latter are concerned with emergency situations.⁷

The passions are a part of the natural sensuous equipment of man's organism and as such are neither morally good nor morally evil. The vices are stable tendencies toward evil and reside in the will as well as in the sensuous appetency. Just as the virtues always facilitate morally good acts, so the vices always facilitate morally evil acts. Like the virtues, they have their origin as habits in frequently repeated acts. The passions, being a part of man's nature, cannot be completely suppressed or destroyed, but must be *regulated* and made subject to the norm of right reason. Vices, on the other hand, are always morally evil in their tendency and must be *uprooted*.

The existence of vices as evil operative habits poses an interesting philosophical problem. Philosophy⁸ assures us that 'evil' is never a positive reality or being of any kind. Nor is it a mere absence of being. Evil is the absence of a reality due a thing and which ought to have it, but does not. Evil is a *defect*, the *privation of a required good*. Therein, however, lies the problem. Vices are supposed to be evil operative habits. They either exist or they do not exist. If they exist, they are positive realities, and as positive realities they cannot be an evil. If they do not exist, they are nothing, and as nothing they cannot be an evil. Yet, vices exist, and they are morally evil. But how can this be?

The problem is not as difficult as it seems. Since evil is essentially a privation or defect of entity, it is obvious that it cannot exist for itself but always *presupposes an existing subject* which *lacks* something which the subject ought to have; as such evil is always something *relative*, i.e., relative to the individual nature in which the defect is found. For example. A soldier receives a severe arm wound in battle; as a result he has a 'lame arm.' Two things are necessary for a 'lame arm.' There must be an 'arm,' and the arm, so far as it is an existent reality, is a good. The arm, however, is 'lame' because it lacks the normal capacity of movement, and 'lameness' is a defect in the arm and as such is an evil. The evil of 'lameness' is thus relative to the good of the existing 'arm'; lameness, therefore, is a defect (evil) in an existing arm (good). While the evil is itself not a positive reality, the good in which it is a privation is a positive reality; without an existing good there could be no evil.

The application to *vice* is apparent. The habit of vice, considered as the facility of a faculty to act in a definite manner, resides in a faculty, and the faculty as such is good. But the acts, for which the habit contributes facility and readiness to the operative faculty, deviate from the norm of right reason and as such are unbefitting to man's rational nature because they *turn him away from his proper end*. Therein lies the *defect* of vice; it deprives man of the right order in his acts by inclining his will in the wrong direction. What physical evil is in the physical order, moral evil is in the moral order —the privation of a required moral good in man. The vices, therefore, considered as 'operative habits,' really exist, but these habits suffer from the defect of turning the will away from its proper end and goal.

The *division* of vice into its species or kinds can be made from different standpoints. Some authors differentiate the vices according to the laws which they violate; others, according to the virtues to which they are opposed; others, according to the nature of the vices themselves. The last method is convenient, because one can restrict the enumeration, as was done with the cardinal virtues, to those vices, which are the roots of all particular vices.

The *capital vices*, from which practically all evil deeds derive their origin, are seven in number: pride, covetousness, lust, anger, gluttony, envy, and sloth. They are the chief sources of moral evil in the world.

Pride is excessive esteem of one's own self and failure to attribute all excellencies to God rather than to one's own person. *Covetousness* is excessive desire of worldly goods. Lust is excessive desire of sexual enjoyment. *Gluttony* is

excessive love of the pleasures of the palate. Anger is excessive desire of revenge or an unreasonable opposition to a person or thing. *Envy* is displeasure over another's good qualities or good fortune because it lessens one's own glory and importance. *Sloth* is laziness of body and mind, causing one to neglect the obligations involved in the pursuit of moral goodness.

The *ground* for this division lies in the consideration of the kinds of goods which man either seeks or flees in an inordinate manner. There are four types of earthly goods which man *seeks inordinately*. He may seek inordinately: (1) goods which, in a certain sense, are spiritual, such as glory, honor, fame — this is 'pride'; (2) personal, bodily goods which may be necessary for the preservation of the individual, such as food and drink — this is 'gluttony'; (3) goods which refer to the preservation of the species, the functions of sex — this is 'lust'; or (4) goods which are external and material, such as wealth and other earthly possessions — this is 'covetousness.' There are two types of goods which man flees inordinately. He may flee his *own personal* moral good because of the trouble and difficulty connected with its attainment; this is 'sloth.' Or the good of another because he considers it as a lessening of his own excellence; this is 'envy.' Finally, if the good of another becomes an obstacle in our path, and we resent its presence, react with emotional violence to it, and seek to remove the obstacle, we are guilty of 'anger.'

It is imperative to distinguish between evil *habits* and evil *acts*. Single, isolated acts do not constitute a habit: they must be repeated frequently before they engender the

constant inclination toward the respective evil acts which we call 'vice.' Conversely, the fact that a person has a vice does not necessarily mean that he always performs the acts associated with the habit; if the constant inclination to perform the acts is present, because the frequent repetition of this type of act has formed a deep-seated and permanent tendency to perform them, the vice, even when not exercised, is present. A person, therefore, may have the firm resolution to extirpate a vice to which he is addicted, but this resolution alone will not put an end to the vice immediately; he must counteract the vice by the frequent repetition of the acts of the opposing virtue. In this way the vice will gradually fade out as the opposing virtue grows and gains ascendancy.

Virtues and vices are the great driving forces of moral conduct for good and evil. Vices debase man to subhuman levels; virtues raise him to superhuman heights. Man's temperament is due to nature, his virtues and vices are due to nurture; the former is given, the latter are acquired. Virtues and vices, superimposed on temperament so as to form a consistent unity, establish a person's *character* in the sphere of morals.

Virtues and vices can make or mar our whole life.

Summary of Chapter XI

Virtues and *vices* play an important part in every individual's moral life.

1. *Concept of Virtue.* A 'habit' is a comparatively permanent quality disposing a thing well or ill in its being or operations. Operative habits dispose a thing well or ill in its operations. Only such things can properly be the subjects of operative habits as are *free* in their activities, because they are intrinsically indeterminate. *Acquired* operative habits are formed through the frequent repetition of habits. *Moral virtues* are acquired operative habits. Virtue is the *permanent inclination and facility to perform morally good acts*.

2. *The Subject of Virtue.* Only 'human acts' are morally good acts, and they are *free* acts. Consequently, the moral virtues reside either in the will itself or in some other power controlled by it.

3. *The Cardinal Virtues.* Cardinal virtues are the principal virtues among several groups of virtues. They are *prudence, justice, temperance, and fortitude*. They may be accompanied by other virtues considered as *parts*; these parts are either 'subjective,' integral,' or 'potential.'

4. *Prudence.* 'Prudence' is that virtue of the intellect which enables man to judge correctly in each individual case what the moral order demands of him. Prudence is a habit of the practical intellect.

Subjective parts: personal prudence and prudence in the direction of others. *Integral* parts: remembrance,

intelligence, docility, sagacity, reason, foresight, circumspection, and caution. *Potential* parts: eubulia, synesis, and gnome.

5. *Justice*. 'Justice' is that moral virtue which inclines man's will to render unto each one his due.

General or legal justice regulates the actions of the individual in his relations to the 'commonwealth.' *Commutative* justice orders the dealings of one individual with the other individual and sees to it that each one receives strictly what is his own. *Distributive* justice orders the dealings of society toward its members and inclines those in government to distribute equitably the common goods and burdens among the members of the commonwealth and inclines the latter to be contented with their share of the social goods and burdens assigned to them. In cases of injustice, only commutative justice imposes the obligation of restitution.

Subjective parts: commutative and distributive justice. Some authors also include legal justice.

Integral parts: none. *Potential* parts: love of moral truth, gratitude, liberality, affability, fairness, neighborly love; love of God, hope in God, religion; piety and observance.

6. *Temperance*. 'Temperance' is the moral virtue which orders the desire for sensible pleasure within the limits of right reason. Sensible pleasures are not in themselves evil, but they must be used as means to a higher end; they must be regulated by reason and brought into reasonable subjection. This is done by *temperance*.

Subjective parts: abstinence, sobriety, and chastity. *Integral* parts: propriety and the sense of honor and shame.

Potential parts: self-restraint, humility, meekness, clemency, and modesty.

7. *Fortitude*. 'Fortitude' is the moral virtue which inclines the will to overcome grave danger and sustain severe hardship in the pursuit and maintenance of the moral good. It is opposed to rashness and cowardice.

Subjective parts: none. *Integral* parts: none. *Potential* parts: confidence, magnanimity, magnificence, patience, perseverance, and endurance.

8. *Vices*. A *vice* is an *operative habit inclining the will to act at variance with right reason*. 'Vices' and 'passions,' though related, are not identical; vices are always directed toward what is morally evil, but the passions, since they are natural equipment of man, can be directed toward either good or evil. As an 'evil,' habits are essentially a *defect*, a *privation* of a required good. Their defect consists in that they turn man away from his proper end.

The *capital* vices are seven: pride, covetousness, lust, anger, gluttony, envy, and sloth.

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¹ *Nicomachean Ethics*, Bk. II, Oh. 6 (1106 a, 22).

² *Summa theol.*, 1a 2ae q. 55, art. 4

3 *Ibid.*, Ta 2ae, q. 56, art.

4 *Loc. cit*

5 *Ibid.*, 1a 2ae, q. 61, art. 2.

6 *Ibid.*, 2a 2ae, q. 48

7 For a more detailed discussion on the passions, see the author's *The Whole Man*, Ch. XI

8 See the author's *The Domain of Being*, Ch. XIV

Chapter 12

RIGHTS AND DUTIES

PRUDENCE, JUSTICE, TEMPERANCE, AND FORTITUDE ARE THE four cardinal virtues heading the various groups of virtues which make one a truly 'good person.' They are so many skills or habits which give the will and its subordinate powers the readiness and proficiency necessary for the ordering of human conduct in accordance with the norm of morality. Though a person may excel in one or the other of the cardinal virtues, all four are interdependent in a great measure and render mutual assistance.

Among the four cardinal virtues, *justice* is of special importance, because it is essentially a *social* virtue and man is by nature a social being. Justice is the moral virtue which inclines the will to render unto each one his due. Because something is 'due' to a person, he has the 'right' to demand what is his due, and others have the 'duty' to render unto him what is his due.

Rights and *duties* are the warp and woof of the social fabric of human relations. Without justice, and without the rights and duties which issue from justice, the social life of man would end in chaos.

Concept of Right and Duty

The term 'right,' as used in *moral philosophy*, has a twofold meaning in its basic use. As an *adjective*, 'right' has a meaning identical with 'morally good' and is used in opposition to the term 'wrong' or 'morally evil.' We thus speak of human acts as being 'right' or 'wrong,' and the meaning is that they are 'morally good' or 'morally evil.' As a *noun* the term 'right' is used in a juridic sense as pertaining to law and justice. In a *juridic* sense the term 'right' may have a threefold meaning. It may mean the law itself, as in the statement, 'Natural right entitles him to perform this action.' Or it may mean *just dues*, as when someone says, 'He has the right to the property because he bought it.' Or it may mean the *moral power* or *faculty to exact* his just dues against others, as when the principle is enunciated that, 'Every person has the right to defend his life against an unjust aggressor.'

In the present chapter we are not concerned with the use of the term in its adjectival form meaning what is 'morally good.' 'Right' in this sense has been treated in previous chapters.

Here we treat of 'right' in its *juridic* sense. The use of the term in the sense of 'law' is now rather unusual in the English language; common usage favors the term 'law' in the first of the juridic meanings mentioned above, so that we speak of 'natural law' rather than of 'natural right.' When the term *right* is the correlative of duty it is commonly used either in its second or third juridic meaning, namely as the 'just dues' to be exacted or the

‘moral power to exact one’s just dues.’ As ‘just dues’ the term is taken *passively*, and as the ‘moral power it is taken *actively*. If someone has the ‘right’ to exact his just dues, someone else has the ‘duty’ to render unto him his just dues, and this is a matter of justice.

Law is not the same thing as ‘right.’ Law is the source and root of right, and right is the effect and consequence of law. Because there exists a natural law imposing upon parents the *duty* to support and educate their children, the children have the *right* to support and education. Rights and duties always go together as a consequence of law.

Just dues presuppose a certain equality of proportion between thing and thing, and in this sense *right* is the proper object of justice. Justice always implies strict equivalence and imposes the strict obligation or duty to maintain or restore this balance of equality between thing and thing on the part of one person and another. When employer and employee, for instance, have agreed upon a definite wage for a day’s labor, the employee, having rendered his services, has the ‘right’ to the stipulated wage and the employer has the ‘duty’ to pay the wage. The wage in this case is a just due and as such a right on the part of the laborer.

Not all virtues embody this relation of *strict equality*. For example, man must practice the virtues of religion toward God, and these virtues entail a strict obligation on the part of man. Yet, because God is an Infinite Person and man a finite person, man simply cannot render unto God His due in full measure according the demands of strict justice; the equality between right and duty cannot be upheld in such a

case, since the distance in dignity between God and man is infinite.

Similarly, some virtues, though intimately related to justice, cannot be said to impose a *strict obligation*. Such virtues are, for example, gratitude for alms received, amiability, magnificence in the distribution of one's wealth, clemency, and friendship. Virtues of this kind go beyond the strict demands of justice; no one can claim that he has a strict 'right' to them as his just due, just as little as the other has a 'duty' in their regard from the standpoint of strict justice. Such virtues, according to St. Thomas,¹ are only potential parts of justice and are in the nature of a 'moral due' to which one is bound in respect of the rectitude of virtue; strict justice, on the other hand, gives rise to the 'just due' or 'legal due,' in as much as one is bound to render this due by reason of an obligation as the result of the natural law or of a positive law. As the proper object of justice, 'right' thus implies both equality and a strict obligation.

Right in this sense of just dues is therefore defined as *something which is due to someone according to strict equality because of a strict obligation*. This is 'right' in a passive sense.

In an active sense 'right' means the legitimate power or faculty of claiming something as strictly one's own in relation to other persons. Only then can this something be a 'just due.' Powers, however, are of two kinds, physical and moral. *Physical* power or faculty is nothing more than the physical force or ability which enables one to attain a certain end. A robber, for instance, can force a person at

the point of a gun to give up his valuables; he has the physical power to take someone's valuables, but he obviously has not the 'right' to take them and the victim has not the 'duty' to hand them over. Physical power alone and as such, therefore, does not constitute 'right'; otherwise robbery and similar acts of physical violence would be justified. Moral power or faculty is a power which binds a person's will and imposes on it an obligation; moral power appeals to a person's will through knowledge and in the final analysis is based on the moral law. *Right* is thus defined as the *moral and inviolable power vested in a person to do, hold, or exact something as his own*.

The items in this definition of 'right' in the active sense deserve careful consideration. As just explained, right consists in a *moral*, not in a physical, power to claim something as one's own. The mere fact that a person lacks the physical power to enforce his claim does not invalidate his right. When the soldiers of an aggressor nation, in an unjust war, invade a city and take away the personal jewelry of the citizens as loot, the citizens lack the physical power to retain or reclaim their jewelry, but they still have the 'right' to their jewelry, and the invading soldiers have the obligation to respect this right; the right to have their jewelry as their own remains intact in the original owners as a 'moral power.' Right is a 'moral and *inviolable* power.' Every right in one person involves a corresponding duty in others to respect this right and not to violate it. Any violation of a right is morally wrong, and the restoration of the violated right becomes a matter of strict justice binding in conscience. Right is a 'moral and inviolable power *vested*

in a person. This follows from the fact that every right is a 'moral' power, because such a power makes its appeal through knowledge to the free will. Only a rational being or person has an intellect and free will, and therefore only a 'person' is capable of rights in the true sense of the word. Right is a 'moral and inviolable power vested in a person to *do, hold, or exact something as his own.*' Right is a matter of justice, and justice pertains to the 'mine' and 'thine' of persons. It may be something to do, or to hold, or to exact; whatever it is, it is a just due, a 'mine,' and it belongs to a person as 'his own' and not to another.

Such is the meaning of 'right' as distinguished from 'duty.' 'Duty' is the correlative of 'right.' The meaning of 'duty' should be clear from the meaning of 'right.' Duty in this sense is the *moral obligation to do something or to omit something in favor of another according to the demands of strict justice.* It will be noticed that 'duty' as the correlative of 'right' has a far more restricted meaning than it has as a synonym of 'obligation' (see Ch. 10). 'Duty,' as here defined, is taken in an active sense and corresponds to 'right' taken in an active sense. 'Duty' in a passive sense means the *action or omission of an action to which one is obligated by justice.* In a passive sense we speak of *duties*, just as we speak of *rights*, in the plural. If one person has the right to do, hold, or exact something, another person has the duty not to interfere with this right; rather, he has the obligation to perform or omit an action corresponding to the other's right, and this obligation arises from strict justice. Only in this manner can the equality between thing and thing and

between person and person, which is the essence of justice, be established and maintained.

The Nature of Right

A right does not exist for its own sake. It has a purpose in the sphere of human conduct.

The *purpose* of rights is the establishment and maintenance of the social order among human beings, as befits their rational nature, with respect to the realization of their ultimate end and of their special intermediate ends. In the field of *legal* justice the purpose of right is to secure the existence of society and to provide the means which are necessary for society to fulfill its task. In the field of *distributive* justice right has the purpose of safeguarding the members of society in relation to society as a whole in the things which belong to them, so that public burdens and goods are distributed equitably among all according to their merit and capacity. In the field of *commutative* justice right has the purpose of securing the freedom and independence of the individual members of society among themselves in the things that are their own. And as justice is most complete in commutative justice, so right is most complete in the field of commutative justice. The establishment and maintenance of the social order can only be procured when the individuals have a proper amount of free activity for themselves and still restrict themselves in this activity to such a degree that all may live together as members of society in an orderly and harmonious manner. The individuals must work for the common good of all

within the framework of society; since, however, society is not an end in itself but is subordinated to the good of all, the individuals not only retain their rights as individuals but also in relation to society itself.

There are *four elements* which are essential in the constitution of a right: the subject, the object, the title, and the term.

A right always pertains to someone; it requires a subject. The *subject* of a right is the *person* who is vested with the moral power or faculty to do, hold, or exact something as his own. The person in question may be either a physical or a moral person. A 'physical' person is any individual human being as he exists in nature, for example, John Jones, Joe Louis, Douglas MacArthur, John Jones, having paid the price for an automobile and received a bill of sale to that effect, is now the owner of the automobile and has the right to its use. A 'moral' person is any legitimate group of persons acting as an organized unit, for example, a legal partnership in business, a society, a veterans' organization, a labor union, an industrial corporation, a state. The Ford Company makes a contract with a steel corporation for the delivery of a certain amount of steel per month to its factories; it has the right to this amount of steel and may demand the shipments as stipulated in the contract.

The *object* or *matter* of a right is that to which a person has a right. The object or matter may be threefold: to do, to hold, or to exact (something). A person may have the right to *do* something, namely, either to perform an action or to refrain from performing an action. A landlord, for instance, has the right to live in his house or not to live in it; to let it

out for rent or not to let it out for rent; to demolish it or not to demolish it. Or a person may have the right to *hold*, i.e., possess and use, something that is a good for him. Such a good may be 'personal,' like the members and powers of the body and the faculties of the soul, so that a person has the right to the integrity and proper use of these things; or the good may be some 'external' and 'real' good, like property and money, so that he has the right to keep them and use them as his own. Or, again, a person may have the right to *exact* something from another, namely, that this other person perform or omit a certain action. An employer, for examples has the right to demand an honest day's work from an employee for a day's honest wage; a man paying for the building of his home has the right to demand that the contractor erect the structure according to the specifications agreed upon in the contract.

The *title* of a right is the *objective ground* upon which the right is based, so that a person has the moral power or faculty to do, hold, or exact something as his own. Two things are required in the title. One is the *general principle of a law*, either natural or positive law, which empowers a person to consider something as his own. Natural law, for example, gives to a person the right to his life and bodily integrity; positive law gives the right to acquire property by inheritance or purchase. The other requirement is some *contingent fact* which is the proximate cause which determines the right in a particular individual and actuates the right. For instance, the will of a deceased man names his brother as the heir of his estate; here the will of the deceased man is the contingent fact which gives his brother

the title to his estate. A person signs a contract with another for the purchase of a house; the contract is the contingent fact which makes the person the owner of the house and gives him the right to it.

The *term* of a right is the *person* in whom is found the *duty* which corresponds to the right of the subject. Every right in one person implies a corresponding duty in another person. If one person has the right to 'do' something, other persons have the duty not to interfere but to permit him to do it; if one person has the right to 'hold' or possess something, other persons have the duty not to violate his possession; if one person has the right to 'exact' something from another, this other person has the duty to perform or omit the action as demanded.

Subject, matter, title, and term — the four elements which enter into a right — must always be present, if a person is to have a 'right' in the strict meaning of the term.

Brute Animals and Rights

From the nature of rights, as just explained, it should be clear that a brute animal is *incapable* of being the *subject of rights*.

Rights and duties always go together. *Duty* involves the concept of responsibility, obligation. Duty is the restriction of the free will through the prescription of law. Duty, therefore, is a moral entity pertaining to moral conduct; it is an 'ought,' but not a 'must.' Now, brute animals, since they have no intellect, cannot have a knowledge of law and its prescriptions; and since they lack free will, they cannot be

bound by moral obligations. Hence, the necessary character of brute action precludes the possibility of such action being regulated by duties.

The same argument applies to *rights*. If the brute is incapable of duties, it must also be incapable of rights. It would be preposterous to have rights and no duties; because, if one brute has a right, other brutes have a duty corresponding to such a right. A right presupposes rationality. A right is a *moral* power to do, hold, or exact something from another; and this power rests, not on physical force, but on the force of a rational law which gives one will freedom of action while it binds the other wills to respect this freedom of action. Only a rational being can know anything about 'law' and 'will' and 'freedom of action' and 'duty.' A brute, however, is not a rational being and so it cannot have either the required knowledge or the required freedom of the will with its corresponding freedom of action. Where there is no reason, there is no free will. Hence, brute animals are incapable of having rights.

Brutes are *things*. As such they can be, and frequently are, the property of human beings. Whoever injures or kills a brute animal belonging to someone does not violate any right of the animal, but he violates the owner's right, unless he has a sufficient reason in his own personal right for doing so. When a brute animal is the property of someone, it is neither the subject nor term of a right, but merely the *object* or *matter* of a right. To torture an animal may be cruelty unworthy of the rational nature of man, but it is not a crime against the *animal as such*. If brutes were capable of being the subject of rights, they would, like man, have

the most basic of all natural rights, namely, the right to life and to the integrity of their bodily members. In that case, however, no animal could be slaughtered to serve as food for man or beast. On the face of it, this statement is obviously ridiculous and contrary to the universal conviction of mankind; and the reason for this universal conviction and usage lies in the fact that animals are irrational beings, not persons, and as such have no rights which man is bound to respect.

What about *vivisection*? Vivisection is the operation on living animals, especially for biological and physiological study. Here we do not have reference to the cutting, poisoning, or otherwise injuring of animals for the sake of observing their reaction to pain, when this is done out of mere curiosity and without a truly scientific purpose. The scientific purpose being granted, is vivisection morally justifiable? Notwithstanding the constant barrage of propaganda directed against it, scientific vivisection is *morally justifiable* in principle and practice, so long as it is performed for a sufficiently grave reason and only so much pain is inflicted on the animal as is needed for the success of the scientific investigation. Vivisection would be morally wrong only on the supposition that the operators would thereby violate some duty toward God, toward other persons, toward themselves, or toward the animals. Under the conditions as given, however, no such duty is violated.

The *proof* is simple and clear. Scientific vivisectionists do not violate a duty toward *God*. According to the universal scheme of nature, as ordained by God, the lower creatures are destined for the use and benefit of plants; the plants for

the animals; and all for man. The only limitations placed by God on man in the use of irrational things are the prescriptions of the natural law; and natural law requires that man have a rational purpose in his use of things. Vivisection, however, when performed for serious scientific study, especially when vivisection is practically the only means for obtaining valuable knowledge, serves a rational purpose. Therefore, vivisection does not violate a duty toward God. Scientific vivisectionists do not violate any duty toward other persons. Justice is not violated, because vivisectionists do not operate on animals belonging to *other persons*. Charity is not violated, if the operations are performed in the relative seclusion of the laboratory and not before the eyes of unauthorized persons or the general public. They violate no duty *toward themselves*, because it is presumed that they will not inflict any more suffering on an animal than is required for the success of their experiment and the acquisition of pertinent knowledge. They violate no duty *toward the animals*. Animals, since they are irrational creatures and not persons, have no rights which man has the duty to respect.

That vivisection can be, and actually is, of great *advantage to science*, especially to biology, physiology, surgery, and the treatment of internal diseases, is obvious. In very many cases, experiments cannot be made on human beings without the danger of serious harm and even death. All the brute animals in the world cannot measure up to the dignity of a single human being; and if the sufferings of these animals help to alleviate human pain and save a single human life, they have achieved a destiny far superior

to that of their natural existence. Hence, the conclusion is inevitable that scientific vivisection is morally justifiable in principle and in practice.

Right and the Use of Reason

Rationality is the basis of rights. Only a rational being can have rights and duties. Then what about *children* before they reach the age of discretion, *idiots*, and the *insane*? Do they lack rights? Such persons cannot apparently be termed 'rational.' Some of those who defend animal 'rights' appeal to these instances to prove that 'rationality' is not a requisite for rights; these persons, they claim, are for all practical purposes on a par with brute animals.

A distinction must be made between the *possession* and the *exercise* of reason. This distinction is of extreme importance.

Every human being possesses a spiritual soul with definite spiritual *powers* or *faculties*. These powers are *reason* and *free will*. Once the human soul comes into existence, it possesses reason and free will, and it possesses them as long as it exists. The intellect or reason demands proper development of the human organism for its own proper functioning. Any defect in this development will bring about a lack of the proper sensory data for the intellect in the exercise of its own power. Infants have a sensory system which is still in the process of development; idiots have a sensory system which is arrested in its development; insane persons have a defective or maladjusted sensory system. Every human being, therefore,

since it has a spiritual soul, possesses the *power or faculty* of rationality as an integral part of its rational constitution and as such possesses the full dignity of a human person capable of rights; but some persons lack the exercise of their essential rational power. The 'exercise' of rational powers is not essential to man, nor does the lack of this exercise deprive a person of his basic rights, because otherwise a sleeping, drunken, comatose, or anesthetized person would have no rights while deprived of the use of reason. If the latter still retain their basic rights as human beings, then so do infants, idiots, and insane persons. All possess the remote or *radical* power of self-determination essential to the human person, even if they are temporarily or permanently deprived of its use. Rights are determined by what is natural and essential; not by what is accidental and exceptional.

Brutes possess neither the power nor the exercise of rationality. Infants, idiots, and insane persons possess the power of rationality, but they lack its exercise; they are, therefore, true persons with all rights inherent in man.

The Division of Rights

The enumeration of the various *kinds of rights* admits of considerable latitude, depending on the standpoint of division and the purpose of the one making the division. The following are some of the main rights enumerated by ethicists.

From the standpoint of the *law* which gives rise to a right, we distinguish between 'natural' and 'positive' rights.

A *natural* right is founded on the natural law. This right includes everything that is a just due and which a person can therefore claim as his own in virtue of the conditions of nature. Among such rights are, for example, a person's right to his life, his health, his bodily and mental integrity; a husband's rights toward his wife, and *vice versa*; a child's right to support; a person's right to his reputation, to the legitimate products of his labor or business. A *positive* right is one which is founded on the positive law. Positive rights are conferred on persons by private or public pacts or by the ordinance of legitimate authority. Ultimately, of course, all positive rights are based on the natural law of 'mine' and 'thine,' since it is in virtue of the natural law that everyone must render unto another his just dues in strict justice; but positive law gives a greater clarification and specification to the general rights embodied in the natural law. Among such positive rights one might mention the respective rights of labor and industry, rights of inheritance and contracts, and rights of tax exemption. Positive rights may be either divine, ecclesiastical; or civil, depending on whether they are grounded on divine, ecclesiastical, or civil law.

From the standpoint of *origin*, rights are 'connatural' or 'acquired.' A *connatural or congenital* right is one which belongs to man because of his very nature as a person, without any action on his part or on the part of any other person in his behalf. Such rights are the right to life and liberty, the right to marry, the right of parents over their children, the right of liberty of conscience, the right to acquire some property, etc. An *acquired or adventitious* right is one which comes to a person, not through his very

existence as a human being, but through some specific action of his own or some action in his behalf on the part of someone else. Such rights are the right to a house or car or anything which he purchases, the right to property given to him through a donation or legacy, and so on. Connatural rights are always based on natural law, whereas acquired rights may be based either on natural or positive law.

From the standpoint of the *subject* of rights, rights are either 'public' or 'private.' A *public* right inheres in the state or in private persons against the state. Its end is the common good. Such rights on the part of the state are the right of taxation, the right to set up courts for the administration of public justice, the right of eminent domain, etc.; on the part of individuals against the state, the right not to be condemned without due process of law, the right against unfair confiscation, the right to seek redress in the courts, etc. Public rights may be either civil or ecclesiastical. A *private* right inheres in private persons as against private persons. Its end is the individual good. Such rights are the right existing between employer and employee, the right to possess an article purchased from another, etc.

From the standpoint of their *connection with the subject*, rights are either 'inalienable' or 'alienable.' An *inalienable* right cannot be renounced or transferred because it is necessary for the fulfillment of man's purpose of being and essential duties. An inalienable right can, therefore, neither be ceded or superseded. The American government is founded on the doctrine of inalienable rights, as we can see from the famous statement in the Declaration

of Independence: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty, and the pursuit of happiness." Among the inalienable rights are the right to life and the right to liberty of conscience, etc. An *alienable* right can be renounced or transferred for sufficiently grave reasons, because it is not an essential requirement of human nature. Alienable rights, for example, are the right to marry, the right to form a labor union, the right to drink alcoholic beverages, the right to free speech, free assembly. No one can or may renounce an inalienable right; but one may, for sufficiently grave reasons, refrain from exercising such a right, as when a martyr permits his persecutors to carry out their evil design upon his life.

From the standpoint of their *relation to physical force*, rights are either 'perfect' or 'imperfect.' A right is perfect which is based on strictly commutative justice and is so determined as to object (matter) and subject that one may resort to physical force to exact it. Such, for example, are the right to life and bodily integrity, the right to the possession and use of one's exclusive property, the right to a just compensation. An *imperfect* right is based on some virtue other than commutative justice and is not so determined as to object and subject that one may resort to physical force to exact it. Such rights refer to 'moral dues,' not to 'just dues.' Among imperfect rights are, for example, the right of a poor person to alms, the right of a person to a reward for saving a wealthy man's life, the right of a man to his wife's affection and vice versa, the right of parents to

the respect and love of their children, the right of a child to a higher education. Imperfect rights, therefore, are not strict 'rights,' but rather 'claims.' Obviously, from a moral standpoint, many imperfect rights or claims have an inviolability just as great as, and in some instances even greater than, rights based on commutative justice; everything depends on the circumstances of the particular case.

From the standpoint of their *relation to civil law*, rights are either 'moral' or 'legal.' A *moral* right is any right which is based on the moral law and appeals through knowledge to another's will; as such it is identical with 'the moral and inviolable power or faculty vested in a person to do, hold, or exact something as his own.' A moral right is a genuine right, whether it be recognized by civil law or not. The rights mentioned above are moral rights. A legal right is determined and enforced by an enactment of the civil authorities. The state, of course, does not include in its laws all the moral rights of man. However, all legal rights, if they are rights in the true sense of the term, must be also moral rights, because the legal authority of the state is based on natural law and exists to enforce the natural law. The natural law is often obscure to the average individual, and so it behooves the state to clarify and specify the particular rights and duties, implicitly contained in the natural law, by acts of legislation in the interests of peace and order. The state, therefore, does not create rights, but merely determines and declares them. Every legal right is a moral right, but not every moral right is a legal right.

From the standpoint of the *object*, a right is either 'real' or 'personal.' A *real* right (in this meaning 'real' is used in a sense similar to 'real estate') is one which gives to a person power in or over his own objects (*jus in re*). The thing itself is the person's property and belongs to him as his own and as something bound to him. The person who has a real right over a thing can retain and use it or dispose of it or recover it wherever found. Such are, for example, the rights based on purchase, like a car, a house, clothes, cattle, and other articles which have been turned over to a person after purchase. A *personal* right gives to a person power to exact something from another person, so that this something may become his own (*jus ad rem*). Here the right is directed primarily against the person who is supposed to render a service or hand over an object, as in the case of keeping a promise or paying a debt. One who has a personal right of this sort is not as yet in actual possession of the object but is entitled to it and can give action against the personal debtor, so as to obtain it.

'Right' and 'duty' are correlatives. Every right in one person presupposes a duty in another person. Hence, the division of *duties* corresponds to the division of rights. No special enumeration, therefore, is needed. All of us have a rather strongly developed sense of our rights, but we should also develop in ourselves an equally strong sense of our duties. Only when our sense of rights and our sense of duties are properly balanced, will an orderly and harmonious life in society be possible.

Rights and Coaction

There are *three properties* attributed to perfect rights, namely, 'coaction,' 'limitation,' and 'collision.' They will now be treated in this order.

Coaction or coercion is that property or quality of a right in virtue of which a person may use physical force, if necessary, to exact his just dues from anyone who seeks to prevent him from exercising his right. Coaction does not mean that one can compel another's will; such compulsion is impossible, because the will is free in its internal acts and cannot be forced to give its consent. Coaction, therefore, can only mean that one may use physical force to compel another to perform imperate actions, so as to comply with one's own rights. A perfect right thus not merely imposes a 'moral' bond upon another's will, but carries within itself the right of coercion to exact that to which one is entitled. Two things are involved in the power of coercion: *defense* of a right, so that it can be preserved from violation; *vindication* by the infliction of the proper penalty, so that the violated right can be restored. The right remains, even if the power of coaction cannot be, or is not, exercised for some reason. It may happen, for instance, that a man cannot defend his right, as when he is robbed by armed bandits, or that he thinks it more prudent not to exercise his right, as when a father refrains for pedagogical reasons from punishing his child guilty of theft in the home.

Primarily, the *power* of coaction belongs to the person who possesses the perfect right. *Secondarily*, the power of coaction belongs to those persons in authority who

represent the primary possessor of a perfect right, such as the father in his family and the public authority in the state. So far as the *exercise* of the power of coercion is concerned, it pertains *primarily* to the public authority of the state, because the state has the obligation to promote the common good and safeguard the juridical order among its subjects. Only *secondarily* does the exercise of coercion pertain to the individual possessor of a right. The reason is clear. The order of society demands that the defense and vindication of right be exercised by the constituted authority through proper legal procedure rather than by the personal effort of an individual who may be prejudiced by self-interest and blinded by passion. Only in cases of urgent and instant necessity may the individual exercise his power of coercion without waiting for the intervention of public authority, or in cases where the power of public authority has lost its efficacy in the defense and vindication of individual rights.

Nations with an autonomous government are moral and legal persons and have rights. Like individual persons, they have the power of coercion to defend and vindicate their rights. Unless there be an international court capable of upholding their rights, national governments may, when necessary, have recourse to physical force to defend and vindicate their sovereign rights against unjust aggression on the part of other sovereign nations. A war, therefore, may be a just means for a nation to exact its just dues, if every peaceful method has failed to bring about the required adjustment. Strict rights would be useless if nations did not possess the coercive power to repel an

invasion of their rights and restore the rights to which they are entitled.

The power of coercion is a necessary property of a perfect right.

All perfect rights, since they are based on justice, are grounded on, and receive their binding power from, the natural law. The purpose of the natural law is to regulate human actions in such a manner that man can attain his immediate ends and his ultimate end as a rational being. Such is the design of God in establishing the natural law. Now, perfect rights are *means necessary* for the realization of the purpose of the natural law. Hence, it must be possible for man to use his perfect rights as a necessary means for realizing the purpose of the natural law. But this purpose would be frustrated if perfect rights had only moral binding power and not also the power of coercion attached to it. Moral binding power suffices for persons of good will; but many persons are actuated by a perverse will and by malicious self-interest, and they are inclined to disregard the rights of others unless compelled to respect these rights. Under these conditions, the power of coercion is necessary for the defense and vindication of perfect rights, or the purpose of the natural law could not be efficaciously obtained. Hence, the purpose of the natural law demands the use of the power of coercion, if necessary, for the defense and vindication of perfect rights against the evil designs of violators. Since, therefore, the power of coercion is necessarily connected with the very concept of perfect rights, it is a necessary property of a perfect right.

It would be *erroneous*, however, to identify a perfect right and its power of coercion with the *efficacious exercise* of this power of coercion. The efficacious exercise of the power of coercion does not constitute the very essence of right, and a right does not cease to be a right whenever the possessor of a right lacks the physical force needed for the actual defense and vindication of his right. The efficacious exercise of the power of coercion depends upon many external conditions, and these *external conditions* may hinder the efficacious exercise of the power of coercion through no fault of the possessor of the right. An unborn child, for example, has a perfect right to life. Yet the child cannot efficaciously defend its right to life, and all too often the public authorities are incapable of bringing the murderers to justice because of the impossibility of producing sufficient evidence of the crime. Under the circumstances, neither the child itself nor the public authorities can efficaciously exercise the power of coercion to protect the child's right to life. But this accidental lack of efficacious exercise certainly does not invalidate the child's inherent right to life, because the right to life is a natural and inalienable right which each human being possesses by the very fact that it is rational.

A number of *absurd consequences* are involved in the view that a perfect right requires the efficacious exercise of the power of coercion. *First*, it is absurd that rights in their very essence and existence should depend upon the external, accidental conditions connected with the actual exercise of this power. Rights flow from the nature of man and remain with the nature of man, whether or not they can

be actually defended and vindicated by physical force. *Second*, it is absurd that a person could be deprived of his rights, and rights cease to be rights, by the mere fact that the possessor of such rights would not be able to prevail against the superior force of malefactors. Under such circumstances, there would be a premium on physical force as against justice, and the entire moral order would be disrupted. *Third*, it is unthinkable that physical force and its actual exercise, no matter how employed, should be the source of right. Might would then be right, and aggressor nations, if they succeeded in their evil designs, would be justified in absorbing weaker nations. *Fourth*, it is contrary to reason that no rights should exist for legitimate governments and individual citizens in times of civil war and, even more so, during a period of anarchy. If this were not the case, evil would be superior to the natural law. The fact is simply that the actual efficacious exercise of the power of coercion presupposes the power itself, and the power presupposes the right. The right is by *nature prior* to both the power of coercion and its efficacious (or inefficacious) exercise and remains *intact and inviolable* as a moral force binding the wills of others, whether the possessor is capable of enforcing it or not. Any view which places the essence of a right in the actual possibility of its enforcement makes a mockery of justice and of the natural law and of God.

It should be clear, therefore, that the theory advanced by C. Thomasius, I. Kant, R.V. Jhering, R. Stammier, and many modern writers, that the *essence* of a right consists in its *coerciveness* or power of efficacious coercion, is erroneous.

Rights and Their Limitation

The only logical foundation for rights is the existence of the natural law and of God as its author. Without this foundation it is pointless to speak of rights and duties. Man is not his own supreme master. He may not take what he can get, irrespective of the feelings and claims of others. Granted the existence of the natural law and of God, one can understand that rights exist and are inviolable and that duties exist and must be fulfilled. No man has only rights or only duties; rather, he has both rights and duties, and his duties limit his rights.

The *limitation of rights* is that property whereby the exercise of one right is curtailed by some other right. Only God has absolute, unlimited rights. Man's rights are participated rights which, by their very nature, are limited. Because the world is an ordered universe, made according to the plan of divine wisdom, every creature has an independent existence, yet is limited in its activities by the definite end or purpose it is destined to fulfill. This truth applies also to man. Since man is a rational being, he possesses certain natural rights proper to himself; but since he is also a social being and a creature of God, he has certain duties toward other men and toward God which limit his rights.

The limitation of rights is derived from *two main sources*: a right is limited by the 'end' for which the right has been granted; a right is limited by the 'duties' which the possessor of the right is bound to fulfill.

The purpose or *end of man's existence* is to live in accordance with his rational nature, so as to attain his ultimate goal, namely, the glorification of God and his eternal happiness. Whatever is conducive to this ultimate end is an intermediate end. To obtain this end man was given certain rights as necessary means. But all men have this same end and therefore also the same basic rights. Man, therefore, in exercising his own rights, must have due regard for the rights of others, for all must strive to reach the same goal. It follows, then, that the rights of all men are limited by the end for which the rights were given. Each individual right is also given for a *particular purpose or end* and is limited by it. Wealth, for instance, is a physical good, and man has the right to strive for it and possess it; but this right is limited by his ultimate end, and he may neither strive for it nor possess and use it in a manner which would turn him away from his final goal. Man has the right to food and drink; but the purpose of these things is proper sustenance of the body for health and strength, and this purpose limits the use of this right, so that he acts immorally if he uses them to the excess of gluttony and drunkenness. Man has the right to the use of speech; since, however, it is the purpose of speech to communicate one's thoughts to another, this right is limited by this purpose, so that man must use speech for the expression of truth as it exists in his mind and not for falsehood.

Furthermore, man's rights are limited in their exercise by *duties*. Because man has certain duties toward himself, toward his fellow man, and toward God, it is obvious that the fulfillment of his duties will limit the unrestricted use of

any rights which would interfere with his duties. Similarly, others have duties, and these duties also may limit the exercise of rights in another person, in so far as he may interfere in the proper discharge of duty on the part of someone else. The rights of public officials, for example, are limited by their duty to exercise their powers for the promotion of the common good of all citizens. The right of a person to drive a car is limited by his duty not to endanger his own life and limbs and the life and limbs of others. The right of a tavern-keeper to dispense liquor is limited by the duty of his patron not to become intoxicated. The right of a person to food and drink is limited by his duty to have proper regard for his own health, and this duty forbids him to take those kinds of food and drink which would injure his health. Every person has the right to his own life, but his duty to the Creator limits his right, so that he must use it in a manner conformable to the superior rights of God. A man has the right to the use of his wealth, but he may not use it to hinder another from discharging his bounden duties.

Rights and Their Collision

A collision of rights is an apparent conflict of rights which cannot be satisfied simultaneously. This occurs when rights apparently are equally founded.

The term 'apparent' is added to 'conflict' advisedly in the definition. There can *never* be a *real* conflict between rights, when rights are considered objectively. True rights are based on the natural law and derive their binding force from the natural law, either directly or indirectly; and

natural law is an expression of the wisdom and will of the Creator ordering the universe and the life of man to their proximate and ultimate end. True rights, therefore, have their origin ultimately in the wisdom and will of God. Were a real conflict or rights possible, one would be compelled to assume a conflict or contradiction in the wisdom and will of the Supreme Legislator. But a conflict or contradiction in the wisdom and will of the Supreme Legislator is impossible. Therefore, a real conflict between true rights is impossible. Consequently, such a conflict is not real but apparent.

How, then, does an apparent conflict of rights arise? Through *imperfect knowledge* of the natural law and of the rights which flow from it. No human being has absolute rights. Every right is limited in some way by other rights and duties. There exists a *hierarchy of rights* in the life of man, somewhat after the manner of the hierarchy of functions in the human organism. All members and organs of the body have their proper function; but each function imposes a limitation on other functions to some extent, so that together they may co-operate toward the general welfare of the organism. Some functions are more important than others, and it frequently happens that certain subordinate functions must be curtailed or even temporarily suspended in favor of a more important function. So, too, with rights. In the hierarchy of rights, some are more important than others and have preference over them. When there is an apparent conflict, the more important rights prevail over the less important rights.

Through his imperfect knowledge of the natural law and of the hierarchy of rights, aggravated by prejudice and self-interest, man often finds it difficult to decide which of the apparently conflicting rights shall *prevail* and which must be *subordinated* or even *suspended*. Only one of the colliding rights is the true right; the others are mere claims or apparent rights. The solution of the difficulty lies in a thorough study of the entire situation, so as to determine which right has preference under the circumstances. That this is not always an easy task, is clear from experience.

Due to ever changing conditions of human living, it is practically impossible to draw up a set of rules and principles which are universally applicable. However, *three general rules and principles* should prove helpful. *First*. In a conflict of rights, that right should prevail which is grounded in a higher law or has a more genuine title or has a more necessary bearing on the common good. It follows, then, that a clearly defined natural right prevails over one granted by positive law; a connatural right prevails over an acquired right; an inalienable right prevails over an alienable right; a perfect right prevails over an imperfect right; a public right prevails over a private right, and so on. *Second*. The superiority of a person usually carries with it a superiority of rights. Thus, the rights of God have preference over the rights of other persons; the rights of self have preference over the rights of others; the rights of relatives, in the order of their relationship, have preference over the rights of friends and strangers, and so on. *Third*. Rights which concern nobler, more universal, or more necessary matter should prevail over those pertaining to

less noble, less universal, or less necessary matter. According to this standard, rights pertaining to the soul prevail over those pertaining to the body; rights pertaining to the body prevail over those pertaining to physical goods; rights pertaining to physical goods necessary for life prevail over those pertaining to comfort and enjoyment, and so on.

The average person, of course, is incapable of drawing complicated conclusions from general principles; he must seek the advice of the experts. Nevertheless, good common sense often enables him to distinguish between various types of rights in the order of their importance and to decide which should prevail.

Rights and the Moral Order

It is a common doctrine of present-day secular schools of jurisprudence that rights have merely a *legal, not a moral*, character. In other words, rights do not belong to the moral order and entail no moral obligation; they belong merely to the legal order and entail an obligation merely in the courts of the positive law of the state. The state, they claim, is the sole author of human rights.

Present-day false theories on the basis of rights and of the juridical order come from two main sources.

The *one source* is the theory that the juridical order with its rights is derived from the *free will*. Kant and Fichte are the chief representatives of this doctrine. According to Kant, the moral order is distinct from the juridical order. All actions which proceed from the internal motive of morality belong to the moral order; all external actions which

proceed from external motives belong to the juridical order. The purpose of the former is to give internal liberty; the purpose of the latter is to give external liberty, and external liberty exists through legislation on the part of the state.

The *other source* is the theory that the juridical order with its rights is derived from the *coercive power* or *physical might* of the state. Hobbes claimed that the original condition of man was a war of all against all, and as a consequence the state was formed by mutual consent. Might was right in the original condition of nature, and now the might of the state is the source of all right and duty. Rousseau followed in Hobbes's footsteps, except in the contention that man originally was nonsocial, not antisocial. The state was formed through a social contract, and all rights are the result of legal enactment. Spencer considered all rights to be the product of biological factors. The individual is absorbed through biological necessity by the state, and the law of necessity is the source of all rights and duties; there are no individual natural rights. Hegel deduces all rights from the evolution of the impersonal absolute reason into the omnipotent state which is the "terrestrial divinity." The state is the personification of the principle that might is right.

Whatever the source, all these theories agree in the fundamental tenet that *all rights proceed from the state* and that the moral and juridical orders are independent. In no case is the juridical order a part of the moral order.

In opposition to these theories we maintain *that the juridical order is a constituent part of the moral order*.

For one thing. Right, without question, belongs to the juridical order based on 'just dues,' on the 'mine' and 'thine.' Unless, however, we wish to identify 'right' with sheer might, arbitrariness, violence, and tyranny, we must correlate it with *duty* and *obligation* on the part of others who are bound in their will and conscience to *concede* and *respect* this right. But if there is duty and obligation, and not mere cringing servitude in the face of superior might, then others *ought* to concede and respect the other person's right and not interfere with its exercise, even if they have the power to do so. Such an attitude of 'oughtness,' however, is a moral, not a purely legal, attitude.

Again. *Just dues* are the object of rights. Just dues refer to the 'mine' and 'thine' to which one has a legitimate *title*, and this title is more than the physical force capable of wresting something from another and keeping it in one's own possession. Every civilized code of laws recognizes this fact. 'Just dues,' therefore, pertain to *justice*, not merely to legal possession. Justice, however, is a *moral virtue*. And since justice as a moral virtue is a constituent part of the moral order, the juridical order to which rights and just dues belong as a part of justice must also be a constituent part of the moral order.

Furthermore. The *general character* of the attitude of the state in its laws concerning human actions is not purely 'legal,' but definitely *moral*. Criminal law, for example, always seeks to measure the punishment according to the *guilt* of the person committing the crime. Judges and juries treat murder far more severely than homicide, because

murder is committed with malice aforethought, while the latter is done in a sudden burst of passion; in other words, although in both cases somebody's life has been unjustly taken, and a life is a life in the legal sense, murder involves greater 'guilt' and therefore deserves greater punishment. Manslaughter, too, is gauged according to the *degree of culpable negligence*, even when no direct intention of killing is involved, and punishment is meted out accordingly. In cases of civil rights, contracts very frequently are interpreted according to the *intention* of the contracting parties and not according to the mere letter of the contract. Laws made by the highest legislative body are not seldom declared void and *unconstitutional*, because they curtail natural and inalienable rights and are therefore *unjust*. All of which involves 'moral' considerations of a very definite kind that belong to the 'moral order.'

Again. Some rights exist *prior in nature to the state* and are as such independent of the legal power of the state. Such rights are, for example, the right of ownership, the right to life and bodily integrity, the right to marriage, the rights of husband and wife. It is the purpose of the state to safeguard, defend, enforce, and vindicate these and similar rights, but the state *does not create such rights*. Similarly, that the state may demand and expect *obedience* toward legitimate authority, is not the result of its physical power of force; obedience is a 'moral' factor without which the state could not long exist. The entire structure of the state presupposes the binding power of the natural law as the foundation upon which it is based. Take away the *natural law* and the state is nothing more than the *legalized*

tyranny of a police state. The natural law, however, is a moral law.

Finally. Men are by nature *social* beings. The family is a social unit. Men unite into various social groups or communities for the mutual promotion and protection of the common good of all. This *common good* includes bodily, mental, and moral goods of the individuals, families, and other groups. Many laws of the state pertain to the safeguarding of public decency and good morals. But *public decency* and *good morals* are a constituent part of the moral order as well as of the juridical order of the state. Hence the juridical order and the moral order are not completely distinct orders in the life of man; the juridical order is a part of the moral order.

The tendency to separate the juridical order from the moral order is one of the pernicious errors of our time. It was this tendency which gave birth to the disastrous doctrines of nazism, fascism, and communism.

Some Basic Human Rights

God created man as an individual person with an independent existence and a social being in the unity of the family and of the state. In each capacity man is endowed with certain natural basic rights. These rights² are as follows.

Basic Human Rights

The Rights of the Human Person

1. The right to life and bodily integrity from the moment of conception, regardless of physical or mental condition, except in just punishment for crime.
2. The right to serve and worship God in private and in public.
3. The right to religious formation through education and association.
4. The right to personal liberty under just law.
5. The right to the equal protection of just law regardless of sex, nationality, color or creed.
6. The right to freedom of expression of information and of communication in accordance with truth and justice.
7. The right to choose and freely to maintain a state of life, married or single, lay or religious.
8. The right to education suitable for the maintenance and development of man's dignity as a human person.
9. The right to petition the government for redress of grievances.
10. The right to a nationality.
11. The right of access to the means of livelihood, by migration when necessary.
12. The right of association and peaceable assembly.
13. The right to work and choose one's occupation.
14. The right to personal ownership, use, and disposal of property, subject to the rights of others and to limitations in the interest of the general welfare.
15. The right to a living wage.

16. The right to collective bargaining.
17. The right to associate by industries and professions to obtain economic justice and the general welfare.
18. The right to assistance from society, if necessary from the state, in distress of person or family.

The Rights Pertaining to the Family

1. The right to marry, to establish a home and beget children.
2. The right to economic security sufficient for the stability and independence of the family.
3. The right to the protection of maternity.
4. The right to educate the children.
5. The right to maintain, if necessary by public protection and assistance, adequate standards of child welfare within the family circle.
6. The right to assistance, through community services, in the education and care of the children.
7. The right to housing adapted to the needs and functions of family life.
8. The right to immunity of the home from search and trespass.
9. The right to protection against immoral conditions in the community.

The Domestic Rights of States

1. The right to enact just laws binding in conscience.

2. The right to establish courts of justice and to enforce the observance of law with adequate sanctions.
3. The right to demand of its citizens respect for the rights of minorities.
4. The right to tax by adequate and equitable means in order to carry out its proper functions.
5. The right to exercise eminent domain when demanded by the common welfare.
6. The right to require that its people receive an education suitable for citizenship.
7. The right to defend itself against domestic violence.
8. The right to watch over, stimulate, restrain, and order the private activities of individuals and groups in the degree that is necessary for the common good.
9. The right to regulate operations of international economic groups functioning within its own boundaries.
10. The right to adopt in time of emergency special measures necessary for the common good.

The Rights of States in the International Community

1. The right to exist as a member of the international community and to be protected in its national life and integrity against acts of aggression by any other state or states.

2. The right to independence in the determination of its own domestic and foreign policies in accordance with the principles of morality, and subject to the obligations of international law.
3. The right to juridical equality with other states in the family of nations.
4. The right to membership in the organized international community and to the benefits of international co-operation.
5. The right to the assistance of the international community in securing the fulfillment of the terms of a just treaty or agreement.
6. The right to obtain from the international community redress of grievances arising from unjust treaties imposed by force.
7. The right to the revision of treaties which are no longer in accord with fundamental justice.
8. The right to recourse to the procedures of pacific settlement established by the international community for disputes which diplomatic negotiations have failed to settle.
9. The right to maintain political, economic, and social intercourse with other states upon equal terms.
10. The right of access, upon equal terms, to the markets and raw materials of the world necessary for its own life as a people.
11. The right to protect its own natural resources and economic life from unjust exploitation.

12. The right to the assistance of the international community in time of economic or social distress.
13. The right to grant asylum to refugees from injustice.

These are some of the basic human rights. They are predicated on the natural law and flow from the rational nature of man as a person, as a social being, and as a creature of God. In these basic rights and their corresponding duties the high dignity of man is made the foundation of individual, social, religious, and international ethics. On the security of this foundation rests the peace and welfare of the world.

Summary of Chapter XII

The moral virtue of justice necessarily embodies *rights* and *duties*.

1. *Concept of Right and Duty.* *Right* in the passive sense of 'just dues' is something which is due to someone according to strict equality because of a strict obligation. *Right* in an active sense is the moral and inviolable power vested in a person to do, hold, or exact something as his own.

Duty in an *active* sense is the moral obligation to do something or to omit something in favor of another according to the demands of strict justice. *Duty* in a *passive* sense means the action or omission of an action to which one is obligated by justice.

2. *The Nature of Right.* Every right has a purpose, and the purpose of rights is the establishment and maintenance of the social order. There are four elements in every right: the subject, the object or matter, the title, and the term.

3. *Brute Animals and Rights.* Brutes are *incapable* of being the subject of rights. They are incapable of *duty*. Duty implies responsibility, and only a rational being, endowed with intellect and free will, can be responsible. They are incapable of *rights*. Rights and duties go together. Hence, if brutes are incapable of duties, they are also incapable of rights, because they cannot have either the required knowledge or the required freedom of will with its corresponding freedom of action.

Vivisection for serious scientific study is morally justifiable, because no duties are violated and it is of great advantage to science and humanity.

4. *Right and the Use of Reason.* Infants, idiots, and the insane have a spiritual soul with the spiritual powers or faculties of reason and free will. Due to the imperfection of their nervous system, they lack the proper exercise of these powers. Since they are true human beings, they are capable of rights.

5. *The Division of Rights.* From the standpoint of *law*, rights are either 'natural' or 'positive.' From the standpoint of origin, they are either 'connatural' or 'acquired.' From the standpoint of the *subject* of rights, they are either 'public' or 'private.' From the standpoint of their *connection with the subject*, they are either 'inalienable' or 'alienable.' From the standpoint of their *relation to physical force*, they are either 'perfect' or 'imperfect.' From the standpoint of their *relation to civil law*, they are either 'moral' or 'legal.' From the standpoint of the *object*, they are either 'real' or 'personal.'

6. *Rights and Coaction.* There are three properties attributed to perfect rights: coaction, limitation, and collision.

Coaction is that property of a right in virtue of which a person may use physical force, if necessary, to exact his just dues from someone who seeks to prevent him from exercising his right. Two things are involved in coaction: *defense* and *vindication*.

The power of coaction is a *necessary property* of a perfect right. Rights are a necessary means for realizing

the purpose of the natural law. But this purpose would be frustrated, if perfect rights had only moral binding power and not also the power of coercion attached to it, because evil persons would not otherwise respect these rights. It is the power, *not the efficacious exercise* of the power of coercion which constitutes the essence of a perfect right.

7. *Rights and Their Limitation.* The *limitation* of rights is that property whereby the exercise of one right is curtailed by some other right. This limitation is derived from two main sources: the *end* for which the right has been granted; and the *duties* which the possessor of the right is bound to fulfill.

8. *Rights and Their Collision.* A *collision* of rights is an apparent conflict of rights, so that it is impossible to satisfy them simultaneously. Collisions arise through imperfect knowledge of the natural law and the rights which flow from it. In the *hierarchy of rights* the more important must prevail, and the others must be subordinated or suspended.

9. *Rights and the Moral Order.* Many authors claim that rights have merely a *legal, not a moral, character*. They place the basis of rights either in the free will of man or in the coercive power of the state. In either case, rights proceed, in their contention, solely from the *state*, and so the juridical and moral orders are *separate orders*.

We contend that the juridical order is a *constituent* part of the moral order. Rights presuppose *duties* and *obligation*; and this implies an 'oughtness,' which is a 'moral' concept. Rights refer to 'just dues,' and just dues pertain to justice which is a 'moral' virtue. The *general character* of the attitude of the state is not purely 'legal,'

but definitely 'moral.' Some rights exist *prior in nature* to the state and belong to the natural law, and the natural law is a 'moral' law. Many positive laws of the state refer to *public decency* and *good morals*; these things pertain to the moral order.

10. *Some Basic Human Rights*. Some basic rights pertain to the individual human person; others, to the family; others, to the state in its domestic affairs; others, to the state as a member of the international community.

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Cronin, M., *The Science of Ethics*, Vol. I, Ch. XX. — Cox, I. W., *Liberty, Its Use and Abuse*, Ch. X. — Noonan, John P., *Ethics*, Ch. X.— Brosnahan, T. J., *Prolegomena to Ethics*, Part II, Ch. X. — Rickaby, Jos., *Moral Philosophy*, Part III, Ch. V. — Ross, J. Elliot, *Ethics*, Part III, Ch. IV. — Higgins, Thomas J., *Man as Man*, Ch. XV.

1 *Summa theol.*, 2a 2ae, q. 80

2 The rights here enumerated are taken verbatim from A Declaration of Human Rights, contained in a statement drafted by a committee appointed by the National Catholic welfare Conference and submitted to the Human Rights Commission of the United Nations

PART II
SPECIAL ETHICS

Chapter 13

GOD AND MAN

GENERAL ETHICS, THE FIRST PART OF MORAL PHILOSOPHY, treats of those general and universal concepts and principles which serve as the *foundation* of morality.

Having established the concepts and principles of the proximate and ultimate end of man, of the norm of morality, of the natural law, of obligation and sanction, and of rights and duties, we must now *apply* these concepts and principles to the various situations of life in which man finds himself, so as to define and determine his rights and duties more in detail. Because of this function which it performs, Special Ethics is frequently referred to as *Applied Ethics*.

The method employed in General Ethics is to a great extent, though not exclusively, analytical and inductive. In the following chapters of Special or Applied Ethics, the method is mainly synthetic and deductive. The entire moral conduct of man is based on the all-encompassing general principle: 'Do the good and avoid the evil.' This principle is expressed more specifically in the formula or axiom derived from the proximate norm of morality: *Observe the order of conduct which befits you as a rational human being*. In this

principle, as in a matrix, all the rights and duties of man are contained implicitly.

Now, man is above all a creature of God; he is also an autonomous individual or person; he is finally a social being. As a social being, he must live among other individuals as an individual; in the family as a member; and in the state or commonwealth as a citizen. These basic situations in the life of man bring with them certain rights and duties. Rights and duties are correlatives. The basic rights of man have been enumerated in the last chapter. To these rights there correspond basic duties. Man, therefore, as a *creature*, has certain *duties toward God*; as an individual *person*, he has certain *duties toward himself*; as a *social* being, he has certain *duties toward others, toward the family, and toward the state*. This classification of man's rights and duties constitutes the division of the subject matter to be treated in Special or Applied Ethics.

First of all, then, we must examine the duties which man, as a creature, has toward God.

Natural Religion

Man is a rational being endowed with intellect and free will. As such, he is made in the image and likeness of God.

It is a postulate which ethics accepts from the philosophical department of theodicy that He exists, that He is a person of infinite power and perfection, that He is the uncaused cause of the universe and everything in it, that He is, therefore, the *first cause and the last end of man*. Existence and nature, whatever he is and has, man owes to

the loving kindness of God, his Creator. Because of this transcendent fact, man is absolutely dependent in all things on God. Accordingly, man's *relation* to God as his first cause and last end is *absolute, natural, and essential*.

The *facts* or *truths*, then, upon which this relation of man to God are based, are these: God is the Supreme Being, of infinite perfection and excellence, worthy of all honor and homage; He is the Creator of the world, man's first cause and therefore his absolute Master; He is man's ultimate end and goal, in whose possession he is destined to find consummate happiness for all eternity. Because of these facts and truths, man has certain specific *obligations or duties* toward God: due to God's infinite perfection and excellence, man owes Him all honor and homage; due to his creation by God, man owes Him acknowledgment of his dependence and complete service; due to the fact that God is his ultimate end and goal, man owes Him complete love and devotion and the dedication of his entire life here on earth. This absolute, natural, and essential relation of man to God, and the obligations which flow from this relation, are the foundation of *natural religion*.

WHAT IS RELIGION?

In its *primary* meaning religion is the worship extended by men to an extramundane and supra-mundane personal being, on whom they believe to be dependent in their lives and fortune and whom they seek to make propitious by special observances. Whether this honor and homage be directed toward one or more such personal beings, is of

minor importance, so far as the general concept of 'religion' is concerned. This definition, it will be noted, embraces all religions of all peoples, whether they be monotheistic or polytheistic; they all agree in the common factor that they are a 'religion.'

'Worship' is the *honor* and *homage* given to someone in proportion to his worthiness. 'Honor' signifies the recognition on our part of the excellence of another. Honor is more than mere knowledge of excellence; it implies that the will, through an act of its own, refers this knowledge or recognition to another person. 'Homage' or 'reverence' signifies the acknowledgment of superior dignity and power in another. Here, too, the will plays its part by referring this acknowledgment to another person.

Divine worship, then, is the honor and homage rendered to God in proportion to His excellence, dignity, and power. By rendering 'honor' to God, we recognize His infinite excellence as the Supreme Being. By rendering 'homage' or 'reverence' to God, we acknowledge His infinite dignity and power as the Creator of all things who, through His loving kindness, gave us being and existence and is deserving of all our love and devotion. It is a natural consequence of this love that we seek, positively, to please Him in our conduct and, negatively, not to displease Him through infractions of His laws. Divine worship, considered in the abstract, consists in this honor and homage as such; *in the concrete*, it consists in the acts of honor and homage which man renders to God.

Again, the term 'religion' is used in a *secondary* sense to signify the sentiment or *virtue* which inclines man to render

honor and homage to God as the Supreme Being, the first cause and last end of man. The virtue of religion is an eminently personal matter and is the flowering of love in the mind, will, and heart of man toward God, his Lord, Master, and Father. The virtue of religion prompts man more and more to know God, to love Him, and to serve Him in all the vicissitudes of life. When an individual possesses this personal virtue of religion, we speak of him as being 'religious.'

Finally, the term 'religion' is used in a *third* sense to signify all the *truths* which underlie the relation of man to God and all the duties which pertain to man in consequence of these truths. In this sense we speak of 'religious truths,' 'religious doctrines,' 'religious duties,' 'religious institutions,' 'religious feasts,' etc.

THE CLASSIFICATION OF RELIGION.

We distinguish between 'true' and 'false' religion. The *true* religion is the honor and homage which is rendered to the One God, the Creator of all, who is all-wise, omniscient, omnipotent, without beginning and without end, the Alpha and Omega of everything that exists and is possible; it is also the honor and homage which is worthy of God in His excellence, dignity, and power. A *false religion* is one which renders honor and homage to a being other than the true God or in a manner unworthy of His excellence, dignity, and power. Since there is only one true God, there can be only one true religion; there may, however, be innumerable false religions.

We also distinguish between 'objective' and 'subjective' religion, although it would be more accurate to say that we distinguish between religion in an objective and in a subjective sense. *Objective* religion consists of the objective truths which underlie the relation of man to God and of the objective duties which pertain to man because of this relation. These objective truths and duties are independent of man's knowledge or ignorance and of his likes or dislikes. Since they are 'objective,' man must acknowledge them as a standard for his conduct in relation to God; they are based on the nature of God and the nature of man, and as such they have an immutable content. *Subjective* religion is the personal sentiment, inclination, and practice of worship, by means of which an individual renders honor and homage to God. Subjective religion naturally admits of degrees, both as to extent and as to intensity, so that it can increase or decrease within the individual.

We distinguish, finally, between 'natural' and 'supernatural' religion. *Natural* religion is based on the truths and duties which man knows through the aid of human reason alone. Human reason, through its natural capability, can acquire considerable knowledge of the nature of God and man, of man's relation to God, and of the duties which flow from this relation. The worship or cult based on this rational knowledge is natural religion. *Supernatural* religion, on the other hand, though it presupposes the truths and duties of natural religion, is based essentially on the voluntary revelation of God. Supernatural religion adds new truths to the fund of truths acquired by means of rational investigation; obviously, such

revealed truths may induce duties beyond those imposed by natural religion.

Necessity of Natural Religion

Every morally good act is an 'indirect' act of worship, because an act is morally good when it is in conformity with the law of God; as such, it tends to glorify God, and the actual glorification of God is, at least indirectly, an honoring of God and thereby also an act of worship. In this connection, however, we are interested in the *direct worship* of God, namely, in those acts of man which have as their aim and purpose the honor and homage of God, so that man *deliberately intends* through them to honor and reverence the Supreme Being. Direct worship may consist of either 'interior' or 'exterior' acts or of both types. *Internal* acts of worship have no outward expression, but occur in the intellect and will; for example, intellectual acts of praise, thanksgiving, prayer, and adoration. *External* acts of worship are acts which have an outward expression, so that they are perceptible to the senses in some manner; for example, vocal prayers, hymns, rites, and sacrifices.

NATURAL LAW OBLIGATES MAN TO INTERNAL WORSHIP.

The obligation to perform internal acts of worship follows immediately and evidently from man's essential relation to God as his first cause and last end. Man's dependence on God, both in his essence and existence, is absolute. Now, internal worship is the deliberate

acknowledgment, by means of internal acts of the intellect and will, that man owes his essence and existence to God. As a rational being, knowing that he owes his essence and existence to God, man must acknowledge his dependence on God; to refuse to make this acknowledgment is tantamount to denying that he owes his essence and existence to God. God, as the Creator of all things and as the ultimate end of man, certainly has the right to demand that man consciously recognize his dependence and consciously strive for his ultimate end. Such conscious recognition and striving, however, require internal acts of intellect and will deliberately directed toward God. Hence, if God has the right to these acts of man, man has the duty, in virtue of his rational nature and the natural law based on it, to render this acknowledgment. Consequently, natural law obligates man to 'internal worship.'

NATURAL LAW ALSO OBLIGATES MAN TO EXTERNAL WORSHIP.

Many ethicists, while they admit the necessity of internal worship, consider external worship to be entirely superfluous and valueless. They are wrong. Man is a psychosomatic being, a composite of body and soul which are essentially united to form a single nature or principle of activity. Because of the psychosomatic character of man's unitary nature, bodily conditions naturally affect the mind, and mental conditions naturally affect the body. Joy and sadness, love and hate, elation and anger never remain purely mental states, but inevitably communicate themselves to the bodily organism and express themselves

in bodily manifestations. The body is the mirror of the soul, reflecting in its appearance and emotion the affective states of the soul. Man is not an angel but a *rational animal*, and sensible manifestations are the natural complement of his internal mental conditions. These sensible manifestations are so spontaneous that man must exert violence upon himself to suppress them. It is, therefore, natural for man to give expression to his internal worship by acts of external worship. Now, what is natural to man is intended by God, because God is the Author of man's nature; and whatever is intended by God is legitimately assumed to be demanded by God. Whatever is demanded of man by God, however, is a *duty* for man in virtue of the natural law, provided this demand is based on man's nature. Such being the case, we must conclude that natural law obligates man to *external worship* as well as to internal worship.

The relation of man to God is like that of a child to its parents. Just as the child must, and actually does, give external expression to its internal filial sentiments of love and reverence toward its parents by external acts, so man, too, must give expression to his sentiments of honor and homage toward God in acts of external worship. God, of course, derives no benefit from the worship of man, whether this worship be internal or external, and worship adds nothing either to His glory or His happiness. But internal and external worship is a *natural requirement of right order* and a necessity for man. Hence, God demands worship, and man has the natural duty to accede to this demand. Excessive puritanism and spiritualism, therefore, is contrary to human nature and not in accord with the

precepts of natural religion. Man is bound to render honor and homage to God in his whole being, not merely in a part of it. External worship, devoid of internal sentiments, is mere externalism, and mere externalism in worship is an insult to God as an Intelligent Supreme Being; but external worship, animated by genuine sentiments of internal worship, is a true expression of the whole man as God created him and as such worthy of man and of God.

Natural law, therefore, obligates man to a natural religion which consists of internal and external worship.

The statement that natural law obligates 'man' to natural religion is interpreted by many authors to mean that man as an 'individual' has the duty to practice religion, but not society or the state. This pernicious error is particularly prevalent in modern times. It is a very common opinion that religion is a 'private matter,' and that public worship as a collective function of *society* or the *state* is neither necessary nor advisable. We maintain that *public* worship, *per se* and *in principle*, is incumbent on all men, whether they be taken individually or collectively.

That natural law obligates the individual to the practice of religion has just been shown; the reasons adduced apply at least to the individual person. However, they apply with equal force to society and the state.

Man is by *nature* not only an autonomous person, but a member of *society* and of the *state*; he is by nature a 'social being,' and he must fulfill his destiny as an integral member of the family and of the state. There is in man the natural aptitude, inclination, and need to form the social unions of the family and of the state. To be a member of these

organizations, is, therefore, a requirement of his nature as a human being and consequently a mandate of the *natural law*. Since the natural law derives its binding force ultimately from God, it is evident that the family and the state derive their origin from God as their Creator and Supreme Legislator. In other words, the family and the state exist in a *relation of dependence* with reference to God. Therefore, the family and the state, like the individual, have the obligation, based on the natural law, to acknowledge this dependence and to render honor and homage to God. Natural religion, therefore, is a duty incumbent on the family and the state. And since the family and the state are visible organizations, the worship prescribed by natural religion must also be expressed in a visible manner by the family and the state. But such a worship is public worship. Consequently, public worship is a duty incumbent, at least *per se* and *in principle*, on the family and the state, i.e., on society. Exceptional circumstances may at times make public worship morally impossible for the family or the state, but the general conclusion as given is not invalidated thereby.

Ever since nations and leaders of nations have banned religion from public life and relegated it to the homes and to the individuals, international affairs have become largely dominated by a policy of expediency and national aggrandizement. The result was inevitable. Respect for moral principles waned and international law was breached by aggressor nations with such flagrancy that global wars became the only means to restore peace and order. Unless

nations and governments return to God and religion, the end will be catastrophic.

Supernatural Religion

Supernatural religion is religion founded on supernatural revelation. In general, *revelation* is the manifestation of something hidden. In a more restricted sense, revelation is the manifestation of hidden or unknown truths. Such unknown truths, if revealed by God, constitute 'divine revelation.' Divine revelation is *natural*, if God manifests truths through His works of nature; supernatural, if He manifests truths which man cannot acquire by his reason in the contemplation of nature, but which lie beyond the powers of man's reason and are manifested either by God or His messengers by sensible signs or speech.

It is beyond the scope of philosophical ethics to establish the fact of supernatural revelation and of supernatural religion; this belongs to the province of apologetics. But it lies within the scope of philosophy to inquire whether supernatural revelation is *possible* and furthermore, if revelation occurred, to determine whether man has any *obligation* in its regard.

A SUPERNATURAL REVELATION IS POSSIBLE.

If a supernatural revelation were impossible, the impossibility would have to lie either in God or in man or in the truths to be revealed. However, revelation is possible

from the standpoint of God and of man and of the truths to be revealed.

There can be no difficulty from the standpoint of *God*. God is *omniscient*, while man is very limited in his knowledge. Hence, God knows many truths about Himself and about things which would remain forever hidden from man, if man attempted to acquire a knowledge of these truths through his reason alone. God is *omnipotent*, and He can devise ways and means of communicating the knowledge of these truths to man. It is also consonant with God's *wisdom* to reveal hidden truths to man in his earthly life; there would only be required a sufficiently worthy purpose for making the revelation. There are conceivably many worthy purposes which God might have. If God, for example, destined man for a supernatural end as a reward for a life of good conduct, a revelation of this fact would be a practical requirement for the attainment of this end. A supernatural revelation, therefore, is possible when viewed from the standpoint of God.

Similarly, there can be no difficulty from the standpoint of *man*. All that would be needed on the part of man is the certitude that God has actually revealed Himself. God alone can work real miracles. Hence, if God, or His representatives acting with His authority and power, were to perform miracles as a visible guarantee of the veracity of the revelation, man would have everything necessary for certitude. Or, God could manifest Himself so clearly to man during the revelation that man could have no reasonable doubt as to the divine source of the truths revealed. In

either case man would have certitude as to the supernatural character of the revelation.

Finally, there can be no difficulty from the standpoint of the *truths* themselves. The only thing man's mind cannot accept is contradictions. But truth is truth, whether man discovers them by the power of his own reason or whether they are revealed by God. The mere fact that some or all revealed truths contained mysteries beyond the understanding of man would be no valid reason for refusing consent. Mysteries are not contradictions; they simply exceed man's capacity of comprehension. God cannot contradict Himself. Hence, if man is certain that God has revealed Himself, he is also certain of the truth of the revelation, because God can neither deceive nor be deceived.

Granted the fact of a divine revelation, natural law obligates man to accept supernatural religion.

God is *all-wise* and *all-truthful*, because His intelligence is infinitely perfect and embraces everything knowable. He cannot, therefore, be deceived in any manner, nor can He fall into any kind of error; and He cannot deceive man, because to deceive someone is to lie, and a lie is contrary to perfection. Hence, if God reveals anything to man, it is, and must be, the purest truth. It is equally evident that God, if He issues a revelation of truth, *desires* that man accept the revelation and believe the revealed truth. This follows from His wisdom. If a revelation of unknown truths is made by God to man, His wisdom can have no other purpose than to enlighten man's mind by making these truths known to him; this is the intrinsic purpose of a revelation. The only way,

however, that man's mind can be enlightened by these revealed truths is to accept them and believe them. God, therefore, in revealing such truths, desires that man accept them and believe them. God, obviously, also has the *right* to exact man's assent to these revealed truths, because He is man's Lord and Master. And man has the duty to give his assent, because a rational being cannot refuse assent to truths revealed by God without committing the gravest crime of disobedience and presumption. The rational nature of man, and the natural law based on man's rational nature, therefore demands that he accept without reservation the truths revealed by God. Now, supernatural religion is the religion founded on supernatural revelation. Consequently, granted the fact of a divine revelation, natural law obligates man to accept supernatural religion.

In case of *doubt* as to the fact of revelation, man has the duty to *investigate*. He cannot ignore the probable fact of revelation; to do so would be to insult God who may intend to impose an obligation on man and would involve the serious risk of frustrating his eternal destiny. After the investigation, if the fact of revelation is clear, man must in all humility submit his intellect and will to God and must accept the truths revealed and the supernatural religion founded upon them. Any other attitude would be immoral.

UNDER NO CIRCUMSTANCE IS INDIFFERENTISM JUSTIFIABLE.

Practical indifferentism is the actual *neglect* of one's religious duties. People may become so engrossed in temporal affairs or so enmeshed in sensuality, that they fail

to give proper attention to God and His service. This neglect is voluntary, directly or indirectly, and as such imputable and grievously sinful. Practical indifferentism is spiritual starvation which weakens the entire moral life of the individual. Theoretical indifferentism is the mental attitude and conviction that a person can fulfill his religious obligation in any type of religion. *Theoretical* indifferentism usually is embodied in the oft-repeated statement: "All religions are equally good." If pressed to its logical conclusion, the statement means that polytheism is as good as monotheism, that the adoration of idols is as good as the adoration of the one true God, that the religious orgies of pagans are as good as the high spirituality of Christian saints. The statement is obviously erroneous. The all-holy God cannot be indifferent as to how He is honored or dishonored. Nor can it be left to the discretion of the individual to select a religion at his own good pleasure. As there is but one true God, there can be but one true religion.

Main Acts of Religion

Every morally good act and every virtuous act is, in a sense, an act of worship, because God is, at least indirectly, honored thereby. However, when we speak of 'acts of religion' we mean those acts of worship which proceed *immediately* from the *virtue* of religion and have the honor and homage of God as their *direct* purpose.

The *source* of these acts of religion is the love of the will for the worship of God as a moral good and the heartfelt

desire to render unto God the honor and homage that is His due. Whoever is animated by this love and desire will naturally feel the urge to acknowledge his reverence toward God by *expressions of honor and homage*. Such expressions may be manifold. Some expressions are individual and subjective in character, the result of the individual person's particular inclination and devotion. Others are acts of cult which are universal in character, because they, by their very nature, are specially suitable as expressions of the honor and homage man owes to his Sovereign Lord and Master; for this reason they are found to exist among practically all nations and peoples. Customary acts of worship, universal in character, are *adoration, sacrifice, and prayer*; exceptional acts of worship are *vows and oaths*.

Adoration. Adoration is an act whereby man expresses his acknowledgment of God's infinite greatness and majesty and of his utter dependence on God as his Creator and Master. This acknowledgment is not based primarily on emotion, but on the intellectual knowledge that God is the first cause and ultimate end of all being and therefore the absolute Lord of the universe. In consequence of this truth, man clearly perceives that he is utterly dependent on God in everything and that he has the strict duty to give expression to this dependence in some practical form. Adoration is thus man's *humble, voluntary affirmation of dependence on God*. Adoration should be the spontaneous expression of the loving heart of a child toward its father, not the cringing servility of a slave toward his taskmaster.

So long as these acts of worship are purely mental, adoration is *internal*. Man, however, since he is by nature psychosomatic, will express his mental states almost involuntarily in some bodily form. Internal adoration, therefore, usually becomes *external* and manifests itself in a devotional posture involving various members of the body. The exact manner of this manifestative expression is regulated to a great extent by custom. With us, it may be a respectful attitude, a bowing of the head, kneeling, folding of the hands, and similar acts. That such external expressions are natural to man, can be seen from the courtesies we extend to persons who hold high offices in the state or who have done heroic deeds for the defense of the country. Adoration is the innermost core of all religious worship.

Sacrifice. A sacrifice is the offering of a sensible, relatively valuable object to God and its actual or symbolic destruction, in order to acknowledge that God is the Creator and Lord of all things. By means of the actual or symbolic destruction of the object, man intends to signify externally that which he acknowledges through the internal act of adoration, namely, his utter dependence on God and God's absolute sovereignty over man's life and possessions. When man is conscious of sin, this victim which is to be destroyed has a vicarious function for man himself; man confesses thereby that he is guilty of death in the eyes of God and should himself be sacrificed.

Practically all peoples have sacrifices of some sort. Usually the sacrifices consist in offerings of food, such as vegetables, fruits, and domestic animals, because food is

necessary for sustenance and represents life. Even human sacrifices have been offered by some nations, thereby giving literal expression to the concept of sacrifice. Most nations, however, have realized that human sacrifices are not required, but that some substitute for man himself suffices for this supreme act of adoration and atonement.

Prayer. Prayer is the lifting of our minds and hearts to God; more specifically, it is conversation with God for the purpose of honoring Him. We pray to adore God, to thank Him for benefits received, to obtain pardon for our transgressions and remission of the punishment due to them, and to request blessings for ourselves and others. Like worship, prayer may be either internal or external. *Internal* prayer or meditation is the type of prayer whereby we unite our mind with God while thinking of truths pertaining to Him. *External* or vocal prayer is the type of prayer which proceeds from the mind and is uttered by the lips. Some authors define vocal prayer as prayer that is cast in a set formula of words, and mental prayer as prayer that is made up spontaneously while meditating mentally on religious truths.

Prayer is without doubt one of the most suitable and important means of worship. When we adore God, praise Him, and thank Him, we glorify Him, and the glorification of God is the primary purpose of our existence. Our essential and absolute dependence on God finds its clearest expression in the prayer of petition, because thereby we acknowledge in the most practical way that God is infinitely powerful and good and that we are in need of constant assistance and support.

Some philosophers consider prayer to be useless and superfluous, particularly so far as the prayer of petition is concerned, except perhaps for its subjective and psychological effect. Nietzsche stated that it was a disgrace to pray. Certainly, prayer is not required to acquaint God with our needs. But God can very well demand our prayers as the *condition* for granting benefits. Prayer presupposes humility and submission to the will of God; and these are important factors in the practical school of life, because they remind man forcefully of his essential relation to God as his ultimate end and the source of his eternal happiness.

Vows. A vow is a voluntary promise made to God whereby a person binds himself to do the better good, i.e., something which is more pleasing to God than its omission. A vow is more than a mere resolution, because a resolution does not involve the concept of an obligation, while a vow is a promise whereby a person voluntarily obligates himself to perform a better good otherwise not binding. The object of a vow must be something more good, and therefore more pleasing to God, than its omission.

St. Thomas,¹ with his usual clarity, puts the matter very neatly: "A vow is a promise made to God. Now a promise is about something that one does voluntarily for someone else since it would be not a promise but a threat to say that one would do something against someone. In like manner it would be futile to promise anyone something unacceptable to him. Wherefore, as every sin is against God, and since no work is acceptable to God unless it be virtuous, it follows that nothing unlawful or indifferent, but only some act of virtue, should be the matter of a vow. But as a vow denotes

a voluntary promise, while necessity excludes voluntariness, whatever is absolutely necessary, whether to be or not to be, can nowise be the matter of a vow. For it would be foolish to vow that one would die or that one would fly.

“On the other hand, if a thing be necessary, not absolutely but on the supposition of an end — for instance, if salvation be unattainable without it — it may be the matter of a vow in so far as it is done voluntarily, but not in so far as there is a necessity for doing it. But that which is not necessary, neither absolutely, nor on the supposition of an end, is altogether voluntary, and therefore is most properly the matter of a vow. And this is said to be a greater good in comparison with that which is universally necessary for salvation. Therefore, properly speaking, a vow is said to be about a better good.”

Vows have a great value and are pleasing to God in a special manner. The act performed in consequence of a vow is a virtuous act in itself and also an act of religion at the same time. Whoever vows something to God, becomes subject to God not only with regard to the single acts, but also with regard to the power to act; it is as if someone gave not only the fruit of the tree, but both the fruit and the tree. By means of the vow a person fixes his will more firmly upon the good and directs it to God in a more permanent manner than the person who merely performs isolated virtuous acts; such a person practices religion in an

outstanding way that cannot but be pleasing to God the Eternal Father.

Oaths. An oath is the calling upon God as a witness to the truth of a statement or of the intention to fulfill a promise. Calling upon God as a witness to the truth of a statement concerning present or past events is a 'declaratory' oath; and calling upon Him as a witness in confirmation of something we intend to do in the future is a 'promissory' oath.

In order that an oath be morally permissible, a number of *conditions* are required. As St. Thomas² says:

"An oath is not good except for one who makes good use of it. Now two conditions are required for the good use of an oath. First, that one swear, not for frivolous, but for urgent reasons, and with discretion; and this requires judgment or discretion on the part of the person who swears. Secondly, as regards the point to be confirmed by oath, that it be neither false nor unlawful, and this requires both truth, so that one employ an oath in order to confirm what is true, and justice, so that one confirm what is lawful. A rash oath lacks judgment, a false oath lacks truth, and a wicked oath lacks justice."

While St. Thomas in his analysis speaks of two conditions, other authors mention three, namely, discretion, truth, and justice.

Oaths are taken in confirmation of *doubtful* or *contingent* facts which demand witnesses for the

establishment of their truth. The truth of speculative propositions is established by a process of reasoning from evident principles which are known naturally and are necessarily true; here no witnesses are required. The case is different with the truth of practical propositions based on contingent facts; what a person has done in the past or is doing at present or will do in the future, since they are contingent facts depending on the free will, cannot be known with certainty through a process of reasoning from evident principles but must be established by the statement of reliable witnesses. Not all persons, however, are reliable witnesses. Some are prone to lying, others are lacking in proper knowledge of the facts. Hence, a mere statement is often insufficient to establish the truth of contingent facts. Yet it may be very important to know that a witness is telling the truth or that he has a proper knowledge of the facts. In such instances recourse may be had to an oath, calling upon God as a witness to the truth of one's statement, so that the necessary confirmation be obtained. In important matters of this nature, an oath is morally permissible and lawful.

A *rash* oath is morally wrong, because it is reprehensible to appeal to the omniscience of God to verify trivial matters, even though they be true. It would be a rash oath on my part, for example, if a friend doubted my statement that I had steak for dinner (which I did) and I answered: "Honest to God, I did." A *false* oath or perjury is a serious crime against the majesty of God, because the perjurer impugns the veracity of God and virtually declares Him to be a liar. To knowingly make a false statement under oath in court,

for example, is perjury. A *wicked* oath is also a serious crime against the majesty of God, because God is all-holy, and it is a grievous offense to call upon Him as a witness that one intends to commit a deed that is morally wrong and therefore displeasing to Him. That would happen, for example, if I assured someone by means of an oath that I would assist him in robbing a store or in committing some other felony.

Adoration, sacrifice, prayer, vows, and oaths are important acts of worship. To perform them in a superficial or mechanical manner would be hypocritical and unworthy of God; but to perform them devoutly, so as to render honor and homage to God, is a genuine practice of religion.

Irreligion and Superstition

Reverence toward God is an obligation of man, and it binds under all circumstances because man is by nature a creature of God. Against this reverence man may fail either through *defect* or through *excess*. Defect of necessary reverence occurs in irreligion; excess of necessary reverence occurs in superstition.

Irreligion takes place when a person refuses to render unto God the reverence which is His due or when a person dishonors Him. *Direct* irreligion dishonors God Himself; *indirect* irreligion dishonors God by dishonoring things or persons dedicated to Him in some special manner.

Tempting or *testing God* is one form of 'direct' irreligion. We tempt or test God if we say or do something which has as its purpose to prove the perfections of God or to procure

a manifestation of God through signs and wonders, without sufficient reason. If the reason for this procedure lies in presumption or vanity, it is obviously not as wrong as if the reason lies in a doubt or disbelief in God's perfections or existence. In either case, however, tempting or testing God in this manner without sufficient reason is a grave violation of the reverence due to God.

Blasphemy, another form of 'direct' irreligion, is contempt for God expressed in insulting thoughts or words. Any thoughts, words, or actions which contain an expression of contempt for God are blasphemous, so long as one is voluntarily conscious of the fact, even though one has not the direct intention of insulting God. To have the direct intention of blaspheming God, is one of the gravest sins that man can commit, because it is the supreme purpose of man to love and glorify God. It would be blasphemy, for example, to voluntarily think or assert that God is cruel or unjust, since God's infinite perfections would be implicitly denied. Insulting thoughts, words, or actions against holy persons or things, in. so far and because they are specially dedicated to God and His service, would also be blasphemy. Hatred of God is the most grievous of all crimes.

Among the forms of 'indirect' irreligion, particular mention must be made of sacrilege and simony. *Sacrilege* is the unworthy and offensive treatment of persons, places, and things dedicated to God and His service. Mistreatment of them involves disrespect for God Himself; by dishonoring them, one dishonors God. An insult to, or mistreatment of, an ambassador, an embassy, and things pertaining specifically to an embassy, is considered to be an insult to,

or mistreatment of, the nation they represent; so, too, the unworthy or offensive treatment of persons, places, and things, dedicated to God and His service, means an affront to the majesty of the Most High.

Simony is the voluntary attempt to buy or sell spiritual things for money or the equivalent of money. An effort is made to establish a parity or equivalence between spiritual and temporal things, as if they had an equal purchase value for purposes of barter. Simony thus implies a vilification and contempt of things pertaining to divine worship and thereby also of God Himself.

ONE FAILS AGAINST THE NECESSARY REVERENCE DUE TO GOD BY *excess* through the practice of superstition.

Superstition is the attribution to a creature of some power which belongs to God alone. It is a false or wrong religious cult which exaggerates in some manner the powers inherent in creatures, so that they are falsely assumed to partake of divine efficacy. Superstition, therefore, seeks preternatural or supernatural help from the things *themselves* rather than from God; for this reason superstition is an offense against God, since it places confidence in things which should be properly placed in God alone or only in things to which He has communicated divine efficacy in a special manner. The chief forms of superstition are idolatry, divination, and magic.

Idolatry is the giving of 'divine honor to a creature. The creature concerned in idolatry may be a manufactured article, such as an idol; or it may be a natural object, such

as the sun, the stars, a river; or it may be a living being, such as a bird, a snake, a cow, a man. No creature is worthy of adoration. To confuse a creature with the Supreme Being is obviously an affront to the Living God. Pagans, in their ignorance, may not be responsible for their error, but idolatry, whether voluntary or involuntary, is a false cult and a superstitious practice.

Divination is the attempt to foretell or to acquire knowledge of future events by evidently insufficient means. The scientist who predicts the future actions of physical bodies through an accurate knowledge of the laws of nature does not practice divination, because he bases his predictions on scientific data; the actions of physical bodies are necessary in character, determined by nature, and a thorough knowledge of these bodies will thus enable the scientist to foretell their course of action. The future actions of men, however, and the events dependent on them, are the result of the choice of their free will, and no one, except the Omniscient Intelligence, can know what these actions and events will be. Therefore, to seek a foreknowledge of future events, contingent on the free will, from anyone other than God, means to attribute to creatures knowledge which belongs exclusively to God. To seek knowledge in this way is divination and an offense against God, because it virtually places a creature on a level with God. God can communicate His knowledge of free future actions and events to man, if He so decides, and this communication can take place in whatever ways God chooses. But man has no right to this knowledge, and to seek it from creatures is superstition. Divination appears in many forms. The most

common forms of divination are the reading of cards, tea leaves, dreams, and stars, fortune-telling, and the superstitious practices of spiritualistic mediums.

Magic is the endeavor to produce effects transcending human powers by inadequate means or by some means other than the power of God. These effects may be of a harmful or beneficent nature. Charms and spells, when actually believed in, are forms of magic, because one thereby attributes powers to them which man does not possess himself and which they, by nature, cannot possess. In practicing magic, one either attributes divine powers to creatures or virtually appeals to evil spirits to produce preternatural effects. In either case, magic is an offense against God. To believe that the number 13 is unlucky, that Friday is an unlucky day, that a rabbit's foot or some other 'luck piece' will bring good fortune, etc., is equivalent to ascribing magical powers to ordinary things. Hexing and voodoo rites are more malicious in intent and involve an appeal to Satan and the evil spirits to lend their superhuman powers to human designs. That such magical practices are morally wrong, should be obvious; they represent an invasion of the rights of God and manifest a woeful lack of reverence and love for God who is all-powerful and all-kind.

When people become morally corrupt and lose their practical belief in God, they inevitably turn to superstition as a substitute. If they refuse to accept the true religion, they invariably accept a false religion. Man simply cannot live without religion of some kind, true or false.

Religion and Morality

Ever since Kant divorced morality from religion, it has become the pet theory of *independent morality* that man can lead a truly moral life without natural or supernatural religion. Religion and morality, these theorists claim, are 'closed systems' and are not interrelated. The theory is convenient. If morality has no intrinsic and essential relation to God and religion, morality can be tailored to suit each individual's desires, convictions, and ambitions, because there is no one to whom he must render an account for his deeds but himself. Independent morality endeavors to give a scientific basis to indifferentism.

Independent morality is a *false theory*.

Religion must be said to have an essential relation to morality.

Religion is the sum of the *duties* which obligate man to render honor and homage to God as the Supreme Being and Creator of man. Man, considered adequately in the totality of his being, is an individual, a social being, and a creature of God. Because of these essential states of his being, he has definite rights and definite duties. He can no more cease to be a creature of God than he can cease to be an individual or a social being. The rights and duties which flow from these states constitute the entire field of morality. Hence, the duties of man toward God as the Supreme Being and Creator of man are an *integral part* of morality. These duties, however, constitute a part of religion. Consequently, religion is an integral part of morality.

Religion is the sum of the *truths* pertaining to the relation of man to God. These truths are the very foundation of the moral order, for without them there would be no moral order. The moral concepts of 'obligation' and 'sanction' are unintelligible, if the concepts of God and man's essential relation to God are deleted from the moral order. Nothing would be left as the foundation of obligation and sanction but the policeman's club and the soldier's rifle. Physical force can control the external actions of men, but it can never engender the sense of obligation which is a constitutive part of moral life and which directs the internal actions of the will, even in the absence of physical force. When public officials are inducted into office and when people are placed on the witness stand in court, they are made to take an oath, calling upon God to witness the honesty of their intentions. The oath is thus made the foundation of civil society, and the oath has no meaning except on the supposition that God exists and is the Supreme Judge who will eventually punish the perjurer.

George Washington, in his Farewell Address, stated in clear words the intimate relation between religion and morality, when he said: "Of all the dispositions and habits, which lead to political prosperity, religion and morality are indispensable supports. In vain would that man claim the tribute of patriotism, who should labor to subvert these great pillars of human happiness, these firmest props of the duties of men and citizens. The mere politician, equally with the pious man, ought to respect and to cherish them. A volume could not trace all their connections with private and public felicity. Let it simply be asked, where is the

security for property, for reputation, for life, if the sense of religious obligation desert the oaths, which are the instruments of investigation in Courts of Justice? And let us with caution indulge the supposition that morality can be maintained without religion. Whatever may be conceded to the influence of refined education on minds of peculiar structure, reason and experience both forbid us to expect that national morality can prevail in exclusion of religious principle.”

The morality of an action is determined by its end or purpose. Where there is a multiplicity of ends, one of them must be the *ultimate end*. Now, as was shown, the ultimate end of man is God. Hence, to exclude God (religion) from morality is to destroy morality. The truth of this conclusion has been confirmed all too clearly in our times in nazi Germany and communist Russia. In both countries the official government acted on the principle that the state is an end in itself, independent of God. The result was disastrous. Obligations were flouted, rights ignored, treaties broken, and injustices of the most revolting sort committed. When governments deny God and disregard religion, man becomes a mere slave of officialdom, and national and international crimes become commonplace occurrences. Without religion there can be no genuine morality, and without genuine morality nations are doomed to eventual destruction. Such has always been the verdict of history.

Religious worship is man’s first and foremost duty. It is man’s greatest privilege to know God, to love Him, and to

serve Him in this life, so as to be eternally happy with Him in the next. A truly religious man is a truly moral man.

Summary of Chapter XIII

Man, as a creature of God, is the subject of very definite *duties toward God* his Creator.

1. *Natural Religion*. God is the first cause and the ultimate end of man. Man is absolutely dependent in all things on God. Accordingly, man's relation to God as his first cause and ultimate end is absolute, natural, and essential. Because of this *relation*, man has certain specific *duties* toward God. This relation and the obligations which flow from this relation are the foundation of *natural religion*.

In its *primary* meaning, religion is the worship extended by men to an extramundane and supra-mundane personal being, on whom they believe to be dependent in their lives and fortunes and whom they seek to make propitious by special observances. Divine worship is the honor and homage rendered to God in proportion to His excellence, dignity, and power. In its *secondary* sense, religion signifies the sentiment or virtue which inclines man to render honor and homage to God. In a *third* sense, religion signifies the *truths* which refer to the relation of man to God and the duties which pertain to man in consequence of these truths.

In *classifying* religion, we distinguish between 'true' and 'false' religion, 'objective' and 'subjective' religion, 'natural' and 'supernatural' religion.

2. *Necessity of Natural Religion*. Natural religion is based on the truths and duties which man knows through the aid of human reason alone.

Natural law obligates man to internal worship. Internal worship is the deliberate acknowledgment, by means of internal acts of intellect and will, that man owes his essence and existence to God. Man has the duty, in virtue of his rational nature and the natural law based on it, to render this conscious acknowledgment.

Natural law also obligates man to external worship. Man is a psychosomatic being, and sensible manifestations of his affective states are the natural complement of his internal mental conditions. It is, therefore, natural for man to express his internal worship by acts of external worship. But a natural demand belongs to the natural law.

Public worship, *per se* and *in principle*, is incumbent on all men, individually and collectively. Man is by nature also a member of *society* and of the *state*. The family and the state exist in a relation of dependence with reference to God. Therefore, the family and the state, like the individual, have the duty, based on the natural law, to acknowledge this dependence and to render honor and homage to God.

3. *Supernatural Religion*. Supernatural revelation is possible, whether viewed from the standpoint of God or of man or of the truths to be revealed.

Granted the fact of supernatural revelation, man has the *duty to accept* it. If God reveals Himself, He evidently desires and intends that man accept the truths revealed. Man then has the duty to give his assent because a rational being cannot refuse assent to God without disobedience and presumption. Hence, *indifferentism* is a serious offense against God, whether it be 'practical' or theoretical.

4. *Main Acts of Religion.* These acts are adoration, sacrifice, prayer, vows, and oaths.

Adoration is an act whereby man expresses his acknowledgment of God's infinite greatness and majesty and of his utter dependence on God as his Creator and Master. *Sacrifice* is the offering of a sensible, relatively valuable object to God and its actual or symbolic destruction, in order to acknowledge that God is the Creator and Lord of all things. *Prayer* is conversation with God for the purpose of honoring Him. A *vow* is a voluntary promise made to God whereby a person binds himself to do the better good. An *oath* is the calling upon God as a witness to the truth of a statement or of the intention to fulfill a promise; to be permissible, discretion, truth, and justice are required as conditions.

5. *Irreligion and Superstition.* *Irreligion* occurs when a person refuses to render unto God the reverence which is His due or when a person dishonors Him. *Direct* irreligion dishonors God Himself, as in 'testing' God or in 'blasphemy.' *Indirect* irreligion dishonors God by dishonoring things or persons dedicated to Him in some special manner, as in 'sacrilege' or 'simony.'

Superstition exaggerates in some manner the powers inherent in creatures, so that they are falsely assumed to partake of divine efficacy. Chief among superstitious practices are 'idolatry,' 'divination,' and 'magic.'

6. *Religion and Morality.* *Independent morality* claims that man can lead a truly moral life without dependence on natural or supernatural religion, because both morality and

religion are 'closed systems' and are not interrelated. The theory is false.

Religion is an integral part of morality. Man is an individual, a social being, and a creature of God, by his very nature. The rights and duties which flow from these states of man constitute the entire field of morality. Now, the duties of man toward God, based on his state of being a creature of God, are 'religion.'

Religion, i.e., the truths and duties pertaining to the relation of man to God, is the very foundation of the moral order. The concepts of 'obligation' and 'sanction' are unintelligible, if the concepts of God and of man's essential relation to God are deleted from the moral order; nothing would remain but physical force. The morality of an act is determined by its end or purpose. But the ultimate end of man is God. Hence, to exclude God (religion) from morality is to destroy morality. History confirms this conclusion.

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¹ *Summa theol.*, 2a 2ae, q. 88, art. 2

² *Ibid.*, 2a 2ae, q. 89, art. 3

Chapter 14

DUTIES OF LOVE

MAN IS A CREATURE OF GOD. GOD, THEREFORE, HAS CERTAIN rights with reference to man, and this relation of creature to Creator entails some very definite duties on the part of man toward God. Having received existence, man is a self-contained, autonomous being, a person, whose body and soul are his own. As such, man can have no duties of justice toward himself, because justice is essentially a virtue which seeks to give 'another' his just dues. The question therefore arises: Can man have any duties at all toward his own person?

Ever since C. Thomasius discussed the problem, many authors have denied the existence of man's duties toward himself. Prominent among them are the utilitarians and, of course, the materialists; the former, because their norm of morality consists in the social effects of conduct, and the latter, because of their doctrine that man is the supreme lord of his being and accountable to no one but himself.

While it is true that man can have no duties of justice toward himself, man has *duties toward himself* which arise out of *love*. And every individual has *duties toward others*, both from the standpoint of love and of justice.

Duties Toward Self in General

“Man is his own master.” In one sense, this axiom expresses a great truth. Man is not a thing, but a *person*. Because he is a person, man has a free will, capable of controlling, directing, and regulating his various powers and members and their actions according to ends and purposes of his own choice. Physical force may exert compulsion on his body, but it cannot invade the citadel of man’s free will and extort its consent. The axiom is thus an expression of the high and noble dignity of the human person.

In another sense, however, the axiom expresses a falsehood. The axiom often is used in the meaning that man is the complete lord of his own person, without duties of any kind toward himself; he is absolutely independent. We cannot admit the contention underlying the axiom used in this sense.

Man can and does have *duties based on the love* which he must have for his own person.

Self-love is an instinct implanted in man by his very nature. Self-love, therefore, is a dictate of the natural law. But self-love can be *ordinate* or *inordinate* and as such morally good or morally bad. It is ‘ordinate’ if it is in accord with right reason, and ‘inordinate’ if contrary to right reason. The natural law of self-love prescribes the proper manner in which man must love himself, so that he may live as a rational being. Such prescriptions represent the duties of man toward his own person.

The identity of man with himself is no obstacle for the duties of man toward himself. As was pointed out in a

former chapter (Chap. 7), a *hierarchy of powers* exists in man, and it is his duty to regulate the use of these powers in such a manner that their actions will conform to the *proper order* dictated by the rational nature of man. Because man is a person, he must observe the proper order *in himself* and *for himself*. God gave man his rational nature with its natural love of self, and He imposes on man the duty to live in accordance with the dictates of his rational nature, so that his self-love will not overstep the bounds of the proper order which should exist in his being.

The *supreme moral principle* states: 'Do the good and avoid the evil'; or, more concretely, 'Live in accordance with the dictates of your rational nature.' Applied specifically to the duties of man toward himself, the supreme moral principle assumes the form: 'Regulate your conduct toward yourself in a manner which agrees with your rational nature as a human person.' All the personal duties of man toward himself can be deduced from well-ordered self-love, so that the moral principle governing man's duties toward himself can be expressed in the following formula: Love yourself with a well-ordered self-love. This self-love will be well ordered when it is such as befits man's rational nature, both as to its object and as to the manner in which it is actuated.

Kant contended that any action prompted by self-interest (self-love) is not morally good; it must be performed out of pure love of the law, from a sense of duty for duty's sake. This is a one-sided view. In creating man, God placed in his nature an ineradicable love of self as the basis of self-preservation. It must, therefore, have been His design and

intention that man be actuated by self-love. Consequently, self-love must be something morally good, because it is *natural*.

In order that man's self-love remain morally good, it must be grounded on proper *self-esteem*. Man possesses the dignity of a 'person.' As a 'person,' he occupies the dominant position in the visible universe, so that all irrational creatures are at his service, while he himself is not in the service, as a means to an end, of any other creature. The self-love, which is the basis and source of his duties toward himself, is a love of *benevolence*. He must, and ought to, esteem himself because of this very fact that he is a 'person' and not a mere thing. So long, then, as man's love for himself is grounded on proper self-esteem and stays within the bounds of proper self-esteem, it is morally good. As soon, however, as man's self-love becomes exaggerated and oversteps the bounds of proper self-esteem, it becomes *selfishness* or *egotism* and is morally evil. There are, of course, motives for action which are nobler than the motive of self-love; such, for example, is the motive of the love of God, which should impel man to act in accordance with the norm of morality. Any act performed from the motive of the love of God is morally good in an eminent degree — this is obvious; but it is equally obvious that an act performed from the motive of a well-ordered self-love is also morally good: both motives are in agreement with right reason. The self-love which prompts man to strive in all things for his *true perfection* is a well-ordered self-love, which is something quite different from

the blind instinct of self-preservation and from the inordinate tendencies of selfishness.

Man, therefore, has duties toward himself, imposed by God on him in virtue of his rational nature, which flow from a well-ordered love of self. These duties refer either to his soul or to his *body* or to *external goods*.

Duties Referring to Man's Soul

The supreme object of all man's endeavors must be the attainment of his *ultimate end*, namely, the eternal possession of God and his own eternal happiness in the life to come. It follows as a necessary consequence that man's entire conduct must be directed toward this end and toward everything that is conducive to it. Proper self-love will prompt him to strive to reach his supreme goal, and this demands self-development and self-perfection, especially in those powers which are primarily concerned with moral conduct. These powers are the intellect and will.

Each person has the natural duty to develop his intellect and acquire the *knowledge* necessary for the fulfillment of the duties incumbent on him according to his particular station in life. First of all, man must acquire at least an elementary knowledge of *God* and of the *religious duties* based on his essential relation to God as a creature. Without this knowledge man could not lead a moral life, nor could he strive effectively for his ultimate end. Hence, he must seek this requisite knowledge either through personal study or through instruction from competent persons. In addition to this general knowledge required of everybody,

each one must strive to acquire the knowledge necessary for the fulfillment of the duties which pertain to the *state of life* in which he is placed. There are special duties for a husband, a wife; for a father, a mother, a child; for an employer, an employee; for a physician, a lawyer, a newspaperman, a builder, a banker, a merchant; for a public official, a ruler, a subject; and so forth. Man owes it to himself and to those with whom he must live to be acquainted with the duties which should govern his conduct in his state of life. Unless he fulfills these duties, man cannot achieve the ultimate purpose of his life on earth. Genuine self-love, therefore, demands that he use all ordinary means to acquire whatever knowledge is needed for the proper fulfillment of his various duties toward God and his fellow man.

A similar situation obtains with regard to the *will*. The free will is the primary factor of all moral conduct, because nothing has a moral character except in so far as it is voluntary and free. The first duty of the will consists in bringing its individual decisions and resolutions into conformity with the recognized norm of morality. In order that this may be done with greater ease and consistency, the will must strive to acquire the various *virtues* which are essential for leading a truly good life; without such virtues a person would always run the risk of succumbing to evil in the stress of temptations which constantly exert pressure upon the will of man and seek to divert him from his ultimate end. One of the greatest sources of temptation to evil lies in the inordinate tendencies of the lower instincts of man's complex nature, unless they are rigidly controlled

and regulated. It is, therefore, the duty of the will to direct these tendencies in such a manner that they are subject at all times to the dictates of right reason and become a help, rather than a hindrance, to man in his sublime effort to lead a moral life.

Duties Referring to Man's Body

Besides his soul, man also possesses a body. The body is as much an integral part of the human person as the soul. Together they form man's nature as a unitary substance and principle of action. Just as he has duties toward himself because of his soul, man also has duties toward himself because of his body. Man has the duty of ordinate love of his body and everything pertaining to the *proper welfare of his body*.

The duties of man toward his body are partly negative, partly positive.

NEGATIVE DUTIES.

No person is allowed to take his own life by committing suicide. *Suicide* is the direct, intentional destruction of one's own life. Suicide must not be confused with the indirect and unintentional surrender of one's life which may be permissible. Anyone performing a morally good act, knowing that his death will follow, provided he has a sufficiently grave reason for the act, does not commit suicide; he 'permits' the forfeiture of his life in a good cause for a sufficiently grave reason. The reader will recall the

case of the flier whose plane was partly disabled and who dove into the enemy aircraft carrier, seriously crippling the ship and dying in the explosion of his own bombs. This man did not intend to take his own life; his direct, intentional act was to stop the enemy from inflicting serious damage upon the forces of his own country. His cause was just, and his heroic act was morally good. His death was an indirect, secondary effect of his action which he permitted to occur; he did not want to die; and if he could have spared his own life under the circumstances, he would undoubtedly have done so. His action, therefore, was not suicide in the moral sense of the term. Actions of this kind must be judged by the principle of 'double effect' and may be, depending on the circumstances, entirely permissible.

Suicide is *self-murder*. A person has no more right to murder himself than he has to murder someone else. That person alone has the right to destroy a thing who has dominion over it. In order that an individual be permitted to destroy his own life, he must have dominion over it. But how can an individual have dominion over his life? He did not create it; he did not acquire it through his own effort and industry; he did not purchase it. Life is a gift. The soul is created by God, and the soul is the life principle of the person. God alone, therefore, has dominion over the life of a person. Since the life of an individual is an unearned gift, man is only the *steward* over his life, and he has the duty to manage and administer his life in the service of his Master. God alone has the right to take man's life. Consequently, if a person commits suicide he is guilty of invading the rights of God.

That suicide is an *unnatural act* is clear from the fact that the most fundamental and peremptory of all instincts in human nature is *self-preservation*. This instinct is a manifestation of the will of man's Creator that he preserve his life against all influences which threaten to destroy it. The preservation of one's life, therefore, is a demand of the natural law. Consequently, man has no right to take his own life intentionally and arbitrarily.

Even extreme misery and pain are no justification for suicide. The express or tacit *permission of God* alone could justify such an act. No one can prove that God gives His 'express' permission. And 'tacit' permission cannot be presumed, except under the supposition that suffering would make it impossible for man to attain his *ultimate end*. Man, however, can attain his ultimate end even in suffering. Suffering can give rise to the finest opportunities of virtue, and virtue is always glorification of God. Because of the difficulties involved in leading the good life under such adverse circumstances, the reward in the life to come will be all the greater.

Not only suicide, but also *self-mutilation*, intentional and unnecessary *exposure to serious danger*, and impairment of health are forbidden by the natural law. All bodily members are integral parts of the nature of man and as such fall under the dominion of God; they are no more the property of the individual, to be disposed of at his arbitrary discretion, than life itself. Each member of the human body has its own specific function, intended by the Creator for the general welfare of the human person. No one, therefore, has the right to mutilate his body, except it be for

the preservation of life and the promotion of general health. An operation, for example, is permissible, whenever the removal of a diseased member is necessary for the life of a person or for the restoration of his health. No one may risk serious danger to life or limb, except for a sufficiently grave reason. The seriousness of the danger is a relative matter. The danger may be serious for a tyro and slight for a skilled person. Thus, aerial acrobatics are permissible for the trained circus performer, but morally forbidden to a novice in the art until properly trained. Stunt flying for amusement's sake is morally wrong if the pilot endangers his life because he lacks the necessary skill or because his plane is defective; if there is little danger attached to the performance, a reasonably good cause is sufficient to permit the action. The stunt flying of a test pilot in an experimental plane is justified, provided he is not rash in his performance; the test pilot, it may be presumed, is highly skilled in handling a plane, and the tests are practically necessary for the common good and for the general advancement of aviation as a science and as a method of travel. Scientists may expose themselves to danger in their scientific investigations if the experiments are important for the general welfare and if they take precautions to minimize the danger as far as possible. Some occupations are always dangerous, but they are essential to the welfare of the government or of the general public. Since these occupational hazards are unavoidable, and since someone must do the work of the world, it is evident that it is morally permissible for some persons to enter these occupations; in all such cases, however, safety measures should be taken.

POSITIVE DUTIES.

Man also has 'positive' duties toward himself with regard to health and bodily integrity. He must strive to preserve life and health through the use of appropriate means. These means are either ordinary or extraordinary. Ordinary means are means commonly used by prudent persons which can be applied without too much difficulty. Extraordinary means are those whose acquisition or application involves difficulties beyond the capabilities of prudent persons. Among the ordinary means necessary for the preservation of health and general bodily integrity are food, drink, sleep, relaxation, moderate exercise, and ordinary treatment in times of sickness. Among the extraordinary means are to be reckoned very rare and expensive medicines, extensive traveling, protracted hospitalization, and severe and dangerous operations.

Health and bodily integrity are gifts of nature, designed by God and given to man for his benefit, so that he will be able to lead a life befitting the human person and perform the duties of his particular state in life, with the over-all purpose of attaining his ultimate end. Such being the intention of the Creator of man in bestowing health and bodily integrity, man is by nature bound to use those positive means which will enable him to preserve the efficiency of his body by applying at least the ordinary means required. Without the use of at least these ordinary means, man obviously would be delinquent in fulfilling the inherent purposes of his body and its members.

In general, the use of *extraordinary* means is not obligatory. God in His wisdom cannot be assumed to will that man be obligated to use means which exceed his ordinary powers. Exceptional circumstances, however, may require extraordinary means. Charity, for instance, may at times demand that a person use all means available to preserve his life and health. Thus, the father of a family may be sorely needed for the support of his small children; in such a case, he has the duty of charity to do everything within reason to have his health restored, in order that his family will not become destitute and his children suffer in their moral upbringing.

Duties Referring to External Goods

External goods are all those things which are not a part of the human person but are a benefit for the person in some manner. Chief among such external goods are a person's good name and earthly possessions.

A *good name* or a good reputation is the favorable opinion people hold concerning a person because of some natural or acquired excellence. A good name is an asset and, generally speaking, a necessity. One who enjoys a good reputation is usually anxious to retain the favorable opinion people have formed of him. Hence, he will seek to avoid misconduct, so as not to lose his good reputation. Furthermore, a good name is usually a requisite condition for every type of social activity, not only for those in public positions but also for those whose influence is restricted to the more common circles of friendship and business. A

person with a bad reputation is always considered a poor risk in any kind of enterprise. Since man is a social being and must live in a social world, he has the *natural duty* to obtain and retain a good reputation among his fellow men. This duty, however, extends only so far as a good reputation is required for the fulfillment of the moral obligations pertinent to his vocation in society. A public official, for example, whose honesty has been besmirched, may have the duty, for the sake of good government, to defend his good name against unjust attacks. So, too, a physician, falsely accused of malpractice, may be in duty bound to bring his defamer to justice.

Man has the duty of self-preservation and, if he has a family, the duty of supporting his family. For this he needs a reasonable amount of *earthly possessions*. These goods, however, are usually of such a character that they must be acquired by personal endeavor and initiative. Hence, the average person has the *natural duty* to acquire the amount of earthly possessions needed for the proper support of himself and his family, provided he has the ability and opportunity. It would be wrong, therefore, for a family man to neglect to work for a living, if his family were dependent on his wages for sustenance; but it would not be wrong for him to retire from active work, if he had acquired an amount of earthly goods sufficient for himself and his family, according to their accustomed standard of living, for the present and the foreseeable future.

Duties of Love Toward Others

The duties which every person has toward others are the duties either of love or of *justice*. The duties of love have their binding power solely in conscience and as such possess a purely moral character. The duties of justice, on the other hand, correspond to juridic rights and for that reason are subject to coercion.

The *general duty of love* will receive our first consideration. Man may love his fellow man from a triple motive. A man may love a person because of some advantage to be gained or because of the pleasure of his companionship. The love of one's neighbor under such circumstances partakes more of the nature of self-love than it does of love of the neighbor for his own sake. Or, a man may love his neighbor in order to please God. This kind of love is more properly love of God than love of one's neighbor. Or, a man may love his neighbor for the *neighbor's own sake*, because his neighbor has the dignity of a human person who, being endowed with intellect and free will, is created in the image and likeness of God and deserves on that account to be treated with honor and love in his own right. Such a love is a love of *benevolence* and *friendship*, and this type of love is a natural duty for everyone.

Man must love his neighbor, i.e., every human being, as *himself*. This does not mean that we must love others with the same measure or intensity as we love ourselves; it means that our love for our neighbor must be *genuine* and *true*, just as the love for ourselves is genuine and true. In other words, the model after which our love for our neighbor must be patterned is the love we bear for

ourselves. The *degree* of love is determined by the proximity or intimacy that exists between the persons involved. Each one is naturally closest to himself, because he is identical with himself; hence, the love each one bears toward himself is naturally stronger than the love he bears toward another. *Proper order* demands that we love others in proportion to their relationship to us: parents more than sisters and brothers; sisters and brothers more than other relatives; relatives more than friends; friends more than strangers. All, however, are 'neighbors' to us and must receive our love.

That everyone has the natural duty to love his fellow man follows from the very fact of the *nature of man*. We owe love to ourselves because we are creatures of God, endowed by Him with a rational nature, so that we are created in His image and likeness; our rational nature confers on us a dignity which surpasses all the other beings and powers present in the visible universe. *Right order* places upon us the duty, then, to love others as we love ourselves, because they, too, are children of God and possess the same human dignity that God has given to us. In the eyes of God all men are equal and form one great family, and we have the duty, therefore, to embrace in our love, not only ourselves, but every human being who, like ourselves, has the same nature and is destined for the same ultimate end in the possession of God. The 'brotherhood' of all men is not just an idle phrase; it is a fact of profound significance. Even if we leave aside every supernatural motive as being outside the province of natural ethics, the fact that all men are essentially equal among themselves and before God may

and should furnish the solid foundation of harmonious interracial and international human relations.

Duty of Truthfulness

Man has many duties toward his neighbor that spring from the fundamental duty of love. They differ from person to person to a great extent, depending on the conditions and circumstances in which each individual is placed in life. There is, however, one important duty, prompted by the love of neighbor, which is all-embracing, namely, the *duty of truthfulness or veracity*.

Truthfulness is the moral virtue which inclines the will to tell the truth. Truth is conformity between intellect and thing. We are here concerned with *moral truth*, and moral truth is defined as the *conformity between speech and mind or, more accurately, as the conformity between speech and the judgment of the intellect*. By 'speech,' in this connection, one understands not only 'words' but all external signs which are used to convey the ideas and judgments of one intellect to another, be the means of communication words, print, writing, gestures, or anything else.

The opposite of moral truth is the *lie*. A lie is the *telling of an untruth*, so that there is a contradiction between what a person thinks and says. If the person is conscious of this contradiction, so that he deliberately tells a falsehood, the lie is a *formal lie*; and if he is unconscious of this contradiction, the lie is a *material lie*. In telling a 'material' lie, the person is subjectively convinced of the truth of his

statement and has the honest intention of telling the truth; he is, however, actually mistaken about the state of affairs concerning which he is making his statement, so that, from an objective point of view, there exists a contradiction between his statement and the facts as they are in themselves: such a statement, therefore, is an error, but not a formal lie. In telling a 'formal' lie, the person knows that his statement disagrees with his personal conviction (whether this conviction is true or false in itself, is an indifferent matter), yet he consciously and deliberately makes a statement contrary to his convinced judgment. Thus, it may happen that a person tells a 'formal' lie (i.e., makes a statement contrary to his judgment and conviction), and yet, because of an error in judgment, his formal lie may (accidentally, and contrary to his conviction) agree with the actual fact and be 'materially' true. Ethics deals only with formal truths and formal lies. Since only those acts are human acts which proceed consciously from the free will, and since only human acts possess the quality of morality, it follows that only formal truths and formal lies possess the quality of morality and, as such, have moral significance. When, therefore, ethicists treat of truths and lies, they mean 'formal' truths and 'formal' lies. Consequently, a lie, from the viewpoint of ethics, is a *conscious and deliberate statement contrary to one's subjective judgment*, whether this subjective judgment be objectively true or false.

Four elements are distinguishable in a lie: (1) a statement in contradiction to the judgment of the mind; (2) the will to state something one is convinced is false; (3) the

will to deceive another by means of this statement; (4) the deception of another. The first two elements belong to the essence of the lie. The fourth element is the effect of the lie. Whether the third element is an essential element or only a necessary consequence of the lie is a mooted question among ethicists. Practically speaking, whoever tells a formal lie, by that very fact intends to deceive the person to whom the statement is made; otherwise he would not deliberately make a false statement.

A lie can be told in *four ways*: by affirming what one knows is not true; by denying what one knows is true; by asserting as certain that about which one is in doubt; by asserting as doubtful that about which one is certain.

From the standpoint of the *purpose* of telling a lie, there are *three kinds* of lies, namely, pernicious, officious, and jocose lies. A *pernicious* lie not only contains the moral delinquency of deliberately attempting to deceive another, but also seeks to inflict harm upon him by means of the lie. An *officious* lie is one in which a person seeks to gain some advantage or avoid some difficulty, be it for one's own self or for another, without thereby inflicting any harm upon another; this type of lie is often spoken of as a 'white lie.' A *jocose* lie is one made in jest, in order to amuse someone. In all these types, the intention to deceive must be present; otherwise it is no lie. To tell a 'tall story' in jest, therefore, with the knowledge or the reasonable supposition that the listeners do not believe it to be true, is not lying. On the other hand, if a person says an untruth with the intention of deceiving others, he tells a lie, even if they are not deceived

and do not believe his statement; actual deception, therefore, does not belong to the essence of the lie.

So far as the *morality of lying* is concerned, all authors agree in the general statement that lying in the strict sense of the term is morally wrong. But not all authors agree as to what should be considered a 'lie' in the strict sense of the term. Whether, for instance, an *officious* lie is absolutely and intrinsically wrong, represents a very difficult problem, due to the fact that secrets frequently cannot, or should not, be divulged. Plato and the stoics maintained that a lie is permissible to avoid a great evil or obtain a great good. In the Christian era, the priscillianists and semi-pelagians taught that a lie is not always morally wrong; Origen and Cassian held a similar view. St. Augustine defended the intrinsic immorality of lying, and Catholic theologians agree with him. Many Protestants follow the teaching of Hugo Grotius who distinguished between a *lie* (*mendacium*) and a *false statement* (*falsiloquium*). According to Grotius,¹ in order that a lie be a lie in the strict sense of the term, we must add to the definition the element of a "discrepancy with some existing and permanent right of the person to whom the words or signs are addressed." The *right* of such a person *to the truth* must be certain, before a formal falsehood is a lie; if the person has no right to the truth, the false statement violates no right of his and is not a lie in the strict sense of the term. A person's right to the truth may cease "either by the express permission of him with whom we deal... or by tacit permission, or by permission presumed on fair reason; or by the opposition of another right which, by the common opinion of all, is much more

important.”² As examples of the cessation of the right to the truth Grotius mentions the case of giving information to infants and persons of unsound mind, the case of the necessity of preserving an innocent person’s life, the case of hindering someone from committing a grievous crime, and so forth. Instead of the classic definition of a lie as being ‘speech contrary to the mind,’ some authors prefer the definition of a lie as being ‘the denial of communicable truth’; according to this revised definition, they claim, there would be no lie if one would not be allowed to communicate the truth to another.

We claim that a *formal lie*, i.e., a conscious and deliberate statement contrary to one’s subjective judgment, is *intrinsically wrong*.

First. That which is contrary to the *natural* purpose of speech is forbidden by the *natural law*. It is the natural, because intrinsic, purpose of speech, instituted as such by the Author of nature in giving man the power of speech, to manifest the judgments of one intellect to another intellect; in other words, God gave the power of speech to man for the natural purpose that he communicate his judgment about things and events to another. A formal lie, however, is contrary to this natural, intrinsic purpose of speech, because a formal lie does not manifest the judgments of one intellect to another intellect. Consequently, a formal lie is contrary to natural law and therefore intrinsically wrong.

It is no valid objection to point out that speech consists of conventional signs’ and therefore is only an artificial, not a natural, instrument of communication. It is true, of course, that words are conventional signs of ideas, and ‘language,’

therefore, is an artificial construct. However, the actual language used is only a means to the end of communication; on the other hand, the 'power of speech' is a *gift of nature* and of nature's God, and it is a 'natural' instrument intended by nature for the communication of ideas and judgments. The power of speech is essential to communication, while the actual language used to convey meanings is incidental.

Second. That is forbidden by natural law, which, if permitted, would redound to the *serious detriment of human society*. A moment's reflection will suffice to show that truth in speech is essential to society. All the functions of society rest on the intercommunication of ideas between mind and mind by means of speech. Whether this intercommunication be between individuals, in the family, in the nation, or between nations; whether it be in matters of social life, business, industry, commerce, or international affairs; whether it pertain to knowledge or morals in private or public dealings: this intercommunication between individuals and groups is essential to the functions of society. Now, since intercommunication is carried on only through speech, and since speech would be useless without truth in speech, it is evident that truth in speech is essential to the functions of society. However, that which is essential to the functions of society is demanded by the natural law. Truth in speech, therefore, is demanded by the natural law for the proper functions of society. Anything contrary to the proper functions of society redounds to the serious detriment of society. Hence, anything contrary to truth in speech redounds to the serious detriment of society and is

forbidden by the natural law. Consequently, formal lies, since they are contrary to truth in speech, redound to the serious detriment of society and as such are forbidden by the natural law; and since anything contrary to natural law is intrinsically wrong, formal lies are intrinsically wrong.

It is objected that mutual trust and confidence, so essential to the functioning of society, would not be seriously impaired if formal lies were permitted in *exceptional* cases and *for grave reasons*. But who should be the *deciding judge* in such matters? Obviously, one cannot submit each case to an investigating committee, so as to obtain an impartial verdict on the importance of the reasons for telling a formal lie. The matter would have to be left to the discretionary judgment of the individual, and no judge is competent in his own case. The telling of formal lies cannot be permitted under any circumstances, because formal lies are *essentially* the abuse of a natural faculty.

Third. Formal lies are contrary to the *nature of God*. God is infinite truth and holiness. He is true to Himself in every respect, because His truth is His holiness, and His truth and holiness are identical with all His infinite attributes. There would be a contradiction in His holiness, if He could tell lie, because there must be complete correspondence in His being. Hence, a discrepancy between His judgment and its expression is impossible. Now, man's rational nature is patterned after God's. A formal lie, since it is a discrepancy between judgment and speech, involves a corresponding discrepancy with man's rational nature and also a discrepancy with God's nature. But every human act which is a discrepancy with God's nature is contrary to the natural

law and as such intrinsically wrong. A formal lie, therefore, is intrinsically wrong.

A formal lie being 'intrinsically' wrong, it follows as a necessary consequence that it is never permissible to tell an outright lie, no matter what the provocation or the advantage may be, because it displeases God.

Mental Reservation

A person is not always allowed to divulge the truth. We have the duty to keep a secret, to avoid harming another in his reputation or person, to forestall a public calamity, and so forth. Then too, there are times when it would be permissible to tell the truth, but one has no obligation to tell it and prefers not to. In many instances it may suffice to remain silent or simply refuse to answer the question. However, sometimes the circumstances may be such that silence or the refusal to answer would indirectly reveal the very truth one has the obligation to keep secret; one must then seek some other means of hiding the truth.

Examples can be cited in abundance. Here are a few. Clergymen, lawyers, physicians, judges, and public persons frequently receive confidential information in their official capacity; such information is 'privileged' and must be held secret. If asked about it by some unauthorized person, silence or refusal to answer would immediately be construed as acknowledgment that they possess knowledge of the fact; if they did not possess this knowledge, they would not hesitate to say so. Another example. A number of thugs intend to assassinate an enemy or a dangerous

witness who, they have been informed, is hiding out in a friend's home, and so they call on this friend and inquire whether this person is in the house. Silence or a refusal to answer would be virtual admission that he is present and would mean his death. Again. A high-ranking government official is asked about some confidential information concerning important commodities, so that private speculators on the stock market could take an unfair advantage of their competitors. Here, too, silence or a refusal to answer may be all that is required as a hint about pending government action and could cause untold harm. Another example. The envoy of a country is asked privately by a foreign diplomat whether a decision was made by the envoy's country regarding certain important international matters. He cannot answer the question without violating his oath which pledges him to secrecy; but again, silence or a refusal to answer would indicate to the inquirer that a decision had been made, otherwise the envoy would not hesitate to give an answer denying the decision. A final example. An officer is captured by the enemy and asked whether it is not true that a certain date has been set for a general attack. The date is correct, and he cannot deny it; to remain silent or refuse to answer would be tacit admission that the enemy's information is correct, and the officer would be the indirect cause of the death of many comrades and of the loss of the impending battle.

What are persons supposed to do in such and similar situations? They may not lie, and they may not violate the confidences and secrets entrusted to them. If they were not permitted to conceal the truth in some way, the security of

social life would perish just as readily as through formal lies. Consequently, some means of concealing the truth must exist.

Some authors propose the *officious lie* or *false statement* as a means to conceal the truth. However, since a formal lie is intrinsically evil, we must reject it.

Others propose a *purely mental reservation*. A 'mental reservation' in general is a statement which 'reserves' the communication of knowledge from one mind to another by not efficaciously revealing the judgment present in the mind of the speaker. The reservation is *purely mental* when the statement does not reveal the judgment of the speaker's mind in any manner, either by speech or by the circumstances. The statement contains two parts; the one part, which would make the statement clear in its true meaning, is retained in the mind and is not revealed, while the other part, which is false as given in the light of the question, is spoken and is the only part understood by the hearer. For example. One soldier asks another: "Did you see action in the South Pacific?" The latter, although he never was in action, answers: "Yes, I saw action in the South Pacific," meaning: "Yes, I saw action in the South Pacific (in motion pictures)." Or, a mother asks her son: "There was some ice cream in the refrigerator; did you take it?" He answers: "No, mother, I didn't," meaning: "I didn't take it (within the last five seconds)."

A purely mental reservation is really a *formal lie*. The true part of the statement, retained in the mind, can in no sense be considered as *spoken* to another; and it is only this unspoken part which actually corresponds to the judgment

of the mind. The words, however, which are actually spoken to the listener, are false and necessarily lead him into error; the spoken words are directly intended to deceive and are 'speech contrary to the mind,' i.e., they are a lie.

Others propose a *broad mental reservation* as the proper means to conceal the truth from an unauthorized person without telling a formal lie. It is a statement which *limits the full meaning of the spoken words*, so that, although there exists some external indication of the limitation either in the spoken words or in the circumstances of the speaker, the listener will most likely *deceive himself* as to the actual meaning of the statement. For all practical purposes, the statement contains a *double meaning*, either in the words themselves (verbal equivocation), or because of the circumstance (real equivocation), and the listener is *permitted* to put a wrong interpretation upon the statement and thus deceive himself. The statement, however, must always be *true in itself*, even though it be *not the full truth*, and there must be some external clue, either in the words or in the circumstances, which would enable the wise listener to judge that an equivocation is being used. The speaker is the *occasion*, rather than the cause, of deception. These are fine distinctions, but they are valid and necessary.

The *principle* for the justification of the use of a broad mental reservation is formulated as follows: For a just reason we are allowed to use a broad mental reservation, except when the questioner has the right to know the truth; sometimes we are even obligated to use it. Each point of this principle must be given careful consideration.

That the use of a broad mental reservation is *sometimes allowed*, follows from the fact that it is *not a formal lie*. Such a statement contains a double meaning. One meaning is obvious in the words spoken; the other is not obvious, because it is retained in the mind. Since the obvious meaning is true, so far as it goes, the statement is not in itself 'speech contrary to the mind' and, therefore, no formal lie. It is not always required that the listener be apprised of the double meaning inherent in a statement, especially when one has the duty to keep certain information secret. If it were never permissible to make such a reservation, there would be no morally justifiable means of preserving a secret, and the common good of society would suffer tremendous harm. Hence, the use of this type of mental reservation must at times be allowed.

There must, however, be a *just reason* for the reservation. The equivocation involved in the statement is the 'occasion' for self-deception on the part of the listener, and this occasion is placed deliberately before the listener by the speaker. Some just reason must exist to do this; otherwise everyone would suspect ambiguity in the speech of others, and the mutual distrust thereby engendered in the minds of people would lead to definite harm for society. The 'just reason' required is some genuine good gained from the necessity of concealing the truth or the prevention of a real harm to one's self or others which would follow the revealing of the truth.

Furthermore, one is not permitted to use a mental reservation, if the questioner *has the right to know* the truth which is present in the mind of the person questioned.

If the questioner has the 'right' to know the truth, the person questioned has the 'duty' to reveal it, because rights and duties are correlative. In ordinary conditions and circumstances, for instance, parents have the right to the truth from their children about their associates and actions; public officials have the right to know the facts about the physical, mental, and moral qualifications of those who apply for positions or promotions; people about to enter an important contract with others have the right to know whether the other contracting party possesses the necessary legal and financial responsibility.

We are *obligated* to use a broad mental reservation when it would be *sinful* to reveal the truth about which we are questioned and when the questioner cannot be put off without some kind of an answer without revealing the truth indirectly by a refusal to answer. The reason is clear. Since we have the 'duty' not to reveal the secret to an unauthorized person, and since the only means to avoid the importunities of an unauthorized questioner under the circumstances is a statement containing a broad mental reservation, we have the 'duty' to use such a reservation in order to protect the secret entrusted to us. For a sufficiently *grave reason* a person may even make such a reservation *under oath*, namely for the sake of obtaining a great good or avoiding a great evil; the statement as such is true, and therefore God is not called upon to witness a lie. However, due to the ignorance and misunderstanding of the general public, such an oath should be avoided, unless strictly necessary; otherwise their faith in the sanctity of the oath may be unduly weakened.

The *difficulty* concerning the use of a broad mental reservation under the circumstances just outlined does not consist in its 'moral licitness.' Every intelligent person must concede that it is morally justified, whenever the situation is as described. The real difficulty consists in avoiding a purely mental reservation while attempting to make a broad mental reservation. That the matter is delicate is obvious. *Custom* and the *circumstances* of the case must decide what kind of an answer can or should be expected, in order that the answer be limited in its meaning by a 'broad,' rather than by a 'pure,' mental reservation.

Granted all the conditions outlined above, a broad mental reservation is *morally justified*. Three elements determine whether an action is morally good or bad. To be morally good, an action must conform to the norm of morality from the standpoint of the end of the agent, the end of the action, and the circumstances. But a broad mental reservation does this.

The *end of the agent* in a broad mental reservation is the legitimate concealment of confidential information, and that is a lawful end. The *end of the action* or object is the preservation of a secret to which the questioner has no right and the manifestation of which would violate a social trust placed in the speaker. But the speech used in a broad mental reservation protects the secret without the use of a formal lie, and that is justified from the standpoint of the end of the action. The *circumstances* which could make such a reservation unlawful are these: the reservation may be unnecessary to protect the privileged information; the questioner may be authorized by right or charity to know

the truth; the common good of society may demand that the truth be divulged. Under the conditions given, however, none of these circumstances obtain. Consequently, under such conditions a broad mental reservation is morally justified.

A FEW EXAMPLES WILL ILLUSTRATE THE USE OF THE BROAD MENTAL reservation.

Physicians, lawyers, priests, secretaries, magistrates, envoys, ambassadors, military personnel, and public officials of a nation can obtain knowledge of persons and events either as private individuals or in their official capacity as privileged persons. What they learn as private individuals is frequently communicable information, but what they learn in their official capacity is usually incommunicable information. When questioned by an unauthorized person regarding secret and privileged (incommunicable) information, they may answer:

"I do not know." The meaning is: "I do not know this in my capacity as a private individual, so that the information would be communicable as far as you are concerned." What they have learned in their official capacity they may not reveal, and as private individuals they have learned nothing and know nothing. Hence, in a perfectly true sense, namely, as *private individuals*, they can say: "I do not know." According to the same meaning, they could even give a flat "No" to some question asked by an unauthorized person, because the meaning would be: "No, so far as I know as a private person." Every intelligent person would take such

an answer of "No" in the sense that a manifestation of the information should not and cannot be given without violation of a trust.

If custom sanctions the usage, it is permissible for a secretary, maid, or subordinate to say that someone is "not at home" or is "not in," because the phrase is then accepted to mean that the person in question "will receive no callers."

A person arraigned in court may plead "Not guilty" to any charge preferred against him, even if the person has committed the crime mentioned in the arraignment. According to the procedure of American law, no one is to be considered guilty until he has been convicted in court after a fair trial. In pleading "Not guilty," the criminal merely indicates that he desires a fair trial in which his guilt must be proved by proper evidence.

A person passing through the customs office, when asked whether he has any goods subject to duty in his possession, may answer "No." Since the law in this case is a penal law which does not bind in conscience, the negative answer may mean either "I have nothing dutiable" or "I have nothing which I intend to declare." Customs officials understand this and never take such an answer of "No" at its face value.

If a nurse is asked by a patient what illness he has or how serious his illness is, she may answer: "I do not know." It is not within her province as a nurse to give this information it is the right and duty of the physician to inform his patient about the condition of his health. Her answer, therefore, simply means: "Ask your physician,

because I have no right to tell you.” Patients, as a rule, know that the ‘nurses do not talk’ and take their statement accordingly.

Parents often possess information which should be kept from their children, especially the younger ones. The same applies to superiors with regard to their subordinates. For a sufficiently grave reason, therefore, they may give evasive answers to importunate questions by using a broad mental reservation.

At first it may appear as if the answers given in these various examples are nothing less than lies. However, the explanation of these answers shows that they have a legitimate meaning and that the circumstances prompting the answers supply the clue which indicates to the listener that the person questioned may possibly possess some information not to be disclosed. In each case a broad mental reservation was used in a morally lawful manner and no formal lie was uttered.

Secrets

The use of mental reservations generally occurs when it is advisable or necessary to protect a secret. It will, therefore, be of considerable importance to know which secrets must be kept and when they may be divulged.

Subjectively, a *secret* is the obligation not to reveal some hidden thing or knowledge. Objectively, it is the hidden thing or knowledge which may not be revealed.

There are three kinds of secrets. A natural secret is one in which the obligation of secrecy arises from the very

nature of the matter without an existing contract; the matter is by nature such that justice or charity demands that it be not revealed to others. A *promised* secret is one in which the obligation of secrecy arises from a promise given after the knowledge is already obtained. A *committed* secret is one in which the obligation of secrecy arises from a contract or promise when a person receives knowledge of something previously unknown under the explicit or tacit condition not to reveal this knowledge. A committed secret will be 'private' when it exists between individuals as individuals and affects merely the private good of someone; it will be 'professional' when the secret is committed to someone in an official capacity for the sake of counsel or assistance and affects either the private good of someone or the common good of society.

The *violation* of a secret is governed by the following principles.

A *natural* secret obligates seriously in a serious matter, and the matter is considered to be serious when the manifestation of the secret causes grave harm or grave displeasure to the one who is affected by the disclosure. A natural secret may be divulged when it cannot be kept without serious inconvenience; this inconvenience must be proportionately greater, if the secret obligates from justice.

A *promised* secret obligates ordinarily only from fidelity, but sometimes it may obligate from justice, depending on the intention of the one who accepts the secret. The obligation is grave in a grave matter, light in a light matter. The obligation to keep a promised secret ceases when it cannot be kept without serious inconvenience either to

one's self or to another, unless an explicit promise was made to the contrary. It also ceases, whenever the circumstances are such that it would be illicit to withhold the information, even if a promise had not been exacted. The reason is that a promised secret always presupposes that the information has been obtained beforehand through some other source, and then the promise is exacted to keep this information secret; such a promise, therefore, entails no obligation, because no one is allowed to make a promise to do something wrong. Hence, if questioned by legitimate authority, the information of a promised secret must be revealed.

A *committed* secret obligates from justice, and the obligation is serious in a serious matter. This obligation arises from the necessity of preserving the common good of society. The common good would suffer serious harm if people could not consult others in their need for counsel and assistance without being in constant fear that their secret might be divulged. Naturally, a 'professional' secret imposes a more serious obligation than a 'private' secret. Much, of course, will depend upon the nature of the information obtained and upon the intention of the one giving the information; if the information is of a trifling nature, or if the attitude of the one seeking counsel or assistance shows plainly that he views the whole matter as of little importance, then the secret need not be considered as grave.

There are *four situations* in which a committed secret, even of a grave nature, may be revealed.

A committed secret loses its binding power whenever the keeping of the secret would cause great *damage to the common good*. Since the public welfare (common good) imposes the obligation to keep a committed secret, this obligation naturally ceases when the same public welfare requires the revelation of the secret. Hence, if anyone has learned through a committed secret that an unjust revolution is to be set afoot for the overthrow of the legitimate government, he may and must reveal his information to the proper authorities. Even if the secret concerns only an individual who intends serious harm to the state, a person holding the secret must denounce him to the authorities, if he cannot avert the harm by a personal appeal to the individual to desist from his criminal purpose.

The holder of a committed secret may reveal it whenever the one committing the secret intends to inflict unjustly *a grave injury upon an innocent third person*. Since this intention is criminal, charity demands that the innocent party be protected from the criminal act of the other. If John, for example, binds me to secrecy about his intention of murdering or severely injuring his employer, so as to force a favorable issue to the existing strike, then, if I cannot dissuade John from the crime, I must warn the employer or use my knowledge in some other way to protect him from harm. The obligation to keep a secret may cease only when a 'future' action is involved; if the action is past, I cannot avert the crime, and the obligation remains. If a young man contemplating marriage suffers from an active venereal disease, the treating physician must dissuade him from marriage until cured or induce him to

inform his fiancée of his condition; if the young man refuses and intends to marry her in his present condition, the physician may, and probably even must, issue a warning to the girl about the impending serious danger to her health.

The obligation to keep a committed secret also ceases when it is necessary to avert *grave injury to the one committing the secret*. It is presupposed that he will have no reasonable objection to the manifestation of the secret under such circumstances. For instance. A friend tells me under the pledge of secrecy that he intends to invest a substantial sum of money in a certain commercial enterprise. Subsequently I discover that this enterprise is financially very unsound, and I use his information to prevent him from making the intended investment.

Unless a person pledges himself to keep a committed secret even at the greatest personal inconvenience, he may reveal the secret in order to avoid a *grave injury to himself*, because he cannot be supposed to accept a secret which would cause grave injury to himself. An exception to this would be the case where grave harm would be inflicted on the public welfare through the manifestation of the secret information; the common good supersedes a private good, and a person may not prefer his own private good to the common good of all by the use of knowledge which he did not receive except by means of a secret. Thus, if a friend tells me under the pledge of secrecy that he has murdered someone and later on I myself am put on trial for this murder, I may reveal the information in order to free myself from the accusation and the punishment for the crime, provided there be no other way of avoiding the severe

penalty which is bound to follow a verdict of guilt; and this holds good, even if my friend thereby is put in jeopardy of his life.

In general, the obligation to keep a committed secret loses its power to bind, first, whenever it can be reasonably presumed that the one who committed the secret to another is satisfied, in view of the circumstances, that the secret information be used with proper discretion; second, whenever the one to whom a secret has been committed receives the information from some other source, or whenever the information committed to him becomes public knowledge, so that the information is no longer strictly secret.

Charity begins at home. But charity should not remain there. Hence, charity or love imposes duties toward one's own person and toward the person of others. The duties of charity or love proceed from the natural law and are thus binding in conscience.

Summary of Chapter XIV

Man has *duties of love* toward himself and also toward other individuals.

1. *Duties Toward Self in General.* Man can have no duties of justice toward himself, but he has *duties of love*. Self-love is a dictate of the natural law. A hierarchy of powers exists in man, and it is his duty to regulate the use of these powers in conformity with the proper order dictated by his rational nature as a human person. Hence, *ordinate self-love* is a dictate of the natural law and, as such, a duty and morally good.

2. *Duties Referring to Man's Soul.* Proper self-love demands self-development and self-perfection, especially in those powers primarily concerned with moral conduct, intellect and will.

3. *Duties Referring to Man's Body.* Man has the duty of ordinate love of his body and everything pertaining to the proper welfare of his body.

Negative duties. One is never allowed to commit suicide. God alone has dominion over man's life, and the individual is merely the steward over his life. Since man did not give life to himself, he has no right to take it. Suicide is an unnatural act, because it is contrary to the instinct of self-preservation. Also self-mutilation and intentional and unnecessary exposure to serious danger and impairment of health are forbidden.

Positive duties. Man has the positive duty to use the ordinary means of preserving his health and bodily integrity.

4. *Duties Referring to External Goods.* Among the external goods necessary for a well-ordered life are a good name and a reasonable amount of earthly possessions.

5. *Duties of Love Toward Others.* We have the duty of a love of *benevolence* and *friendship* toward other individuals, because they are also 'persons,' children of God, and destined for the same eternal happiness as ourselves.

6. *Duty of Truthfulness.* One of the duties of love toward our neighbors is truthfulness or veracity. *Moral truth* is the conformity between speech and the judgment of the intellect. A *lie* is the telling of an untruth, or 'speech contrary to the mind.' If a person who tells an untruth is conscious of the contradiction between speech and mind, it is a 'formal' lie; if unconscious of the contradiction, it is a 'material' lie. Lies are either *pernicious, officious, or jocose*.

A formal lie is *intrinsically wrong*. First, a formal lie is contrary to the natural purpose of speech, which is the power to communicate the judgment of one mind to another. Second, it is forbidden by the natural law, because anything which redounds to the serious *detriment of society* is contrary to the natural law. Third, it is contrary to the *nature of God* who is all-truthful and all-holy.

7. *Mental Reservation.* One may not always divulge the truth, because secrets must be kept; and one may not tell a formal lie. Hence, there must be a means of hiding the truth

which may not be revealed. Since an officious lie is a formal lie, authors recommend a mental reservation for concealing the truth and protecting a secret.

A *mental reservation* is a statement which does not efficaciously reveal the judgment present in the mind of the speaker. The reservation is purely mental when the statement does not reveal the judgment in any manner. Since the words as spoken necessarily lead to deception, such a reservation is a formal lie. A *broad mental reservation* is a statement which limits the full meaning of the spoken words, so that, although there exists some external indication of the limitation either in the spoken words or in the circumstances of the speaker, the listener will most likely deceive himself as to the actual meaning of the statement.

The principle: For a just reason we are allowed to use a broad mental reservation, except when the questioner has the right to know the truth; sometimes we may even be obligated to use it. The use of such a reservation, when not forbidden by the end of the agent, the end of the action, and the circumstances, is *morally justified*.

8. *Secrets.* Secrets are either natural or promised or committed. A *natural* secret may be divulged when it cannot be kept without serious inconvenience. A *promised* secret may be divulged when it cannot be kept without serious inconvenience to one's self or to another, unless an explicit promise was made to the contrary. A *committed* secret may be divulged in the four following situations: when the keeping of the secret would cause great damage to the common good; when the one committing the secret intends

to inflict unjustly a grave injury upon an innocent third party; when it is necessary to avert grave injury to the one committing the secret; when it is necessary to avoid grave injury to the holder of the secret.

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1 *De jure belli et pacis*, Lib. III, Cap. I, n. XI

2 *Loc. cit*

Chapter 15

DUTIES OF JUSTICE

WHILE MAN CAN HAVE NO DUTIES OF JUSTICE TOWARD HIMSELF, he has, besides the duties of love or charity, duties of justice toward other individuals. As he has rights of justice with respect to others, he also has duties of justice with respect to them. For rights and duties between individuals always go hand in hand.

In the foregoing chapter, the duties of love of an individual toward himself and his neighbor were examined in their fundamental principles. Only the most important duties of love were considered. In the section on 'secrets' it was pointed out that the obligation to keep a secret sometimes proceeds from a duty of justice as well as from love. In this chapter the duties of *justice toward other individuals* will receive fuller treatment, particularly as related to their right to life, to bodily integrity, and to honor and a good name.

Murder

Murder is the intentional and unlawful killing of a person. Killing is 'intentional' when it is deliberately intended either

as an end or as a means to an end. Direct killing may be achieved either positively or negatively: positively, when the death of the person is brought about as the result of an action, such as shooting or stabbing; negatively, when the death of the other is brought about by withholding an action that ought to be set, such as starving a person to death. To be murder, the killing must be 'unlawful.' A killing may be unlawful in one of two ways. The person killed may be 'innocent'; that is to say, he has neither committed a crime nor is he in the act of committing a crime which is deserving of death. Or, he may be a 'criminal' deserving of death. As such he may be put to death by public authority, and this killing is lawful. Individuals, on their own private authority, have no right to put a criminal to death; to do so would be lynching (about which more will be said later) and unlawful. For the present, we are concerned with the intentional, unlawful killing of an innocent person.

Murder, according to the natural law, *is intrinsically wrong*. The same argument applies here as in the case of suicide.

Life is a gift of God. *God alone* has the dominion over man's life, because God is the Creator of man's soul, and the soul gives life to the body. Hence, God alone is the Lord of life and death. A person who directly kills an innocent person invades the supreme right of God over life and death. Every person has the *right to life* according to natural law, and he cannot forfeit this basic right except for a crime deserving of death. But an innocent person has neither committed a crime deserving of death nor is he in the act of committing a crime deserving of death.

Consequently, the direct (deliberately intended) killing of an innocent person, whether on private or public authority, is contrary to the natural law and therefore intrinsically evil.

In a case of 'first degree' murder, the death of the innocent is deliberately intended, so that he is killed, according to the classic legal phrase, 'with malice aforethought.' But when he is killed in the heat of passion, as in an argument or brawl, on the spur of the moment, the directly intended killing of an innocent person is 'second degree' murder. Killing is manslaughter, with various degrees of culpability, if it is *indirectly voluntary*, that is, if it is only intended in its cause by knowingly performing an act which by its nature involves the probability of killing an innocent person, provided one has no just reason for the action. It would be culpable manslaughter, for instance, to drive an automobile at a reckless speed in congested traffic and cause a collision, thereby killing someone; or, to throw tiles down from a building into the street without regard for the safety of the people below; or, to use explosives carelessly in a quarry or mine, without proper precautions for safeguarding the lives of the workers. Such actions are by their very nature dangerous to life, and anyone performing them knows the danger to others; unless, therefore, a person has a just reason for the action, he is responsible if death results, because he is guilty of *culpable negligence*. If a person is killed, notwithstanding the fact that every reasonable precaution had been taken, the death is *accidental* and involves no guilt.

The right to life is a matter of *strict justice*, not merely of charity. Hence, a murderer is bound to supply full

indemnification for the loss of support inflicted on the victim's family and also for all medical bills incurred while the victim, if he lived some time after the attack, was ill. If the death of an innocent person ensues because of 'culpable negligence,' indemnification must be made according to the degree of guilt. That such a decision will be difficult to make is obvious. The principle itself, however, is clear enough. In most instances, the courts will have to render the decision; if they fail to render a decision, the moral obligation still rests upon the conscience of the one guilty of causing the innocent person's death, provided he possesses the means of indemnification. The life of the dead person, of course, cannot be restored; hence, restitution for the life of the person killed is impossible and ceases for that reason to be an obligation. If the widow and children receive insurance money or public funds sufficient for their proper support, they suffer little or no loss, and the obligation of indemnification decreases in proportion. Whatever obligation exists also devolves on the heirs, because the heirs assume all financial rights and obligations of the deceased.

Euthanasia

Euthanasia is the art or practice of painlessly putting to death a person suffering from a marked deformity or from an incurable and distressing disease. Euthanasia is also called 'mercy killing.'

Mercy killing is advocated in the case of infants who are born with marked bodily deformities, especially of the

brain; in the case of idiots and imbeciles, sometimes also of morons, when it is presumed that they will become public charges or a permanent burden to the parents; in the case of the incurably insane; in the case of persons suffering from a very painful and distressing disease which will eventually end in death; and in the case of helpless and useless persons, such as the very aged or hopelessly crippled, who are no longer of any benefit to society. Persons afflicted with extreme pain sometimes request a death-dealing potion, so as to be put out of their misery in merciful unconsciousness. Under such conditions and circumstances, some physicians claim, death is a boon, and they should have the sanction of the law to put an end to the life of these unfortunates. The practice of mercy killing became quite common in nazi Germany before and during World War II.

Euthanasia or mercy killing is a practice contrary to the natural law and therefore *intrinsically wrong*. It is murder. It is presumed that these persons have not been guilty of any serious crime. But the deliberately intended killing of an innocent person is murder. Physicians, of course, do not intend to kill such persons for the mere sake of killing, as if killing were the direct end of their act. They simply intend to put these unfortunates out of their misery by accelerating their inevitable death. They are prompted to the act of killing by a sentiment of 'mercy.' Nevertheless, they *directly intend the killing* as a means toward the otherwise laudable end of terminating a pitiable condition. In other words, they directly intend the killing of an innocent person for the sake of achieving a good end, and

they tacitly assume that 'the end justifies the means.' This is a pernicious and immoral doctrine. One may never do evil in order to promote a good. Since God alone is the Lord over life and death, no human being has the right to take an innocent person's life; to do so is to commit *murder*. But murder is contrary to the natural law and intrinsically evil. Consequently, euthanasia or mercy killing is an invasion of the rights of God and intrinsically evil.

Some physicians believe that mercy killing is permissible when requested by the patient himself, on the grounds that 'no injury is done to one who is willing (*volenti non fit injuria*).' The principle is valid in cases of alienable rights, when the possessor can dispose freely of what is his own. Life, however, is not a thing which belongs to a patient as disposable property; hence, the patient cannot grant permission to anyone to take his life. Even if a public law permits euthanasia and a public official has *authorized* or *ordered* mercy killing, the physician must refuse to perform the act, because neither private nor public authority has the right to take an innocent person's life, since it is an intrinsically immoral act. It is one thing to pass a law permitting an act, and quite a different thing to make an act morally permissible by making it legal; a law permitting mercy killing would be an iniquitous law, which no conscientious person would be allowed to obey.

Therapeutic Abortion

Abortion is the expulsion of a living fetus from the mother's womb before it is viable. By 'viability' is meant the child's

capability to live independently of its mother after it has left her womb. Normally, a child is considered to be 'viable' at about the twenty-eighth week of its life or toward the end of the seventh month, although at present, due to improved medical facilities, this time limit may be lowered to some extent; whatever the situation, in order to be 'viable,' the child must have a fair chance to survive, once it is removed from the mother's womb.

When the expulsion of the fetus occurs through natural causes, abortion is *accidental* or *spontaneous*. When it is purposely induced as the result of a voluntary act, it is *intentional* abortion. Accidental abortion, since it is unintentional and involuntary, is devoid of moral significance. Intentional from killing a child whom they can see and hear and feel. Now, time and size and place are accidental realities, and they carry no weight whatever in judging the morality of intentional abortion.

On the basis of *natural law* and therefore before the tribunal of God, all men are created equal. A life is a life, whether it be one minute or one hundred years old, whether it be that of a mother or that of a child. Every human being possesses the *inalienable right* to its life, and no one may infringe on this right, because no one has dominion over the life of a human being who is innocent of any crime deserving of death. God alone, the Creator of the animating soul, has the right to take the life of an innocent person, and nobody can assume the right to kill an innocent person without the explicit permission of God to do so. That neither the parent of the unborn child nor the physician has received this explicit permission, goes without saying.

Without such permission, it is murder to kill an innocent person through a deliberately intended positive act. Abortion of whatever kind, however, is the deliberate killing of an innocent person, because the expulsion of the fetus from the womb before it is viable cannot be accomplished except by a voluntary positive act. Hence, abortion is unwarranted murder. That the physician may be prompted by the good motive to help the mother in mortal distress, does not justify the act, because murder is evil, and evil may not be done so that good may result from it: the (good) end does not justify the (evil) means.

We must now examine the *main arguments for abortion*, especially therapeutic abortion, with a view to their validity for the justification of abortion in the desperate situation mentioned above, involving the death of either mother or child or of both.

Some physicians, in seeking to justify abortion in this desperate situation, appeal to the well-known maxim: *Necessity knows no law*. The maxim may find valid application in certain human, positive laws, but it can find no valid application in matters pertaining to natural and divine law when this law is negative in its precept. A *negative precept* of the natural law binds everybody at all times. 'Necessity' will be either physical or moral. Necessity is 'physical' when it arises from force according to a law of physical nature, as when a bullet is discharged from a rifle through the explosion of the powder in the cartridge. It is 'moral' when it arises from an obligation binding the will in consequence of a precept of the moral law, as when a mother has the duty to provide for her child according to

the precept of the natural law. There is no 'physical' necessity for saving a mother's life by killing her child by means of abortion because the physician is certainly not compelled by physical force to kill the child. Hence, the necessity, if there is any at all, can only be 'moral,' in so far as the physician would be bound by a moral law to take the child's life in order to save the mother's. But by what moral law? Evidently the natural moral law. However, the natural moral law, as was just pointed out, does not prescribe the death of the child; on the contrary, the natural moral law forbids it. Hence, there is no necessity, neither physical nor moral, for the physician to commit abortion, and the maxim that 'necessity knows no law' is false and invalid.

Another argument frequently advanced to justify abortion in this desperate situation is contained in the statement:

Between two evils the lesser must be chosen, the supposition being that the death of the unborn child is a lesser evil than the death of the mother. The supposition is erroneous. The right to life is a basic, inalienable right inherent in every human person. Both mother and child possess the right to life, and this right is equal in both; the death of the child, therefore, is not a lesser evil, but an equal evil. Hence, the physician, who is only a private individual, has no authority to cause the death of either mother or child. The physician is confronted by the choice of *permitting* a physical evil to occur in the course of natural events or of *perpetrating a moral evil* for which he is personally responsible, namely, of causing the death of an innocent child through his own action. Hence, applying the

principle that 'between two evils the lesser must be chosen,' he must avoid the moral evil of abortion, meanwhile doing everything in his power to stave off the physical evil of death for both mother and child.

It is also argued: In a *conflict of rights the superior right should prevail*. Again the argument rests on the fallacious supposition that a mother's right to life is superior to that of her unborn child. However, the right to life is equal in everybody, and a mother's right to life, therefore, is not superior to that of the child. Of course, the mother and the physician can decide to take the life of the child, because the child cannot defend itself. But that means simply that the stronger can prevail over the weaker without fear of retaliation; in other words, might makes right, irrespective of morality.

Finally, the argument is made: *The child is an unjust aggressor against the mother*, and therefore the mother has the right to defend her own life by taking the life of the child. But on what logical grounds can the child be termed an unjust aggressor? To be 'unjust' the child would have to elicit a positive act of its will deciding voluntarily to launch an attack upon its mother's life. The child, however, cannot so much as exercise its will at this stage, because it is still unconscious. What is really meant is, that the child's mere presence in the womb endangers its mother's life. Undoubtedly it does, under the circumstances; but through *no fault of the child*. The physician should do everything possible to correct the defect of the mother's constitution and preserve her life, if he can, but he has no authority to kill an innocent child in such a situation, because the child

has done no unjust act in being where it is and living in the only place where it is capable of living at the time.

This doctrine may seem harsh, but only to those who prefer sentiment to reason and expediency to morality. *Two principles* must govern this difficult problem: 'murder is intrinsically wrong' and 'evil must never be done so that good may issue from it.' On the basis of these two inviolable principles we are forced to condemn even therapeutic abortion.

Intentional abortion, i.e., the deliberately induced expulsion of a living fetus before it has become viable, is always grievously immoral, even when done to save the life of the mother. In intentional abortion the death of the fetus is directly willed and brought about, so that the death of the fetus is the direct object of the intended action either as an end in itself or as a means to an end; the good that is intended *follows from the abortion* as an effect from its cause. Whether the methods used be direct or indirect is an indifferent matter, so far as the morality of the act is concerned; the abortion itself is a direct abortion, because it is directly intended and willed.

Indirect abortion is different and is sometimes permissible. An 'indirect' abortion is the secondary *effect* of an otherwise licit action which is the primary object of the intention. The situation occurs mainly in the case of a pregnant mother who suffers from a dangerous disease which is not the result of her pregnancy but which she has contracted some other way, although her condition may be aggravated by the pregnancy. For example, The mother may have a malignant tumor or cancerous growth in her

abdomen or uterus. Her life is in serious danger, and the tumor or cancer should be removed without delay, because delay will most probably mean death. Now, a malignant tumor or cancerous growth does not result from pregnancy, as can be seen from the evident fact that many persons are afflicted with a tumor or a cancer without being pregnant. If the woman in question were not pregnant, it would certainly be permissible to remove the tumor or cancer in order to save her life. Hence, it must also be permissible to remove these serious threats to her life, while she is pregnant, because they are not the result of her pregnancy and exist independent of her pregnancy. What is intended directly in such operations or treatments is the curing of her *personal disease* contracted independently of pregnancy, and she has the right to undergo such operations or treatments in order to save her life. If abortion should follow, it would be indirect, *unintentional*, and *incidental*. Her cure would not result from the abortion, but the abortion would result as a secondary effect from the cure.

Indirect abortion is an instance of the *double effect*, one good and one bad, which must be judged according to the principles of the *indirect voluntary* (Chap. 3). In order that any treatment or operation resulting in indirect abortion be licit, the four conditions of the indirect voluntary must be fulfilled. *First*. The principal action must in itself be a morally good or indifferent act. Here, the removal of a cancerous uterus endangering the mother's life is in itself a morally good or indifferent act, not an evil act. *Second*. The good effect must result directly from the principal action

and either precede the evil effect or be at least simultaneous with it. Here, the good effect of saving the mother life is produced by removing a diseased organ and not by expelling the fetus; the death of the fetus follows the removal of the cancerous uterus, but does not precede it. *Third.* The intention must be directed toward producing the good effect while the evil effect is not intended but merely permitted to happen. Here, the intention is directed toward the curing of a diseased condition, which is a good effect, and not toward the killing of the fetus; the death of the fetus is merely permitted as something unavoidable under the circumstances. *Fourth.* The good effect must be more important than the evil effect, or at least of equivalent value. Here, the life of the mother is equivalent in value to the life of the fetus. Hence, it is *morally licit* to remove the cancerous uterus of the mother in order to save her life, even if the loss of the fetus is foreseen. The same principles apply, if it is a question of necessary medical treatment rather than of a surgical operation.

Naturally, everything must be done to save the life of the child. If it can be done by postponing the cure of the mother until the child is at least viable, the cure must be postponed. But if the danger to the mother's life is serious, and the cure cannot be delayed, the physician may proceed with the cure. In proceeding with the cure, if there is a choice of equally effective drugs, treatments, or operations, and one of these drugs, treatments, or operations involves less danger for the life of the child, the less dangerous method obviously must be chosen. Just how dangerous the situation is for both mother and child, and what method will remove

or reduce the imminent danger of death for the mother, must be left to the conscientious judgment of the medical profession.

Some may see little difference between *direct* and *indirect* abortion in such desperate situations, because the child loses its life in either case. There is, however, the difference between *directly willing* and *indirectly permitting* the child's death —the difference between placing a gravely immoral act and a good act.

Self-Defense

The right of an innocent person to his life is sacred and inviolable, so that no one has the right to deprive him of his life. But what about *killing an unjust aggressor*? Before we answer this question, we must clarify our terms.

An aggressor is a person who *attacks another* with the purpose of depriving him of his *life, bodily integrity, or property*. In order that a person be termed an 'aggressor,' the attack must be *actual*, in the sense that he is in the very 'act of attacking' or is doing something which is by its nature the 'proximate preparation' for the act of attacking. It would be, for instance, an 'act of attack' if a man lunged at another with a drawn knife; it would be the 'proximate preparation' for the act of attacking if he started to pull a gun out of his pocket: in either case the attack must be called 'actual,' so that he can legitimately be termed an 'actual aggressor.' The mere 'planning' of aggression does not constitute actual aggression; it is only remote

preparation which may, or may not, lead to actual aggression.

In the question here considered, the aggressor must be *unjust in his attack*. In other words, he has no right to make an attack on another's life, bodily integrity, or property, but invades the other's right in an unlawful manner. If the attack were just on the part of the assailant, resistance would be unjust. It is presupposed, therefore, that the assailant has no right to make the attack, so that his attack is 'unjust aggression.' Unjust aggression may be either formally or materially unjust. Aggression is *formally unjust* if the assailant makes his attack with full knowledge and consent, so that his act is a truly 'human act.' It is *materially unjust* if the assailant is not in possession of his rational powers at the time of the attack, so that his attack is not a truly 'human act,' as would occur, for instance, if the assailant were insane or drunk or under the dominant influence of a powerful drug. Even under such conditions the aggression is 'unjust' (although the assailant may not be directly responsible for his action), because, as a matter of fact, he is invading the just right of another.

Three conditions must be fulfilled for self-defense to be lawful. *First*, the assailant must have proceeded to actual attack. After the actual aggression is past, one can no longer speak of 'self-defense.' *Second*, the attack must be formally or materially unjust. If the attack is just, resistance as self-defense would be unjustifiable; a robber, for instance, cannot resist a policeman on the plea of self-defense, because the policeman is in the right. *Third*, proper moderation must be observed in self-defense, so

that one does not use means greater than necessary to repel the attack of the unjust aggressor. Hence, if the danger to one's life can be avoided by fleeing or shouting, this should be done, if not too inconvenient; if wounding the assailant suffices to ward off the danger to one's own life, one must choose wounding rather than killing, provided one can conveniently make the choice under the circumstances.

These three conditions having been fulfilled, the *general principle* holds that an innocent person has the right to defend his life against an unjust aggressor, even to the extent of *killing the aggressor if necessary*. However, to exceed the limits of 'proper moderation' would be revenge; not 'just self-defense.' One cannot actively and effectively repel an unjust aggressor's attack without inflicting some loss upon him. If it is impossible to repel the assailant's attack upon one's life except by taking his life, killing the unjust aggressor is morally lawful; but if it is possible to repel his attack by inflicting an injury on him less than life, killing the unjust aggressor is not morally lawful.

The right to life is a *basic* and *inalienable right*, and it does not cease when a person is unjustly attacked by another. Every basic and inalienable right, however, possesses co-active *inviolability*, because it is a right given to each individual by the natural law. But such a right would not possess co-active inviolability if it could not be defended up to the point of effective preservation. Now, the effective preservation of life against an unjust aggressor may be impossible without killing the unjust aggressor.

Consequently, under such conditions the defense of one's life would justify the killing of the unjust aggressor.

The only valid reasons one can give that the innocent defendant's right to life would cease under an unjust attack would be: that the aggressor's right to life is greater than that of the defendant's; that the innocent defendant's right to life was nullified by the aggressor's unjust attack; that the innocent person must cede his right to life to the aggressor's right to life. It should be obvious, however, that none of these reasons are valid. The unjust aggressor can save his life by ceasing to attack the life of the defendant; but the defendant cannot save his life by ceasing to defend himself. Hence, the right to defend one's life against an unjust aggressor does not cease under attack, whereas that of the unjust aggressor does.

We arrive at the same conclusion when we consider the *welfare* and *security of human society*. If the innocent person were not permitted to repel the unjust aggressor's attack, even at the expense of the assailant's life, criminals would have a tremendous advantage and would not hesitate to ply their nefarious trade without fear. They could and would threaten other people's lives without danger to their own. As a consequence, they would inflict the greatest damage upon orderly society. Of course, society has the obligation to establish the necessary police and military force to protect the rights and lives of the citizens, and the citizens, whenever possible, must seek the aid of the government when their rights and lives are threatened. Criminals, however, are not in the habit of advertising their plans in advance, so that an appeal to the authorities would

be effective. Since the danger to the innocent person's life is immediate and instant, without the possibility of recourse to the public authorities, each person must be permitted to defend his life to the best of his ability at the moment the attack is made; otherwise the welfare and security of society cannot be adequately maintained.

On the same grounds and for the same reasons it is morally lawful to *defend the life of others* against unjust attack. What an individual is allowed to do for himself, he is allowed to do with the help of another. Hence, he may solicit the aid of another, and the other may offer his aid. Even if the innocent defendant is not in a position to solicit aid from another, he has the right to do so, and it is presumed that he would do so if he had the opportunity. Hence, one may come to the assistance of the innocent defendant without waiting to be asked. Since, however, the killing of another person, even if he is an unjust aggressor, is an extreme measure, one has *no duty to assist the defendant*, unless it be that one is obligated to render this assistance on the special grounds of *piety* or *official position*. For example. If the defendant were a person whose life is needed for the preservation of the public welfare, and there is good hope of success, legal justice would demand that one come to his assistance; or, if the person attacked were a member of one's immediate family, piety would impose the duty upon the other members of the family to defend the life of the one assailed; or, if one had the official duty to protect other people in their life and property, such as a guard, a policeman, or a soldier, he would be in duty bound to

defend them, even at great inconvenience and considerable danger to himself.

Although an innocent defendant has the 'right' to defend his life, even to the extent of killing the unjust aggressor, if necessary, he has *no duty to kill* his assailant. The natural law demands that each person use all 'ordinary' means to preserve his life, but he need not use 'extraordinary' means. Now, the killing of another is certainly an 'extraordinary' means of preserving one's own life. Hence, one need not use such means, but may permit the aggressor to carry out his threat. There are *two exceptions*. The innocent person must defend his life, if his life is necessary or very useful for the public good, or if his soul is in a state of grievous sin and he thus runs the serious risk of losing his eternal happiness.

Bodily integrity and material *possessions*, like life, are rights based on strict justice, and as such they have *co-active inviolability*. These goods are necessary for the individual for the proper ordering of his life in society. No one has the right to deprive an innocent person of these goods, and the innocent person has the right to defend these goods against an unjust aggressor. If these goods are of *considerable value* and importance, the innocent defendant may protect them against the unjust aggressor even to the extent of killing the assailant, if they cannot be preserved in any other manner. Charity does not demand that one prefer the higher good of another (the life of the assailant) to one's own goods of a lower order (integrity and possessions), except in the case where the other's life would be jeopardized unnecessarily or without just cause. In

defending one's bodily integrity or possessions against an unjust aggressor, justice is evidently on the side of the innocent defendant, not on the side of the aggressor; hence, there is a just cause for defending these goods. Nor can it be rightly said that the unjust aggressor's life is jeopardized unnecessarily, because he exposes his life voluntarily and all he would have to do to avoid the danger of death would be to desist from his act of unjust aggression.

The goods in question must be of 'considerable value and importance,' because charity demands that no one inflict the extreme penalty upon another for something which is only a slight offense. The standard, according to which the value and importance of these goods are to be judged, depends largely on the person assailed; something may be of minor value to one person and of great value to another, depending upon conditions and circumstances. A very wealthy man, however, may defend his possessions against an unjust aggressor and kill him, if necessary, even if the loss would not entail any serious privation for him personally; here the standard would be the welfare and security of society, because society would soon be disrupted, if a criminal could deprive a wealthy man of his possessions with impunity. The wealthy man in such a case would be defending the welfare and security of society while defending his own possessions, and that is a just and sufficient reason to repel the aggression of his assailant. So, too, a woman may defend her chastity against attack and kill the would-be rapist, if flight or screaming would be of no avail, because she is defending a good which is of

greater value than earthly possessions; however, if she is forced to submit to the attack under threat of death or bodily harm, it is well to remember that chastity is not lost without personal consent.

Provided, then, that the innocent defendant observes proper moderation, he has the right to defend his life, bodily integrity, and possessions against the attacks of any unjust aggressor.

Dueling

A *duel*, in the juridical sense, is a *conflict between two individuals, undertaken by mutual agreement and fought with weapons capable of inflicting serious wounds or death.*

In order that a conflict between two individuals be really a duel, it is essential that they enter into a mutual agreement as to the place, the time, and the type of weapons, so that an interval exists between the setting of the conditions and the actual conflict. It would not be a true duel, therefore, if two individuals provoke each other to anger in a quarrel and forthwith proceed to fight, even if they use lethal weapons. The weapons used in a duel must be such that they are, of their very nature and not merely by accident, capable of producing serious wounds or death; such weapons, for instance, are pistols, sabers, and rapiers, but not sticks, fists, etc.

Duels may be 'private' or 'public.' It would be more accurate to say that duels are undertaken either on *private or public authority*. In a 'private' duel the participants seek to settle their individual differences by means of an armed

conflict. In a 'public' duel the participants represent their respective nations and states and fight in the name and with the authority of the respective governments.

Duels undertaken on the *private authority* of individuals are always morally *wrong*. It is contrary to natural law to intend to kill or severely wound another and to expose one's self to the same danger. Neither of the participants has the dominion over his own life or that of his opponent, so that he would have the right to cause his death or inflict severe wounds. Hence, in agreeing to a duel they assume a right which is not theirs, but God's.

Duels undertaken by *public authority* are licit if they are fought for the common good which could otherwise not be obtained except through the consequent shedding of much blood. If an army can fight against another army at the behest of public authority, in order to reach a decision, certainly the decision can also be sought by selecting two individuals to represent their respective governments, so long as these governments agree to rest their decision on the outcome of the individual conflict. The only *legitimate reason*, however, which may prompt the governments to seek the solution of their differences in this manner, would be to avoid a just war or to terminate a just war, so that the blood of many may not be needlessly shed. If governments can settle their differences by arbitration or by an appeal to an international court, even the duel by individual representatives would not be permissible, because the outcome of a duel by no means always coincides with the right.

Lynch Law

Lynch law is the practice or act of meting out punishment by private persons to guilty or suspected persons without due process of law. 'Lynching' is said to derive its name from Charles Lynch (1736—1796), a justice of the peace in Virginia, who used such methods against the Tories of his day.

It is one of the functions of organized society with its properly constituted public authority to protect the rights of the citizenry and administer justice through the medium of courts and law-enforcement agencies. In organized society no private individual or group of individuals is allowed to *usurp the functions of public authority*; to do so would be an act of violence and a species of anarchy.

In communities which are an integral part of society, lynching is done either before the court has handed down a verdict or after. If *before*, lynch law is employed on mere suspicion of guilt or, if guilt is certain, before the court has declared the accused guilty of a crime deserving of punishment. To lynch an accused person under such conditions is to deprive him of his life without due process of law and is contrary to the welfare and security of society. If *after*, the verdict of the court was either 'guilty' or 'not guilty.' If 'guilty,' lynching is an arbitrary usurpation of public authority on the part of a private individual or group of private individuals, and such an act is also contrary to the welfare and security of society, because it is the right and duty of society to bring a convicted criminal to justice according to the statutes of law. If 'not guilty,' the citizens

are obligated to abide by the decision of the court, because the very purpose of legal processes would be frustrated if lynching were permissible. Even if the accused were known on private information to be guilty, lynching would be morally wrong, because it is better in the interest of society as a whole that one criminal go without due punishment than that the processes of law be frustrated through the usurpation of public authority on the part of private individuals. Lynching, if permitted, would give free rein to blind passion and partisanship, and the abuses inherent in lynching would threaten the common good through mob violence. The remedy is worse than the cure.

Lynching may be *morally permissible in exceptional circumstances*. In frontier regions, where society with its legal processes is not yet properly established, individuals and groups of individuals may execute the law against known criminals for their own protection; otherwise there would be no adequate deterrent against crime. Under such conditions the natural law is the only law in force, and law-loving persons and groups have the right to enforce the natural law against evildoers for the good of all concerned. Such were the genuine Vigilante Committees in the Far West before the various states were founded and organized. Theoretically speaking, it would be morally lawful for citizens to employ the lynch law in cases where the machinery of the law is used by corrupt judges and courts to perpetrate constant miscarriages of justice, in order to put an end to such abuses. The judges derive their authority from God through the community and act in the name of the community; hence, if they are unfaithful to

their trust, and if no other remedy is available, the community itself may administer justice for the sake of the public welfare. In practice, however, even in such extreme cases, lynching is in itself so serious a menace to orderly government that it cannot be justified except as a last resort, because it permits violence and mob rule to take the place of public authority. In most instances, the laws of society provide for the correction of abuses on the part of judges and courts, and it is necessary to have recourse to every legitimate means before the community would be justified in taking the law into its own hands.

All in all, therefore, lynching is morally unlawful, except in places where the laws of organized society are not enforceable.

Eugenic Sterilization

Sterilization in general is the mutilation of the sexual power in man or woman so as to render conception impossible. It permits sexual intercourse, but hinders conception. If performed for the purpose of hindering the conception of undesirable and physically or mentally unfit children, it is called *eugenic sterilization*. Sterilization is *voluntary*, when a person wills and requests it for himself; it is involuntary or compulsory, when performed by order of the public authority of the state. Eugenic sterilization is advocated by many for persons convicted of serious crimes and persons afflicted with social diseases or grave physical or mental defects, such as syphilitics, lepers, idiots, imbeciles, and insane persons.

Voluntary eugenic sterilization is *intrinsically wrong*, because it is contrary to the natural law. Every kind of sterilization is serious mutilation of a natural power and frustrates a natural function. The intrinsic purpose of the sexual function, as intended by the Creator, is the propagation of the race, and the propagation of the race is intrinsically dependent on conception. Whoever, therefore, hinders conception by a positive act, such as a surgical operation, frustrates the intrinsic purpose of the sexual power, as intended by the Creator, and thereby acts contrary to the natural law which is based on human nature and its natural functions. But everything contrary to natural law is intrinsically immoral. Consequently, voluntary sterilization, even when requested for an apparently good purpose, is intrinsically wrong, because a good end does not justify immoral means.

Compulsory eugenic sterilization is *intrinsically wrong* when ordered by public authority in the case of *innocent* persons, even when these persons are afflicted with congenital, inherited, or acquired incurable diseases or defects. The state exists to protect the natural rights of citizens; it may not deprive them of natural rights. Thus, for example, the individual's right to life is a natural right, and it would be murder on the part of public authority to put an innocent person knowingly to death. Similarly, the right to bodily integrity is a natural right, and it would be criminal on the part of public authority to invade this natural right by ordering the sterilization of a person not guilty of a serious offense, because sterilization, even when performed for eugenic purposes, is a serious mutilation. The purpose

of the state in legalizing eugenic sterilization is to permit individuals to have sexual relations, but to hinder conception. Since, however, the natural and intrinsic purpose of sexual powers and sexual relations is the conception of children, according to the law of nature, the frustration of this function by means of compulsory sterilization in an innocent person is a positive act contrary to a natural law. A positive act contrary to the natural law is intrinsically evil. Hence, the compulsory sterilization of an innocent person is intrinsically evil.

The very essence and existence of the state is based on the natural law. Once the state permits itself a nullification of the natural law, it undermines the very foundation of its own security and existence. The state is a legal and moral person composed of individual persons and, like the individual persons of which it is composed, is subject to the rigorous prescriptions of the natural law. And just as individual persons may not voluntarily submit to the mutilation of eugenic sterilization without seriously violating the law of nature and of nature's God, so, too, the state may not compel its innocent subjects to submit to the mutilation of eugenic sterilization without seriously violating the natural law and invading God's absolute dominion over man's members and functions. The state would have the right to order the compulsory sterilization of its innocent subjects only on the supposition that the state is superior to the natural law and the source of all human rights and duties. Such a theory, however, is identical with the totalitarian doctrine of *state absolutism*, as taught and practiced by nazism and communism. The

right to enter marriage and beget children *existed prior to the state* and as such must be protected, not abolished, by the state. In legalizing compulsory eugenic sterilization for innocent persons, therefore, the state arrogates to itself a right which it does not legitimately possess.

Defectives, such as cripples, idiots, morons, and insane people, and *diseased*, such as tuberculars, syphilitics, lepers, are not guilty of serious crime in a legal sense; they are 'innocent' persons in the eyes of the law. Hence, the state has no right to impose eugenic sterilization upon them, especially since acquired or accidental characteristics are not hereditary.

Even *criminals* have natural rights, among them the right to bodily integrity, of which they may not be deprived by the state. Since sterilization is nothing but a form of *positive contraception*, and contraception is the frustration of a natural power and its function, compulsory sterilization, even when performed on criminals, contravenes the natural law and is intrinsically immoral. The state, therefore, has no right to perform compulsory sterilization on criminals. The state may, for just cause, *prohibit the use* of a natural function, and the state actually does condemn criminals to a life of celibacy while they are imprisoned. Those criminals who are sentenced to life imprisonment for very grave crimes cannot make use of their marital rights, if they are married, nor can they have extramarital relations with anyone during their incarceration; since they cannot have offspring, sterilization is unnecessary in their case. Those criminals who have not committed a crime deserving of death or life imprisonment

have expiated their crime and paid their debt to society at the expiration of the sentence, and any other penalty is unjust. Since they are now restored to membership in society, they have the right to the use of all natural rights, the same as all other citizens in good standing. Hence, to deprive them of the very possibility of having offspring through compulsory sterilization is to impose a penalty upon them far in excess of the nature of their crime. If they are sane, their former crime will not produce defective children, and there is not even a eugenic reason for their sterilization; if they are insane, they should be permanently institutionalized in a hospital for the criminally insane, and in that event there is again no need for sterilization. Since sterilization is not merely temporary or permanent prohibition of the use of a natural power and function, but permanent and serious mutilation, the state is guilty of violating the natural law in ordering compulsory eugenic sterilization for criminals, and this is intrinsically wrong.

A treatment or operation necessary to preserve a person's life or restore the general health, is morally permissible, even if sterility results as a secondary or coincidental effect. The restoration of the health of the person is intended, not sterility. The case is similar to that of infected eyes which must be removed because of danger to the whole body. The loss of sight is not intended, but permitted to follow the operation as an unavoidable result, in order to restore general health. The principle of double effect applies. In compulsory eugenic sterilization, however, the treatment or operation is intended directly and immediately to prevent conception; the social or eugenic

good, namely, a better breed of human beings by hindering the conception of undesirable and unfit children, is the result obtained by the immoral means of frustrating a natural power and its function. The desire for a better human race is in itself laudable. But the advocates of eugenic sterilization lower human beings to the level of a human stud farm. It is one thing to strive for the betterment of the race; it is quite another to do so by violating true morality. Eugenic sterilization is a measure of expediency, but *expediency* is by no means a valid norm of morality.

If the time should ever come that marriages by defectives, because of the increasing number of defective children, seriously threaten the welfare of society, the state has the authority to *segregate the unfit* and thereby *indirectly* procure the betterment of the race, without the immoral means of sterilization. The common good of society will justify this segregation as an extreme remedy, just as the state now segregates those who are a constant menace to their fellow men. In this manner the public welfare is preserved and the moral order is upheld.

Honor and Good Name

Besides the right to life and bodily integrity, each individual ordinarily has the right, based on strict justice, to honor and a good name.

A good name or a good reputation is the esteem in which a person is held by others because of natural or acquired excellences. *Honor* is the manifestation of esteem rendered

to someone in an external manner, as by speech, actions, or other signs.

Honor and a good reputation, whether founded on natural or acquired qualities, are of great value to the individual for a successful life in human society. Hence, each person has the duty to exercise reasonable care in acquiring and preserving his good name among his fellow men. From this duty arises the right of each individual to demand of others that they do not unjustly hinder him from acquiring a good reputation and honor and that they do not unjustly injure the good reputation and honor once acquired. Correspondingly, others have the *duty to respect* the good name and honor of their neighbor and *not to injure him unjustly* in these important goods.

Honor and a good name are far superior in value to material possessions. And just as one has the right in strict justice to possessions received by inheritance or acquired through personal Initiative and industry, so one has the right in strict justice to the honor and good name obtained naturally or as the result of personal activity. Each person has a *connatural right* to the esteem which is accorded people because of their natural dignity as human beings and because of the gifts and qualities nature has bestowed on them. Thus, every person has the right to be esteemed as good until proved to be bad. And each person has the connatural right to acquire *special* honor through extraordinary personal achievement, so long as his endeavor does not violate the rights of others or harm the common good of all. Similarly, each person has the acquired right to retain the honor and good reputation he has been

able to build up for himself among his fellow men as a consequence of his personal achievements.

These rights are *perfect* rights and as such they possess *co-active inviolability*. Hence, they may be defended against unjust attack by suitable and legitimate means and reparation exacted for the damage inflicted, as is frequently done in libel suits in courts of justice.

Unjust internal injury is done to another's good name by *rash judgment*, which is firm assent to a supposed defect defamatory of one's neighbor without sufficient cause, and by *rash suspicion*, which is suspicion of such a defect without sufficient reason. Unjust injury is done externally to another's good name by *detraction*, which is the manifestation of a hidden fault or defect of another without sufficient cause, and by *calumny*, which is the false attribution of a defect or fault to him. The injury will be grave or slight, depending on the person injured and the nature of the defect or fault.

At times it *may be lawful* to reveal the hidden defects or crimes of another, namely, for a proportionately grave reason. A *just cause* would be the common good of the community or of society. It would also be a just cause if the manifestation were necessary for the private, personal good either of the one making the manifestation or of those to whom the manifestation is made or of the one about whom the manifestation is made. Two *conditions*, however, must be fulfilled in order that the manifestation of another's hidden defects or crimes be morally permissible: the good to be gained must be at least equal in gravity to the harm done to the one whose faults are revealed; the harm done

must be minimized as much as possible. It would, for instance, be lawful for me to reveal the hidden faults of someone who is bent on unjustly ruining my good name, if he could not be deterred from his action in any other way. It would be lawful to reveal the hidden defects and crimes of a candidate for public office if these defects and crimes make him unworthy of the office to a notable degree or hinder him from properly fulfilling the duties of his office.

When the good reputation of another has been unjustly damaged, strict justice has been violated, and *proportionate restitution* must be made to repair the damage.

Paramount among the basic personal rights of man, to be respected by all in strict justice, are the right to life, to bodily integrity, and to honor and a good name. Another basic personal right is that of proprietorship; it will be considered next.

Summary of Chapter XV

This chapter treats of the *chief duties of justice toward other individuals* as related to their right to life, to bodily integrity, and to honor and a good name.

1. *Murder*. Murder is the *intentional and unlawful killing* of a person.

Murder is *intrinsically wrong* according to the natural law. Whoever kills directly an innocent person invades God's supreme right of dominion over man in his life and death. Every person has the right to life according to the natural law, and he cannot forfeit this basic right except for a crime deserving of death. A murderer is bound to supply full indemnification for the loss inflicted.

2. *Euthanasia*. It is the practice or act of painlessly putting to death a person suffering from a marked deformity or from an incurable and distressing disease. Euthanasia is also called 'mercy killing.'

Euthanasia is *intrinsically wrong*, because it is the direct killing of an innocent person and therefore murder. Even though the motive be good, the (good) end does not justify the (evil) means.

3. *Therapeutic Abortion*. Abortion is the expulsion of a living fetus from a mother's womb before it is viable. Intentional abortion is the deliberately induced expulsion of a living fetus before it has become viable. Abortion deliberately induced to save the mother from danger of death brought on by the pregnancy is called therapeutic abortion.

Intentional abortion, even therapeutic abortion, is *intrinsically wrong*. The right to life is equal in all persons, and it is an inalienable right; the right to life on the part of the mother has no preference with respect to the life of the child. God alone has absolute dominion over man's life. Without His permission, which may not be presumed, to kill an innocent person is murder. In abortion an innocent person, the unborn child, is directly and deliberately killed. This act is murder, and murder is intrinsically wrong. The arguments commonly advanced are invalid.

In direct abortion occurs as the secondary effect of an otherwise licit action which is the primary object of the intention; indirect abortion is indirect, unintentional, and incidental to the licit action, and is an instance of the *double effect*, one good and one bad, according to the principles of the *indirect voluntary*. For a proportionately grave cause it is permissible.

4. *Self-Defense*. It is permissible to kill an unjust *aggressor* in self-defense, provided there is an 'actual' attack and the attack is 'formally' or 'materially' unjust, due regard being given to 'proper moderation'.

The right to life is a *basic* and *inalienable* right, and it does not cease when under an unjust attack by another. The coactive inviolability of such a right presupposes its effective preservation against an unjust attack; hence, the defense of one's life would justify the killing of an unjust aggressor, if necessary for self-preservation. For the same reason it is permissible to defend another's life against an unjust attack. Even *bodily integrity and material possessions of considerable value* may be defended to the

point of killing the unjust aggressor, if they cannot be preserved in any other way. In all cases, however, *proper moderation* must be observed, so that one does not use means greater than necessary to repel the attack.

5. *Dueling*. Dueling is a conflict between two individuals, undertaken by mutual agreement and fought with weapons capable of inflicting serious wounds or death.

When undertaken on *private authority*, dueling is morally wrong. It is contrary to natural law to intend to kill or severely wound another and to expose one's self to the same danger.

When undertaken by *public authority* to avoid a just war or to terminate a just war, so as to prevent the consequent shedding of much blood, a duel between two official representatives of the respective nations or governments is permissible.

6. *Lynch Law*. This is the practice or act of private persons of meting out punishment to guilty or suspected persons without due process of law. In organized society no private individual or group of individuals is allowed to *usurp the functions of public authority*. Lynching may be morally permissible, when society is not yet properly established, or when, in extreme cases, corrupt judges or courts perpetrate constant miscarriages of justice and no other remedy is available.

7. *Eugenic Sterilization*. Eugenic sterilization is the mutilation of the sexual power in man or woman for the purpose of hindering the conception of undesirable and physically or mentally unfit children.

Voluntary sterilization is intrinsically wrong, because it involves the frustration of a natural power and function and as such is contrary to the natural law.

Compulsory sterilization is *intrinsically wrong* for the same reason, both in the case of innocent persons and criminals. Sterilization is a form of positive contraception and as such is contrary to the natural law. The (good) end does not justify the (evil) means.

8. *Honor and Good Name*. Each person has the natural right to the esteem which is accorded people because of their natural dignity as human beings and because of the gifts and qualities nature has bestowed on them. And each person has the acquired right to retain the honor and good reputation he has built up for himself through personal effort.

‘Internally,’ unjust injury is done to another’s good name by rash judgment and rash suspicion; ‘externally,’ by detraction and calumny. A ‘just cause’ is required for the revelation of the hidden defects or faults of another; otherwise justice is violated and restitution must be made.

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Chapter 16

RIGHT OF OWNERSHIP

MAN IS A SELF-CONTAINED, AUTONOMOUS BEING, A 'PERSON.' Because he is a person, he has definite basic rights, among which are the right to life, to bodily integrity, to honor and a good name. Man, however, is not an angel, but a psychosomatic being, a rational animal. Being an animal and having a material part in his nature, man must use material things.

It is recognized by all peoples, civilized as well as uncivilized, that the use of material things brings with it the *right of ownership*. Included in this right is the right to *private* ownership. There can be no question about the universal fact of private ownership; the fact itself is admitted by everybody.

The question of property rights, as represented in the system of capitalism and in the system of communism or socialism, is the great ideological problem of our age. To pass an adequate judgment on its legitimacy, we must understand 'private ownership' in its nature and applications.

Nature of Ownership

Ownership is a form of dominion, and *dominion* is the right to dispose of certain persons or things. The right to rule certain persons as subjects is called the 'right of jurisdiction'; we are not concerned here with this type of dominion, except indirectly. The dominion over things is the *right of ownership or proprietary dominion*, and it is defined as the *exclusive right to control and dispose of some thing as one's own according to one's will*.

Ownership is an 'exclusive right' over a thing. The thing 'belongs' to this particular person. There is such an intimate connection between this person and this thing that no one else may have it or use it without his permission, because he is the 'owner' of the thing.

Ownership is the 'exclusive right to *control* and *dispose*' of a thing. To 'control' and to 'dispose' of a thing means to possess it, to use it, to sell it, to change it, to give it away, to destroy it, or to do anything else with it. The owner has the right to do any of these things, without violating commutative justice against any other person. He might violate the virtue of charity or the virtue of piety with respect to his family, but he cannot be said to violate commutative justice in controlling and disposing of the thing in any of the ways just mentioned, because the thing is 'his' and not another's.

Ownership is the 'exclusive right to control and dispose of *some thing*.' The term 'thing' is taken here in a very broad generic sense as material and immaterial goods. Money, land, houses, cattle, machinery, etc., are material

things; good will (in business), the right to an invention or to an inheritance, etc., are immaterial things. Any of these goods are 'things' that may fall under the ownership of a person, so that he has the exclusive right to control and dispose of them.

Ownership is the 'exclusive right to control and dispose of some thing at *one's own*.' The thing belongs to him as his property, so that he has the *jus in re* over it. This is the distinctive characteristic of proprietary dominion in the strict sense, because it indicates that the owner actually possesses the thing in question and may control and dispose of it.

Ownership is the 'exclusive right to control and dispose of a thing as one's own *according to one's will*.' Since the thing belongs to him and is his own, he can control and dispose of it to his own interest in any way he sees *fit*. He need consult no one but himself, because he is the owner of the thing and the thing is strictly 'his.'

Such is the nature of private ownership in its most fundamental form. *In the concrete*, proprietorship often exists with a *limitation or restriction* either upon the right of ownership itself or upon its use. It would be a limitation on the right itself, for example, if a father willed the ownership of a house to his son, but conferred the right to live in the house on his daughter; again, for the public welfare, the state may restrict the building rights on certain landed properties. The use of a certain right may be limited either on 'moral' or 'juridical' grounds: on moral grounds if this use would be contrary to some virtue, as is the case, for instance, when a person is prohibited from using his wealth

for immoral purposes; or on juridical grounds, as when a minor is prohibited from using his property until he is of age.

Unless, therefore, some limitation is imposed on the right or its use, private ownership by nature is 'the exclusive right to control and dispose of a thing as one's own according to one's will.'

Kinds of Ownership

The two main *divisions* of ownership are the right of eminent domain and of private domain.

The right of *eminent domain* is the superior dominion of the state over all property whereby it has the authority to appropriate and dispose of the property of its subjects, adequate compensation being made to the private owners whenever possible, for the necessary purposes of public welfare. Strictly speaking, the right of eminent domain is not a dominion of proprietorship, but a dominion of 'jurisdiction.' The sovereign state does not 'own' the property of its subjects, but under certain conditions it may confiscate such property, force the subjects to sell their property through a process of legal 'condemnation,' and so forth, provided the common good requires such action.

The right of *private domain* is proprietary dominion or the right of private ownership in the strict sense of the term, as explained in the foregoing section. Private ownership is either perfect or imperfect. It is *perfect* when the owner of a thing may dispose at will over the thing's substance and over its use and fruits. It is *imperfect* when

the owner of a thing may dispose of either its substance or its use and fruits. Imperfect ownership is either direct or indirect. It is *direct*, or radical, when a person has the proprietorship over the substance of a thing, but not over its use and fruits. It is *indirect* when a person has the proprietorship over the use and (or) fruits of a thing, but not over its substance. *Use* is the right to employ someone else's property for one's own purposes, but without the right to dispose of its substance; a man, for instance, who rents a house from the owner, has the right to live in it, but he may not sell it. *Usufruct* is the right to employ someone else's property and also take its fruit, but is without the right to dispose of its substance; a man, for instance, who rents another's farm in its entirety, has the right to till the soil and take the apples growing in the orchard, but he has no right to dispose of the farm itself. The real owner of the house or farm has 'imperfect direct' ownership, because the substance of the house or farm is his property; but he cannot live in the house or operate the farm, because he has given up the use and usufruct of these things to another. The one who has the right to the use or (and) usufruct has 'imperfect indirect' ownership, because he has acquired the proprietorship over the use and (or) fruits of the house or farm through rental; however, since he lacks imperfect direct ownership, he has no right over the substance itself of the house or farm. In order that a person have 'perfect' ownership over a house or farm, he must not only have the proprietorship of the substance of the house or farm but also retain the proprietorship of the use and fruits thereof, so that he has the right to dispose of both the

substance and its use and fruits; he is, in other words, the complete master of the thing itself and of everything pertaining to it.

Object and Subject of Ownership

The *object* of ownership is anything over which man may exercise dominion, so that he is its master and can control it and dispose of it. Such objects are called goods.

Goods, as objects of ownership, are of *three types*, internal, external, and mixed.

Internal goods are objects which are a part of man's being or proceed from his being and its activities. Some of these internal goods are part and parcel of his very nature, so that they are not distinct from man himself, as his life, his body, his members, his powers and faculties. They belong to him as his own, to be used for his own interest and benefit; but they are not his to dispose of at will. Over these types of internal goods God alone has absolute dominion, direct dominion; man has only a 'beneficial dominion' over them, as a steward and administrator who can utilize them to his own advantage. Other internal goods are distinct from man's nature, although they proceed from it, such as the operations of his powers and faculties and their effects. Over these types of internal goods man has control and can dispose of them at will, so that he has 'direct dominion' over his actions and all goods produced by them; a person, for instance, has direct dominion over the activities of his hands and everything made by them, provided, of course,

that he also owns the materials he uses to fashion something.

External goods are things external to man's person over which he can exercise control in some manner, so that they become his property. Not all external goods, of course, can become a person's private property. Some external goods are for the common use of everybody, for example, the atmosphere, the sea, the light for the sun, the rain; some belong to the sovereign state, for example, streets, roads, public buildings; others are owned by the organization of the church, for example, temples, schools, cemeteries. Other external goods, however, may become the private property of individuals. Among such external goods we distinguish between *movable* and *immovable* goods. The former are goods that can be transferred from place to place without destroying their substance, such as cattle, crops, money, automobiles, machinery; otherwise they are immovable goods, such as houses, mines, woods, lakes, farms. External goods are either *interchangeable* or *non-interchangeable*. Interchangeable goods are goods for which a substitution can be made by articles of the same quality and quantity, for instance, money, grain, oil, fruit, wire; interchangeability is determined not so much by the article as by equivalence in value. Non-interchangeable goods are goods which are so important in themselves that they are owned and retained as such, for instance, cattle, houses, orchards, farms. Some external goods are *consumable* in first use: they are destroyed when used, or their substance is radically changed, for instance, food, coal, gas, wine. Others are *non-consumable*: their

substance may deteriorate through use, but their substance is not thereby destroyed or radically changed; examples are houses, furniture, machinery, automobiles, boats.

Mixed goods occupy a position between internal and external goods; examples are honor and fame.

The *subject* of ownership is any person capable of having proprietorship over things. This person may be either a physical or a moral person.

A *physical* person, capable of being the subject of ownership, is *any living human being*, even if this person be an unborn child or a person permanently bereft of the use of reason. The foundation of ownership is the rational nature of man. Because man is rational, he has the power to dispose of things as his own at will. It is not essential to the concept of ownership that a person actually dispose of goods; it suffices that he have the power, inherent in his rational nature, to do so. Hence, the unborn infant, the child before it reaches the age of discretion, the idiot, and the insane person possess the capacity of acquiring and retaining ownership as long as they live, because they have a rational nature. An act of the will is required for the actual *exercise* of ownership, but not for ownership itself. For this reason children and insane persons cannot actually dispose of their property. In principle, therefore, any individual who has the use of reason is capable of possessing and exercising property rights. For the sake of public welfare, however, the sovereign state often enacts positive laws restricting the exercise of these rights in various ways. A *dead* person ceases to have dominion over goods of fortune. External goods are intended by the

Creator for the benefit of man in his earthly life, and so at death a person is no longer capable of being a subject of ownership.

A *moral* person is any *society* or organized group of persons capable of ownership. Absolutely speaking, any society established for an honorable purpose is capable of ownership. For reasons of public welfare, however, the state recognizes only those societies as capable of ownership which are *juridical* persons, that is, which are capable of rights and duties and as such are responsible before the law. The main juridical persons capable of ownership are *ecclesiastical* and *secular societies*, together with their respective subsidiary organizations which enjoy the status of juridical persons. Chief among the secular societies is the sovereign state itself. Secondary societies within the state are of different kinds, depending on the organization existing within the sovereign state, such as individual states, counties, cities, villages, universities, and minor societies. A city, for example, is the owner of parks, buildings, lands, and many types of immovable and movable property. Ecclesiastical and secular societies, the sovereign state included, own their properties in virtue of private dominion; the right of 'eminent domain,' as was pointed out earlier, is not real ownership, but merely the right of 'supreme jurisdiction' over the private domain of its subjects.

The ownership of a society as a 'moral person' must not be confused with *co-ownership* or *con-dominion*. Co-ownership, or con-dominion, is the simultaneous ownership of the same thing by two or more persons. A number of

persons may form a partnership or corporation, so that the property belongs to them conjointly, and each one shares in the losses and gains. Similarly, two or more persons may be co-heirs of the same business or industry; in this case, too, the property belongs to them conjointly, and each one shares in the losses and gains of the business or industry. But with respect to a 'moral person,' the individuals composing the society gain nothing and lose nothing personally, because the property is vested in the society as a society and not in the individuals as physical persons with joint dominion.

Origin of Ownership

The earth existed before man. The earth is a vast storehouse of material wealth in manifold forms. Up to the time when man made his appearance, the material things existing on and in the earth evidently belonged to nobody. The actual appearance of man made no change, at least in the very beginning, in this general situation. All material goods were common goods.

The material things existing on and in the earth are adapted to the use of man, so as to supply the means to satisfy his diverse needs. Man must live. To live, he needs *food, clothing, and shelter*. Plants and animals are admirably adapted to serve man's need for food, and man cannot sustain and develop his life without them. Plants, animals, and many sorts of inanimate things are necessary to man for the purpose of providing adequate clothing and shelter; without them man would soon succumb to the

dangers to health and life which surround him on all sides. To procure the necessities for health and life, man must make and use various types of *tools*; and here, too, plants, animals, and inanimate things supply him with the means required to fashion tools of all kinds.

Since man is neither an angel nor a brute, but a *rational animal*, he is subject to the natural law as an individual person, as a social being, and as a creature of God. In accordance with this nature of man, natural law imposes certain obligations and also confers certain rights, so that he can live the sort of life which befits him in these essential relationships. To live a life befitting his nature as a rational animal in these essential relationships, he needs the material goods of this earth in a great measure. But if he needs them for self-preservation and self-perfection in accordance with his rational nature, he has the duty to use them for that purpose.

God made both the earth and man. And if man needs the goods of the earth, and if the goods of the earth are adapted to the needs of man, the conclusion is legitimate that *God intended* the earth and its goods for the use of man. And if man cannot exist and live according to his rational nature without the use of these goods, the conclusion is legitimate that God intended to place the *moral obligation* on man to actually use them. However, duty necessarily implies *right*. Man, therefore, has the *right to use the external goods of nature* for his self-preservation and self-perfection.

The very existence of man on earth is thus seen to be the *foundation* of man's right to use the external goods of

nature. And since all individuals have the same human nature, every human being has an *equal right* to use the external goods of nature. These external goods, viewed absolutely, are *negatively common*, in the sense that they belong to whoever uses them, because nature itself has made no definite allocation to one person rather than to another. Hence, speaking absolutely again, the external goods of nature are such that no one, in the beginning, had a *determinate* right to allocate to himself any particular thing. Who should use what, particularly and concretely, had to be determined by the need, usefulness, and opportunity of the individuals taken singly or collectively; in other words, the *exigencies of life* among men would make the right to use particular goods *definite* and *determinate*. St. Thomas¹ is very clear on this point. He says: "If a particular piece of land be considered absolutely, it contains no reason why it should belong to one man more than to another; but if it be considered in respect of its adaptability to cultivation, and the unmolested use of the land, it has a certain commensuration to be the property of one and not of another man."

In order, then, that the external goods, which by nature are common to all men, be allocated to particular persons, so that they have the definite, determinate, and *exclusive* right to use them, something more is required, namely *another right* which entitles the individual person to allocate to himself determinate goods for his personal determinate use.

THE GENERAL, INDEFINITE RIGHT OF ALL MEN TO THE USE OF THE external goods of the earth is insufficient for the preservation, development, and perfection of man as intended by nature and nature's Creator. Man does not exist as a general, indefinite entity, but as an individual, definite person with *specific, determinate needs* which can only be satisfied by *specific, determinate goods*. It is impossible for individual persons to use specific, determinate goods in an orderly and unmolested manner except under the supposition that these goods become his permanent and exclusive property. Individual persons, therefore, must have the permanent and exclusive *right of property or ownership* over specific, determinate goods.

First. By nature man has the general right to use the external goods of the earth for the satisfaction of his needs. This right, however, presupposes the power to exclude others from the use not only of the things which he needs and actually uses at any given moment, but also of the things which he will need in the *immediate future*. To restrict any individual to the momentary and actual use of a thing would make his 'right' to the use of an external good illusory. The time element of actual use is certainly not the most important matter in the right to use these goods. Why should the right of use be restricted to the food an individual is actually putting into his mouth or to the clothing he actually wears on his body or to the shelter he actually occupies at the moment or to the tools he actually employs with his hands here and now?

In order to lead a *well-ordered* life as befits his rational nature, the individual must not only provide for the needs of

the moment; he must make reasonable provision for his *future needs*. These needs change considerably for individuals and entire groups according to season and locality. The wise man will see the necessity of storing foodstuffs against the contingencies of winter, drought, floods, and crop failures; of having the proper clothing and shelter for the change in seasons; and, most of all, of providing for the time when illness and age curtail his ability to till the soil or hunt game. These needs extend over a considerable period of time and must be taken care of. The mere right to the immediate, momentary use of things will not suffice. Man must have the *right to the acquisition* of external goods which are required for an *indefinite future*. And he must be able to consider such acquired goods as his own, so that he has the exclusive right to control and dispose of them in his own interest. It would be unreasonable to expect him to labor for his future security, if any other person had the equal right to take and consume the goods he had toiled to gather for his future sustenance and convenience. In order, therefore, that his future security be assured, he must have the *right of ownership or proprietary dominion*, i.e., the exclusive right to control and dispose of goods as his own according to his wishes.

Furthermore. Man as an individual person cannot fulfill his natural destiny without the right of private ownership. As a *social being* he needs this right even more. The basic unit of society is the *family*. For a well-ordered family life the right to private property is indispensable. In virtue of the natural law, father and mother have the strict duty to support and educate their children in a manner befitting

their nature as rational beings. Therefore, they are by nature entitled to all the means necessary for the fulfillment of their duty. The general right to the use of the common goods of nature, however, is insufficient for the accomplishment of the purposes of parenthood. A man simply cannot raise a family properly on an hour-by-hour, or even on a day-by-day, basis. The raising of a family is of necessity a long-range proposition extending over years and decades. Parents, therefore, must have the permanent and exclusive right to acquire, control, and administer many types of external goods, such as food, clothing, shelter, and tools, and these goods must be obtained and kept in readiness far in advance of their actual use; otherwise the orderly existence and security of the family will be seriously jeopardized. The *social welfare* of mankind thus makes the right to own private property a necessity. The exact amount of private property to be acquired is not determined thereby, being dependent to a great extent upon circumstances of time, place, opportunity, and initiative; but that man has the right to some amount of private property, is evident. Whether this amount be small or large, is of minor importance. What is of great importance, however, is the *principle* of the right of private ownership. Once the principle itself is established and acknowledged as founded on the nature of man and on the nature of external goods, the *application* of the principle can be regulated by mutual agreement and positive law.

Finally, *History* is witness to the fact that all nations at all times have lived under a system in which the right of ownership in private property has been recognized in

principle and in practice. Customs and laws have protected this right and regulated its application. Nomadic tribes, because they are always on the move, lack immovable goods, but they have private ownership in movable goods, such as herds of domesticated animals, weapons, tools, clothes, foodstuffs, and other items. Except in small communities and in a limited degree, collective use of goods is found nowhere; and even in such instances, the ownership of personal articles is customary. Private ownership is thus seen to be a universal phenomenon among both civilized and uncivilized peoples. This fact shows definitely that the system of private ownership is based on the very *nature of man* whose personal and social needs cannot be satisfied except by external goods which have become the private property of individuals and groups.

Hence, the conclusion is inevitable that the right to private ownership is a *natural right* of man. *Absolute communism*, the doctrine which bans ownership of property in every form and which advocates the simple use of all goods, is thus seen to be contrary to human nature and therefore false.

The Primordial Title

In the beginning, the earth and its wealth consisted of negatively common goods: they were destined by the Creator for the benefit of man, but they belonged to no one in particular. Man, however, in virtue of his needs, has the right to ownership, so that he can turn at least some of

these common goods into his private property. The abstract, general right to ownership is practically valueless. Man's needs are concrete and specific and can be satisfied only by concrete, specific goods. Hence, man's right to property must enable him to appropriate concrete, specific goods. In order, however, that concrete, specific goods be appropriated and become private property, the general right to ownership must be actuated by some *title*. Barter, purchase, donation, inheritance, etc., are titles to ownership. Since in the beginning and by nature all earthly external goods were 'negatively common' and ownerless, there must be, both from the viewpoint of nature and of time, some title which precedes all others and is the foundation for all others. This first and most fundamental title for the acquisition of private property, is termed the 'primordial title.'

What, then, is the *primordial title to private ownership* which is the original foundation of specific proprietary rights?

The primordial title must be some *fact*, and it must be a fact which is not only 'suitable' to settle the general right of ownership upon a definite object, but is also of such a nature that it is 'prior' to all other titles. This fact is occupation or the *effective seizure and possession of an ownerless object with the intention of making it one's property*.

Occupation is by nature suitable to settle the general right of ownership upon a definite object. Originally, the earth and its goods belonged to no one in particular; they were 'negatively common' for all men. Each individual had

the general right to take for himself what his needs required, and he could exercise this right by designating some particular ownerless objects as his own and by taking possession of them. These objects thus became his private property. Nothing more was required. He violated no other person's prior right, because all persons were on an equal basis in the face of ownerless objects. No other method was available in the beginning to establish private ownership.

The *objection* is made that occupation cannot be the primordial title, because one cannot assume that simple occupation of objects, especially lands, should entitle anyone to possess them forever.

The *answer* to this difficulty is obvious. The simple occupation of ownerless objects does not, of itself, produce perpetual ownership. Every title demands a *subject* in whom it exists. The owner may transfer his title to another person through sale, donation, bequest, or some other way; in that case, the title itself has changed and is no longer the primordial title of occupation. If the original owner, who acquired the property by occupation, does not transfer his title to someone else, the property becomes ownerless again at his death, because his title to it ceases to exist when he dies.

Another *objection*. In thinly populated territories some enterprising person might claim vast expanses of land, even half a continent, as his own by the simple procedure of occupation. A few persons could thus gain ownership over almost the whole earth, while the masses of people, notwithstanding their natural capacity for ownership, would be excluded from acquiring any landed property.

Answer. The difficulty is more imaginary than real. Mere intention or declaration of ownership does not constitute a real, legitimate title. Ownerless lands can be acquired by occupation; but occupation means *effective* seizure or possession. 'Effective seizure' on the part of an individual or family, or on the part of a group of individuals or families, can occur only when the amount of land occupied actually or potentially is capable of *satisfying their human needs*; anything beyond that does not constitute 'effective seizure.

False Theories

Not all philosophers agree with the thesis just proposed and proved. A number of divergent theories have been advanced by various philosophers in the course of time.

Hobbes maintained that all titles to ownership are derived from the sovereign power of the *state*, because the state is the sole source of all rights, including property rights. His *legal* theory of the origin of property rights followed as a necessary consequence from his general doctrine that the principles of morality and of law have validity and binding power exclusively from the state. Other prominent authors also subscribed to the 'legal' theory, notably Montesquieu, Trendelenburg, Fichte, and Kant. Kant must be placed among their number in so far as he defended the view that the right to property in the strict sense of the term is dependent on the protection of the co-active power of the state. The *positivist* school of law also derives all rights from the state.

We maintain that the right of private ownership *cannot be the creation of the state*. The right to private property had its origin at the time when private property became a necessity for man. This necessity, however, arose long *before* the formation of sovereign states and their positive laws. Since the right to ownership existed *before* the formation of the sovereign state, the sovereign state cannot be the source of property rights as such.

History is of no help in determining the primordial right of ownership. All recorded history reports ownership as already existing. However, a somewhat *analogous situation* prevails on many islands and in many isolated sections of the globe, where tribes have not as yet banded together to form a sovereign state. Individuals, families, and groups of families possess private property. These people obviously did not receive their right to private ownership from the supreme authority of the sovereign state, for the simple reason that a sovereign state, in the accepted meaning of the term, does not exist in these localities, for instance, among the Eskimos in the arctic regions. A similar situation must have prevailed among men in the beginning before sovereign states were formed.

GROTIUS AND *PUFENDORF* CLAIMED THAT THE RIGHT TO PRIVATE property originated by means of a mutual pact between people. History, of course, tells us nothing about such a mutual pact whereby people agreed among themselves to establish private ownership of property. The only way to

prove such a theory would be by rational deduction. Rational deduction, however, rather proves the opposite.

If this theory were correct, it could be so only on the supposition of an original *collective ownership* of all earthly goods. The first families could not make a partition of all goods among themselves unless they formed a closed community and as a closed community had collective ownership over everything, because they could not make a pact to turn goods into private ownership if they did not possess them in the first place. The supposition of collective ownership on the part of these original families, however, is an *arbitrary assumption*. Since the geographical horizon of these first families was undoubtedly extremely limited, it is unreasonable to assume that they intended to partition the whole earth and *everything it contained* among themselves. That a certain amount of communal ownership of *land* existed, may be assumed as probable. Even if the primitive peoples were hunters and fishermen rather than agriculturists, they probably considered certain tracts of land as being the common property of the tribe to which they belonged. But how did the tribe acquire this land in the first place? Evidently by simple seizure, by occupation. Whether, therefore, land was communally or privately owned, the primordial right to it was based on occupation, not pact.

Furthermore, if in the beginning hunting and fishing were the primary method of earning a livelihood, instead of agriculture, then the *necessary implements* for hunting and fishing had to be fashioned out of *raw materials* of some sort. These raw materials, whether of wood or stone or

metal, belonged to nobody; hence, they could be appropriated wherever found and fashioned into implements. But this means that the primordial right to property had its origin in occupation.

LOCKE CONTENDED THAT ALL PROPERTY RIGHTS ARE REDUCIBLE TO the right of *labor*, namely, that man has the right to call the fruits of his labor his own. *Henry George* made a similar claim in his famous book *Progress and Poverty*. In our day the *socialists* and *communists* are the ones who proclaim the priority of labor to any other title. Socialism and communism will receive special treatment in a later chapter. The followers of Henry George were concerned mainly with landownership, but their argument from labor applied actually to ownership in general. The *argument* runs somewhat as follows: Man's sole primordial right is the right to exercise his own faculties; the exercise of his faculties, which is labor, produces values and alone produces values; man has the right to possess what he produces; hence, labor is the original title to property and the only right to property. Since man does not produce land, he has no right to own land.

The argument is *fallacious*. It is true, of course, that man has the right to exercise his faculties. Such a right, however, is a right to *action*, not a right to possess property. It is also true that man produces values by the exercise of his faculties, namely, by the expenditure of productive labor on some external object. There are, however, two factors to consider in productive labor: the *original object* to which

the labor is applied, and the value created by productive labor in this original object. Labor admittedly produces the added value, but it does not produce the original object or material to which the value has been added. In consequence of his labor, the workman may be entitled to the value superadded to the original object or material, so that this value becomes his property; but what about the original *object*, the *material*? Since he did not produce the original object or material through his labor, he cannot, according to Henry George's own principle, become the owner of the object or material. But object and value are inseparable. If he is not the owner of the *object itself*, neither is he the owner of the produced value, because the value is inseparably attached to the original object. To be the owner of the value, he must also become the owner of the *total object*. How can he, however, become the owner of the original object or material upon which he expends his productive labor? The object or material exists prior to his labor. Either, then, he cannot become the owner of the total object through his labor or he must become the owner of the original object or material through a *title other than labor*. But again, if labor is the primordial title to private property, how can he acquire the original object or material? He must acquire it through some title, or his labor is futile.

One man walks along the seashore, picks up an oyster shell, opens it, and finds a valuable pearl. Another strolls over the veld in South Africa, picks up a stone, and discovers that it is a magnificent diamond. Another walks along a water bed in desolate Klondike, sees something

yellow and shining, and suddenly realizes that he has found a pocket of gold nuggets. Such and similar objects have a commercial value *prior to*, and *independent of*, any labor expended on them to give them added value. Yet they certainly belong to the finder as the first occupant. Occupation, therefore, not productive labor, is the primordial right which entitles a person to the ownership of private property.

Neither the authority of the sovereign state nor the mutual pact nor productive labor can explain the origin of ownership and be the primordial title to private property. The requirements of the primordial title are found only in occupation.

Limitations of Ownership

The nature and needs of man require the system of private ownership of external goods. Almost all moralists and sociologists agree to this. Because things are privately owned, the owner has the exclusive right to control and dispose of his goods at will.

Man, however, has *no absolute dominion* over temporal goods, even if they are his private property. There are *limitations* on ownership and use.

God alone has absolute dominion over all created things. The earth and its wealth were intended by Him for the sustenance of *all people*. The *primary* purpose for the creation of these temporal goods, therefore, is the life and welfare of every human person, so that man may have the necessary means for the attainment of his immediate and

ultimate ends. Consequently, every man has the natural primary right to the use of the goods of nature for the attainment of the purpose of his being as a human person. This primary right to the common goods of nature remains intact even after the division of these common goods into private property; the right to private property is only a *secondary* right, always subject to the primary general right of all persons. St. Thomas² expresses this important truth as follows: “Two things are competent to man in respect to external things. One is the power to procure and dispense them, and in this regard it is lawful for man to possess property. . . . The second thing that is competent to man with regard to external things is their use. In this respect man ought to possess external things, not as his own, but as common, so that, to wit, he is ready to communicate them to others in their need. . . . A man would not act unlawfully if by going beforehand to the play (theater) he prepared the way for others; but he acts unlawfully if by so doing he hinders others from going. In like manner a rich man does not act unlawfully if he anticipates someone in taking possession of something which at first was common property, and gives others a share; but he sins if he excludes others indiscriminately from using it.”

St. Thomas hereby stresses the principle, so often overlooked, that all private property has an *individual* and a *social* character. Man naturally has the right to possess temporal goods as his own; whoever violates this right violates commutative justice. On the other hand, many persons have the same right, and God created the temporal

goods not only for the benefit of individuals and their families but also for the benefit of all people; hence, proper order must be observed in the use of temporal goods, both from an individual and a social stand point, so that the *common good* of all will be served. Because of the 'individual' character, each individual has the right to possess private property and to dispose of it as his own; because of the 'social' character, the form of distribution and the use of temporal goods must always be such as to be of benefit to others and to the common good. The use of private property, therefore, is not absolute, but limited, because the possession and use of private property involves certain obligations.

There are *individual obligations*. Everyone has the obligation, binding in conscience in virtue of commutative justice, to render to each one his own and not to violate the legitimate rights of others.

There are *social obligations*. Granted the general right of disposing of one's temporal goods at will, private owners have the *duty of social charity*, according to the amount of their means, of assisting others by means of almsgiving, liberality, and benevolence. A very wealthy family, for instance, should try to use its extensive superfluous income to provide the opportunities of labor for common working people, so that the latter may be able to acquire the means of a decent living.

More important is the *duty of social justice*, namely, the duty to use one's right for the common good as dictated by justice. Some rights are of such a nature that their excessive use would restrict others in the use of the same

right or even bring about a definite domination over others. Among such rights is the right to acquire wealth, the right to make contracts, the right to work, the right to form associations of various kinds. Obviously, such rights can be used and abused and can bring great good or great harm to people. Rights, as was stated many times, always involve corresponding duties. The rights just mentioned, for example, involve the strict *negative* duty of justice not to hinder another, either by force or fraud, from exercising his own just rights. It is an *affirmative* duty to assist others by offering them the opportunity to acquire private property; but this affirmative duty is not directed toward any specific person, as if everyone had the strict duty to procure a job for a particular individual or see to it that a particular individual obtained the opportunity of making large profits in some business. The common good requires that no injustice be done at any time; but the common good does not require that a particular individual or group of individuals be given the opportunity to accumulate temporal goods. However, when *broad classes* of society are hindered from making a decent living through the accumulation of excessive wealth in the hands of a relatively few persons, the 'common good' of all is definitely endangered, and the government has both the right and the duty to regulate the use of such proprietary rights for the good of its subjects in general. That is why we speak of *social* rights and duties, because they pertain to the 'common good' of all the members of society. Great wealth, therefore, imposes social duties which must be discharged conscientiously, notwithstanding the rights of private

ownership, because private ownership is a right secondary to the primary right of all men to the goods of nature necessary for their sustenance.

The right of individuals to the things *necessary for life* is paramount, but it is not the same for each individual. Whoever can work has the right to acquire the things necessary for life by his labor; to hinder him permanently from earning his living, whether by force or fraud, would violate strict justice. Whoever is incapable of work, has the moral and legal right to obtain what is necessary for life either from the state or from the superfluous goods of the wealthy. If the state is unable to support him, and if he is placed in *extreme necessity* (as happens after a devastating war, for example), he is allowed to take from the superfluous goods of the wealthy whatever is necessary to sustain life; in such a case the necessity to preserve one's life has priority over the secondary right of private ownership. The wealthy person, in such a case, has no strict duty to offer his superfluous goods to the indigent person, but he has the strict duty *not to hinder* a person in extreme necessity from taking what he needs to preserve his life.

In this manner the right to private ownership and the right of all men to proper sustenance are brought into harmony.

Summary of Chapter XVI

All peoples recognize the fact and principle that the use of material things brings with it the *right to private ownership*.

1. *Nature of Ownership*. The *right of ownership* or proprietary dominion is the exclusive right to control and dispose of something as one's own according to one's will.

2. *Kinds of Ownership*. There is 'eminent domain' and 'private domain.' *Private domain* is ownership in the strict sense, while eminent domain is a domain of jurisdiction. The right of private domain is *perfect* when the owner of a thing can dispose at will of its substance and of its use and fruits; it is *imperfect*, when the owner of a thing can dispose of either its substance or its use and fruits. Imperfect ownership is *direct*, when the owner has proprietorship only over the substance of a thing; *indirect*, when he has proprietorship over its use and (or) fruits, but not over its substance.

3. *Object and Subject*. The *object* of ownership is the goods which man owns. They are *internal* if these goods are a part of man's being or proceed from his being and its activities. They are *external* if they are things external to his person. External goods are either 'movable' or 'immovable,' 'interchangeable' or 'non-interchangeable,' 'consumable' or 'non-consumable.' They are mixed, if they occupy a position between internal and external.

The *subject* of ownership is any person capable of having proprietorship over things. The subject is a *physical* person

when it is a living human being; moral, when it is a society or organized group of persons capable of ownership.

4. *Origin of Ownership.* In the beginning all external goods were 'negatively common' and intended by the Creator for the use of all men. Man needed them for food, clothing, shelter, and tools. Man thus had the *moral obligation* and the *right* to use the external goods of nature for his self-preservation and perfection. In virtue of his human nature, man has the right to acquire and use specific and determinate goods for his exclusive use, because in no other way can he satisfy his *present* and particularly his future needs pertaining to the welfare of himself and his family. As an *individual* and as a *social being*, therefore, man has the right to make the common goods of nature his private property.

5. *The Primordial Title.* Ownership must be actuated by some title. Among all the titles one must be the *primordial title*, i.e., the one which is by nature and in time the original title and the foundation for all others. This primordial title is occupation or the effective seizure and possession of an ownerless object with the intention of making it one's property.

6. *False Theories.* Hobbes and others, including the legal positivists, maintain that the right to private ownership is derived from the sovereign *state*. This theory is false, because private ownership existed prior to the formation of the state.

Grotius and Pufendorf derive it from a *mutual pact*. This theory presupposes that original ownership was collective ownership, which is an arbitrary assumption. Collective

ownership in lands may have existed, but even communal lands could have become the property of a community only through occupation. Hunters and fishermen needed implements of various kinds, and they could have taken the raw materials for these implements only through occupation.

Locke, Henry George, and others claim that labor is the primordial title. Before labor can be expended on an object or raw material, the object or material must first be acquired. Ultimately, these must be acquired by occupation. Many things have value without labor, such as pearls, gold, and diamonds.

7. *Limitations of Ownership.* Man has no absolute dominion over things; there are *limitations* on ownership and use. The *primary purpose* of the earth and its wealth is the life and welfare of every human person; the right to private property is therefore only a *secondary* right. All persons must be able to make a livelihood from the goods of the earth. Every owner of private property, therefore, has *individual* and *social obligations* in the acquisition and disposition of his earthly goods; these social obligations are obligations of charity or of justice.

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1 *Summa theol.*, 2a 2ae, q. 57, art. 3

2 *Summa theol.*, 2a 2ae, q. 66, art. 2

Chapter 17

TITLES TO PROPERTY

ALL THE GOODS OF THE EARTH WERE OWNERLESS IN THE beginning and 'negatively common.' To serve their purpose adequately as a means to satisfy the specific needs of individual persons and groups of persons, especially of families, man had the natural right to appropriate as much of these goods as he needed, thereby making them his private property.

In order to acquire dominion or ownership, a person must have a *title*, i.e., a cause must exist which of itself is suitable and sufficient to confer ownership of a specific, determinate thing on a person. Without a title there can be no ownership.

Titles to property are either original or derived. An *original* title is one in virtue of which a vacant or ownerless thing becomes the property of a particular person. A *derived* title is one in virtue of which one person succeeds another to the ownership of something. Original titles are occupation, accession, and labor; derived titles are prescription and contract. Occupation, accession, and labor have their force and validity from the natural law; prescription, from the positive law of the sovereign state;

contract, from the intention and will of the individuals making the contract. These are the acknowledged ways or modes of acquiring private property.

Occupation

Occupation, as the primordial title to ownership, was treated in the preceding chapter. It is the fundamental title.

Three conditions are required in order that occupation may be a legitimate title: (1) that the thing have no owner at the time of occupation, otherwise an injustice would be done to the owner by taking it; (2) that the thing be really and truly seized; (3) that there be the intention of making it one's own. In civilized countries, at least in those that are thickly populated, about the only things which can still be acquired by means of occupation are *animals* and *found articles*.

Among the animals some are domesticated, some are tamed, and some are wild animals. *Domesticated* animals are so habituated to human beings and their habitation that they live peacefully with their owner and show little or no tendency to return to the freedom of the wild state. Examples of domesticated animals are horses, cows, pigs, dogs, chickens, ducks. Domesticated animals, even when they stray, still belong to their owner, unless the owner turns them loose or does not consider them any longer as his own. *Tamed* animals never really become domesticated and are always inclined to seek the freedom of movement characteristic of the wild state, though at the moment they may have been trained to stay and even return to an

enclosure. Examples are bees in a hive, birds in a cage, fishes in an aquarium or pool, and various kinds of animals (such as monkeys, deer, elephants) in a pen or cage. Tamed animals are the property of their master and owner so long as they remain in his custody; once they escape and are free, they are ownerless and become the property of whoever captures them. Animals which have acquired the habit of returning to their enclosure are considered to have freed themselves from this habit if they fail to return after a few days. *Wild* animals abhor and avoid all association with man and enjoy complete freedom. Examples are fishes in large bodies of water and birds and animals which live constantly in forests and open spaces. They belong to no one, even if the forests and the fields are someone's property.

They become the property of the person who captures them and remain his property so long as he effectively retains them; or they become the property of the one who kills and takes them. Civil law frequently makes regulations for fishing and hunting; since these regulations are made for the common good of all, they should be obeyed, but as a rule such regulations are only penal laws.

The *finding* of hidden and forgotten treasures, or relinquished or derelict objects, and of lost articles is a species of 'occupation,' and the general principles of occupation apply to them. *Hidden and forgotten treasures* and *relinquished or derelict objects*, generally speaking, have no real owner and therefore become the property of anyone who discovers and appropriates them; it must be remembered that it is not the one who sees them first who

becomes their owner, but the one who seizes them first. However, the civil authority may have laws regarding the disposition of such finds. *Lost articles* belong to some unknown owner and do not pass over automatically into the proprietorship of the finder. “Finders—keepers, losers—weepers” is not a sound moral principle. Whoever finds a lost article is bound in justice to locate the rightful owner if the article possesses any value. His efforts to locate the owner must be in proportion to the value of the article, all circumstances being considered. The expenses of the search must be borne by the owner, and the finder is permitted to deduct his expenses and demand any reward promised for the return of the object. If the owner cannot be located after a reasonably diligent search, the finder acquires ownership in virtue of the title of occupation.

Accession

Accession is the acquisition of ownership by means of some addition to one's property. This addition may be natural or industrial or mixed.

Natural accession is the addition to one's property as the result of natural agencies alone, without assistance on the part of any person. It is either *fructification*, as when privately owned trees and soil bring forth their natural crop; or birth, as when the animal belonging to an owner brings forth young; or *alluvion*, as when the gradual action of a stream, brook or lake leaves deposits of earth on the shore of a man's land and thereby increases his acreage in the course of time. This natural increase becomes his

property, according to the legal axiom: *A thing fructifies to the owner (res fructificat domino)*.

Industrial accession is the addition to one's property as the result of a person's industry and skill. It is termed *specification* when a thing receives a specifically new form through the work expended upon it; cloth, for example, is fashioned into a garment, flour is baked into bread, wood is carved into a figurine, steel is forged into a tool. When the owner of the original material and the one who is the author of the specification are two different persons, ownership of the gain or increase goes to the principal, i.e., to the one who contributed most to the value of the complete article. Industrial accession is termed *junction* or union when one thing is added to another in such a manner that both form a single unit; for example, a jeweler sets a precious stone in another man's ring, or an artist paints a picture on another's canvas. When the two things form an inseparable unit, the ownership belongs to the principal. Industrial accession is termed *mixture* when two or more substances commingle and form a unit; for example, two measures or grades of wine are blended into one, two bushels of wheat are poured together, or a bushel of wheat and a bushel of barley are mixed together. If the parts are separable, they must be separated, and each part belongs to its respective owner; if two items of the same kind are mixed together, the entire quantity is divided among the owners according to the part contributed; if one part can be considered to be the principal part, either because of quantity or quality or both, the owner of the principal part is entitled to the whole thing, but he must reimburse the

other owner for his portion. Industrial accession is termed *building* when one person erects a building on his own land with materials belonging to another, or when one person erects a building with his own materials on the land belonging to another. The building belongs to the owner of the land, because the ownership of land is a prior right; the owner of the land, however, must reimburse the builder, unless the latter acted in 'bad faith' and therefore tried to cheat the owner of the land. In solving the problems resulting from industrial accession, the decision is made according to the legal axiom: *The accessory follows the principal (accessorium sequitur principale)*.

Mixed accession is the increase of one's property or gain as the result partly of natural agencies and partly of industry. It occurs when someone sows seeds or places plants in another's land. Everything which grows on a person's soil is his property as the principal owner.

In as much as it will frequently be difficult to decide who is the principal owner in many instances, the *civil law*, for the sake of the common good, can and does often render decisions in these matters; these decisions, once rendered, must be followed, because the civil power has the authority to make the general provisions of the natural law more determinate and specific.

Labor

Labor is human industry which produces goods of some sort. It is immaterial whether this labor is bodily or mental or whether it produces goods immediately or mediately; the

important point is that the work expended is by its nature capable of producing something which is of use and value to the individual or the community.

Labor is a legitimate mode of acquiring dominion. Every person is the master of his powers, be they bodily or mental, and the application of his powers to the production of something is 'labor.' Whoever expends his energies upon *his own property* and thereby produces in it some new form is the proprietor of the *entire thing*, both of the original substance and of the new form produced in it. The original substance naturally belongs to him, because it is his property already; the new form of the substance belongs to him, because he has the natural right to the fruits of his labor. Whoever expends his energies upon *another's property* does not thereby become the proprietor of the thing, because the original substance, in which he produces a new form, belongs to this other. Since no one is allowed to alter something owned by another without the owner's permission, everything will depend on the agreement made between the owner and the workman. If the owner of the original substance and the workman have formed a *partnership*, each one becomes a *partial proprietor* in the newly formed article. If, however, the workman has only *given his labor for hire* in the service of another, he acquires no dominion over the fruits of his labor; he is neither the owner of the entire article nor a part owner of the article. Since the real owner of the original substance hired the workman's labor and the workman hired out his energies to the real owner, the workman, in virtue of this 'contracts between himself and his employer, is entitled to a

just wage for his labor. More will be said about this in the treatment of the wage contract.

Viewed from the standpoint of a *title*, labor, if expended in the seizure and possession of an ownerless thing, participates in the title of 'occupation'; if expended on one's own property, it amounts to the title of 'usufruct'; if expended on someone else's property, it is reduced to the title of 'contract.' Only with respect to its *own proper fruits*, therefore, can labor be regarded as a natural and original title of dominion.

Prescription

Prescription is the acquisition of ownership or the discharge of a debt by the continuous possession of a thing for the time and in the manner prescribed by positive law.

The legal profession knows and enumerates many types of prescription. Basically, all types are reducible to two: 'acquisitive' and 'extinctive.' *Acquisitive* prescription is the operation of the law conferring a title on someone through the continued exercise of corresponding powers; for example, someone acquires the right to use a path or roadway over another's land because he has been allowed to do so without hindrance by the owner for a number of years. *Extinctive* prescription is the operation of the law extinguishing someone's right through the prolonged failure to exercise corresponding powers; for example, the law frees someone from the obligation of paying a debt because the creditor has failed for a long time to demand payment from the debtor. Just how much time must elapse

before prescription becomes effective depends upon the civil laws, and the laws differ from country to country and from state to state.

Prescription is a *legitimate title* to ownership. In virtue of prescription the prolonged possession of a thing, provided the proper conditions are present, transfers the ownership of the possessed thing to the possessor. The transfer is made through the power of the *positive law*. The sovereign power of civil authority has the right of 'eminent domain' and therefore can transfer the ownership of a thing from one person to another without the consent of the original owner, whenever *grave reasons* affecting the common good demand such an action. There are a number of grave reasons for prescription, prompted by the common good of society. For 'acquisitive' prescription the following reasons are given: that the ownership of a thing may not be uncertain for a long period of time; that lawsuits may be avoided or may at least be more easily brought to an end; that doubts of conscience regarding the lawful possession of a thing may be removed and the fear of losing a possessed thing may be allayed; that people may be spurred on to be more careful in protecting their property and in exacting their rights. For 'extinctive' prescription the following reasons are advanced: it can be legitimately presumed that the debtor has fulfilled his obligation, because creditors as a rule do not wait long in demanding the payment of a debt; it is unreasonable to require anyone, especially a large business concern, to keep receipts of payment on file forever so as to avoid double payment of the same bill.

CONDITIONS FOR ACQUISITIVE PRESCRIPTION.

Five conditions are required for the validity of acquisitive prescription: aptness of the object; good faith; a title; continued possession; proper time.

Aptness of the object is the quality of an object making it a fit object of ownership. Not all objects are prescriptible. Some are not apt for dominion, either because of their very nature or because of a natural or positive law. Such objects, for example, are sunlight, air, ocean lanes for boats; public highways, bridges, parks; at least so far as private persons are concerned, marriage rights.

Good faith is the erroneous judgment which gives a person the moral certitude that something in his possession is really his property, although as a matter of fact it belongs to someone else. It is evident that no one can make a thing his own, when he is conscious of the fact that it is not really his; the possessor acts unjustly against the real owner, if he keeps an object of this sort and does not return it to the owner. This possessor is in 'bad faith' and is not allowed to profit thereby. Even if the civil authority enacted a law declaring an object held in bad faith prescriptible, the possessor acting in bad faith is in conscience bound to restore the object to the rightful owner. A thief, therefore, can never acquire the ownership of the stolen object through prescription, because he knows that the object does not belong to him. If a person purchases a stolen object in good faith, prescription begins then and there; if he finds out later that the object was stolen, prescription is

interrupted at that point; but if he begins to doubt, and a reasonable effort does not resolve the doubt, prescription continues. The good faith of a predecessor always counts in favor of the successor if the latter is also in good faith; hence, the periods during which the object is possessed in good faith are included in the computation of the time required by the law for prescription. If the bad faith of a predecessor is definitely established, the civil law frequently will not count this against the successor who receives the object in good faith; in such matters one must consult the provisions of the prevailing laws of the locality.

The *title* of prescription is the cause or reason why the possessor of an object judges it to be his own. Obviously, the title involved in prescription is not a true title, namely, a title which would truly transfer ownership; if it were a true title, there would be no need for prescription. The title, therefore, can only be an *apparent* title. An apparent title of some kind is naturally required, in order that the possessor be in good faith and actually believe that the object is his own; otherwise he would be in bad faith, and prescription could not even begin. In a case of extraordinary prescription a 'presumptive' title suffices; the very fact that an object has been in one's possession for a very long time becomes, in the eyes of the law, a presumption that a legitimate title to the object has always been present.

Possession is the very foundation of prescription. It consists in the actual keeping of an object in one's power or in the actual exercise of a certain right. Since a time limit is set for prescription, possession must be continuous for the time set. Prescription may be *dormant* because of some

impediment laid down by the law; for example, in the case of minors or wards, when their property is administered by another, or in the case of a revolution, when the processes of law do not function. During this dormant period prescription is suspended, but is resumed after the dormant period is passed. Prescription is *interrupted* or *ceases* altogether whenever an essential flaw appears; this happens, for example, when the possessor ceases to be in good faith, or when the actual owner appears and claims ownership.

The *time* necessary for prescription to be effective depends on the civil law. The time differs according to different civil codes and according to different kinds of objects.

When all these conditions have been fulfilled, the law declares that the possessor has a sufficient claim to ownership and transfers the object to the dominion of the possessor. If the former owner should appear and claim the object, his claim need not receive consideration from the possessor after the period of prescription time has elapsed; the possessor is now the rightful owner.

CONDITIONS FOR EXTINCTIVE PRESCRIPTION.

The conditions required for an extinctive prescription to be legitimate are similar to those required for an acquisitive prescription. The *right* or *debt* must be prescriptible. A prescriptible 'right,' for example, would be the right of way through another's property, in order to enable someone to conveniently connect his farm with the highway; or the

right to maintain a privately constructed dam on a stream of water. A prescriptible 'debt,' for example, would be taxes owed to the commonwealth or a loan one believes is already paid.

Another condition is the *non-use of a right*. For instance, a person has the right to start action in court against another for the purpose of claiming a right or exacting payment of a debt, but he fails to do so.

Good faith is also required. 'Good faith' is *positive* when a person is subjectively convinced that he has no duty in a particular matter or that he is not under the obligation of a debt with respect to another. He may, for example, have forgotten his obligation, or he may believe that the debt has already been paid. 'Good faith' is *negative*, when he is conscious of his duty or debt, but believes that he has no moral obligation to discharge his duty or pay his debt until such time as he receives notice or a lawsuit is started against him. It may, for example, be a case of damages inflicted by him upon another through an unavoidable collision; having incurred no moral guilt, he can decline paying damages until ordered to do so by the court.

The *time* required for prescription to take effect depends on the provisions of the law. In order that extinctive prescription extinguish a right or a debt in *conscience* and not merely before the law, much depends on the intention of the legislator. If the law stipulates a *long* period of time before the extinction of a debt can be effective, it is commonly assumed by moralists that the legislators intend the debt to be actually extinguished, so as to avoid delay in lawsuits and the necessity of having testimony available for

an indefinite length of time. But if the stipulated time be three years or less for the validity of prescription, the moralists are not in accord; if it can be shown that the legislators probably intended a debt to be extinguished after such a brief period, a person in good faith can take advantage of the doubt and consider himself rid of his obligation.

Since prescription is founded on positive law, the legislative power of the community or state has the right to establish or alter the conditions required for its validity.

The Nature of Contracts

A *contract* is the agreement between two or more persons to transfer a right to do or not to do something. When it is said to be an agreement 'to transfer the right to do or not to do something,' the 'doing' may refer to a thing or to an action. One person, for example, may make a contract with another to sell or not to sell an article, to go on an expedition or not to go on an expedition; in the first case the contract revolves around a 'thing,' and in the second case around an 'action.'

Four conditions are essentially necessary for a valid contract: suitability of the matter; competence of the contracting persons; mutual consent; and cause of the consent.

The *matter* of a contract is anything that can be the object of dominion, namely, a thing or action or the omission of an action. The matter of a contract, to be suitable, must possess certain qualities. It must be *possible*, both

physically and morally. No one can obligate himself to do something which is physically impossible for him to do, because he cannot keep his part of the contract. No one, it is reasonably assumed, intends to obligate himself to do something which is morally impossible for him to do, unless a stipulation to that effect is expressly included in the contract. The matter must be *existent* either in reality or at least, according to a sound probability, in the future. It is obvious that one cannot transfer to another the right to a thing that neither exists nor is expected to exist; but he can transfer to another the right to a future reality, such as, for instance, the crop of apples he has reason to expect will grow on his apple trees. The matter must be the *property of the contracting party*. If a thing belongs to another and not to the contracting party, the latter obviously has no right to dispose of it; but he may make a contract about something belonging at present to another, if there exists a solid ground for believing that the thing will some day become his property. The matter of the contract must also be something *honorable* and *licit*. If it were dishonorable and illicit, he would be obligated to avoid the action; in that case, however, he certainly cannot obligate himself by a contract to perform the act. Hence, a contract to murder someone, to rob or steal something, to cheat in a business deal, etc., is invalid. Finally, the matter of the contract must have some *appreciable value*, namely, it must be of a nature that it is something laborious or inconvenient for the one party and something useful or pleasurable for the other. Contracts, therefore, about useless or valueless things are not binding.

The *competence* of the contracting persons means that they have the use of their reason; otherwise they could not give valid consent and assume an obligation. So much is certain from the standpoint of the natural law. Hence, those are incapable of making a contract who cannot give perfect consent, such as infants, insane persons, idiots, and persons who are completely or nearly completely drunk or under the influence of a very strong hypnotic or narcotic; their acts are not human acts. *Positive law* often declares certain types of persons incompetent, for example, minors or wards under guardianship; in some states or countries the wives are declared incapable of making contracts without the husband's consent. Many laws *limit* the power of contract for such persons.

That the *consent of the contracting parties* is necessary for the validity of a contract, is evident from the fact that the contracting parties assume an obligation; an obligation, however, presumes a voluntary act, since a person binds himself through the mutual agreement of a contract and mutual consent is involved. This consent, therefore, in order that the contract be valid from the standpoint of natural law, must possess certain qualities. It must be *true* consent; that is, it must be actually given by the will; otherwise no obligation is assumed. Hence, feigned and fictitious consent vitiates a contract. However, if a person feigns consent, but expresses his consent externally to the contract, he is guilty of deceit and must repair all damages resulting to the other contracting party from the invalid contract; if he cannot repair the damage except by fulfilling the contract, he is bound in conscience to fulfill the contract. For the same

reason, consent must be *free* and *deliberate*; only a contract made with proper advertence, deliberation, and freedom can induce an obligation in the will. The consent must also be *mutual*, so that the contracting parties consent to the same juridical object; no one can transfer a right to another unless the latter is willing to accept it, and no one can be obligated to transfer a right unless he is willing to be obligated. This holds good even in unilateral contracts, such as gifts and promises; the contract is not completed by the mere offer to transfer a right, but only when the offer is accepted. As a result a gift or promise always may be withdrawn before the one to whom the offer is made consents to accept the offer. Bilateral contracts, by their very nature, demand the consent of both contracting parties. For the validity of a contract the consent must be *manifested in a sensible form*, because all contracts have social implications and, since society is a sensible and visible organization, contracts can have validity only if expressed in a sensible form.

Error, deceit, and fear may render a contract invalid or at least rescindable, because they contravene the freedom of the will and therefore *vitiate consent*. An error is a misapprehension caused by one's own self; deceit is a misapprehension caused by a person in another with the intention of misleading him. Error and deceit are either substantial or accidental. They are *substantial*, when they pertain to the substance of the thing about which the contract is made, as when a jeweler sells someone a synthetic ruby in place of a natural stone; or when they pertain to a quality which is the basis of the contract, as

when a person intends to buy a genuine Murillo painting and receives only a copy; or when they pertain to the substance of the contract itself, as when a person thinks he is given the loan of a machine and then finds out that he has unwittingly contracted for the purchase of it. *Accidental* errors, which leave the substance of the contract in its full vigor, do not vitiate the consent; otherwise very few contracts could be made, and society would suffer as a result. 'Substantial' errors, however, vitiate the consent in its very essence and render the contract invalid. But accidental errors, induced antecedently to the contract through 'deceit,' render the contract rescindable, because of the injustice committed by the deceiver. A contract is said to be made out of *fear*, when fear is a determining factor in the making of a contract to such an extent that the contract would not be made otherwise. Fear, of itself, does not invalidate a contract, because a consent given out of fear is a truly human act, unless fear is so great as to deprive a person temporarily of the use of reason. However, if the fear is the result of an *unjust* act on the other's part, the contract is rescindable, because no one is obligated to live up to his side of the contract when the other party has been guilty of an injustice in the very making of the contract; the guilty party is bound to remove the injustice, and that, in this instance, involves the contract itself if the innocent party so desires.

The *cause of the contract* is the reason why one person transfers a right to another. In gratuitous contracts the cause is the will to do good to someone; in onerous contracts it is the utility one expects to derive from the

thing that is the object of the contract. If the motivating cause of the contract is the commission of a *criminal act* the contract is void. Hence, either party may refuse to fulfill his part of the contract before the crime has been committed; in fact, both parties are bound in conscience to withdraw from the contract. If the contract has not as yet been carried out and the price paid, the price must be restored; but if the contract has been carried out, the price may be demanded and retained, unless the civil law ordains differently. Not all authors, however, agree to this; some contend that a criminal contract is simply invalid, and payment, therefore, need not be made.

Valid contracts, except the contract of a gratuitous promise, bind in conscience in virtue of *commutative justice*. It belongs to the very essence of a contract (except a promise) that the contracting parties have the will to bind themselves in justice to the fulfillment of the contract; otherwise there would be no sense in making a contract. Hence, they also bind themselves to all the rights and duties which are naturally connected with the terms of the contract as intended by the contracting parties.

Kinds of Contracts

There are many types of contracts, and a division can be made from many viewpoints. The following are the main divisions.

From the standpoint of their *effect*, contracts are either unilateral or bilateral. A *unilateral* contract imposes an obligation upon only one of the contracting parties. The

contract, for instance, to make a donation obligates only the giver, not the receiver. A *bilateral* contract imposes an obligation on both contracting parties. Both the buyer and the seller, for instance, have obligations in virtue of their contract.

From the standpoint of their purpose, contracts are either *gratuitous* or onerous. In a gratuitous contract the one party intends generosity, while the other party receives a favor, as when a patron promises a scholarship to an indigent student. In an onerous contract both parties intend to obtain something to their advantage, as when an employer hires a workman to render some service and the workman gives his service for a price.

From the standpoint of their *mode* or *manner*, contracts are either consensual or real. A consensual contract is one which is made essentially by the mere consent of the contracting parties, as a promise. A real contract is one in which the contract is not essentially completed until some object has passed from the hands of the one contracting party to the hands of the other, as in a loan.

From the standpoint of their *matter*, contracts either pertain to a certain event or chance. A contract *based on a certain event* is one according to which something is to be done or given in dependence on a definite event, as in renting a house. A contract of chance is one according to which something is to be done or given in dependence on some fortuitous event, as in gambling.

From the standpoint of *conditions*, contracts are either pure or qualified. In a *pure* contract, no condition or

modification is added. In a *qualified* contract, some condition or modification is added for validity.

While the number of special contracts is rather large, all can be placed under three distinct headings; unilateral contracts; bilateral contracts based on a certain event; and contracts based on chance. Under the heading of *unilateral contracts* we distinguish between three, namely promise, donation, and testament. These unilateral contracts will be treated first.

Promise

A *promise* is an act by which one person obligates himself gratuitously to another to do or omit something, and the promise is accepted by the one to whom the promise is made.

A promise is not valid without the following *conditions*: the promisor must have the intention of binding himself by the promise, and this intention is always implied in a seriously given promise; the promise must be manifested exteriorly in some manner, and the promisee must accept the promise. Before acceptance, therefore, the promisor may revoke his promise.

So far as *obligation* is concerned, the following points must be considered. Whether the promisor is obligated from fidelity or justice depends entirely on his intention. Ordinarily, promises are not made with the intention of binding one's self under the rigorous demands of justice. If, however, a promise is made with exceptional solemnity, for instance, in writing or before witnesses or under oath, the

civil courts presume that the promisor intended to bind himself in justice; lawsuits for 'breach of promise,' especially in nuptial engagements, are based on this presumption. So far as conscience is concerned, everything depends on the intention.

Promises *cease to obligate*: if a considerable change in circumstances occurs; if the main or sole motive for making the promise no longer exists; if the execution of the promise, through no fault of the promisor, becomes impossible or illicit or useless; if the other party, in the case of a mutual promise, does not keep his promise.

Donation

Donation is an act by which one person gratuitously transfers the perfect dominion of all or part of his property to another.

From the standpoint of *natural law*, a donation is *valid* if the donor actually transfers the dominion of the thing to the donee and the donee accepts the dominion. The acceptance must be manifested by the donee externally in some recognizable form; otherwise the donation still is only the offer of a gift and can be revoked by the donor. Civil law frequently prescribes definite forms for the validity of donations, so as to avoid unnecessary litigation; hence, through the force of positive law, donations may be revocable either entirely or in part, and the donor may take advantage of the decision of the judge. However, donations contrary to the prescriptions of the positive law may be considered valid and binding *in conscience*, before the

court renders a verdict, because the donations are then consensual contracts which depend for their validity on the wills of the contracting parties.

Testaments

A *testament* or *last will* is the act of a person by which he ordains what disposition shall be made of his goods after his death.

In virtue of the natural law the descendants of a person possess the right of hereditary succession to the property of the deceased. Civil society is composed of families, and its existence is inextricably bound up with the existence of its component families. Now, families come into existence and are kept in existence through the biological process of generation. By the very law of nature, therefore, parents have the natural obligation to provide for the welfare of their children. This obligation is one of the main reasons for the legitimacy of private property, because parents must also provide for the *future* welfare of their children. The conservation and propagation of families and provisions for the welfare of children would be impossible without the transmission of family goods, at least in its major portion, from one generation to the other. Consequently, *nature itself* demands that the descendants of a person possess the *right of hereditary succession* to the goods of the family at the death of a parent. So much is clear from natural law. There are, however, many other points about hereditary succession which must be more accurately determined, for instance, the manner of succession, the amount of

inheritance for each of the descendants, the degree of relationship entitling a person to a portion of the inheritance. These points are defined and decided by civil law.

‘Hereditary succession’ is the right to succeed to the property and rights of a deceased person. Hereditary succession may be either *testamentary* or legal. It is termed testamentary, when the right of succession to the property and rights of the deceased is determined by the ‘last will and testament’ of the deceased made before death. It is termed legal, when the deceased has made no last will for the disposition of his property and rights, but dies ‘*intestate*’; the disposition is then made according to the statutes of civil law.

When the death of the testator occurs, the heir does not automatically obtain his inheritance. He must express his *acceptance* if he desires to receive the inheritance. If he accepts, he becomes the rightful heir to all the goods and rights of the deceased, and he must also assume all the obligations and debts of the deceased within the limits of the amount of the inheritance; ‘personal’ rights and obligations, however, namely, those which the testator had and which can be carried out only by himself, cease with his death. The heir, of course, need not accept the inheritance; if he refuses, the civil law decides what is to be done with the inheritance.

Absolutely speaking, a person has *no obligation to make a testament*, because his descendants will succeed to his property even if he dies *intestate*. At times, however, there may be an obligation to make a will. In particular, a person

may be bound in conscience to make a will in order to satisfy an obligation of restitution, or to fulfill a promise of justice, or to prevent discord and litigation. The duty of natural law demands only that his *children* receive so much of his goods as is necessary for them to live according to their proper state of life; if the children are unworthy, he may cut them off from their inheritance, except for the minimum amount prescribed by civil law. By natural law the testator, after providing for his children, is seriously bound in conscience to provide also for his wife, brothers, and sisters sufficiently to relieve their grave poverty, if the inheritance is large enough for this assistance; but if these persons are able to support themselves, the testator has no strict obligation to remember them in his will.

Promises, donations, and testaments are unilateral contracts. Among these the last will and testament is obviously the most important in its social effects.

Bilateral contracts imply an obligation binding on both contracting parties. They are based on a certain event or on chance. Bilateral contracts based on a *certain event* are deposits, commodates, commissions, loans, buying and selling, hiring, partnership, and exchange.

Deposits

A *deposit* is a contract by which something is taken over by a person to be guarded and to be returned later to its proprietor in its natural condition.

The *custodian* has certain obligations with respect to the deposit. He must guard the deposit with as much diligence

as he would his own property of equal value. To use the deposit for his own benefit, he must have the expressed or the tacit or at least the reasonably presumed permission of the owner. He must return the deposit to the owner whenever the request is made, unless a definite time for the return has been stipulated in the contract. He also has the obligation to repair any damage which may have occurred to the deposit while in his custody, if the damage occurred through his fault.

The *depositor* also has obligations. It is his duty to pay all expenses which the custodian incurs in guarding the deposited object. It is also his duty to indemnify the custodian for all damages which he suffers while guarding the object; this indemnification must be made before the sentence of the court if moral guilt is involved, but after the sentence if only legal guilt is involved. Thus, if John stables his cows in Peter's barns, John must pay for their keep; and if Peter's cows become infected with tuberculosis through contact with John's cattle, John must indemnify Peter for the damage.

Commodates

A *commodate* is a contract by which a thing is turned over to someone with the right to use it for a certain time and with the obligation to restore it to the owner after use. A commodate is a 'gratuitous' contract; if a price were demanded and given for the use of the thing, the contract would be a contract of hiring, not lending. The object is of

such a nature that it is not consumed by use, because the object itself must be returned.

The *borrower* has *obligations* concerning the borrowed object. He may not use the object except for the purpose specified; otherwise he violates justice. He must pay all ordinary expenses connected with the use of the object. He must take proper care of the object while it is in his possession; if damage is done to it through his fault, he has the duty to indemnify the owner. Since the object is given for use for a specified time only, the object must be returned promptly after the expiration of this period of time. Any expense incurred by damage to the object because of use not mentioned and intended by the contract must be borne by the borrower.

The *lender* also has obligations. He must make known to the borrower any harmful defects existing in the object; if he acts in bad faith, he is bound to restitution for any losses incurred by the borrower. Ordinary expenses must be borne by the borrower but extraordinary expenses by the lender. He may not reclaim the object before the expiration of the time specified except in an important and unforeseen contingency. If the object should perish during the specified time of the contract, through no fault of the borrower, the owner, strictly speaking, must bear the loss, because the object belongs to him.

Commissions

A *commission* is a contract by which one person accepts the agency to do business in the name of another. It is either a

gratuitous or an onerous contract. If the agent is paid for his service, the contract is 'onerous'; if not, it is 'gratuitous.'

The agent or broker *accepting* a commission has definite obligations. He is bound to exercise as much diligence and fidelity in transacting the business entrusted to him as if the business were his own; and more, if he accepted payment for the work. The terms of the contract must be rigorously fulfilled; any losses resulting from his failure to do so must be borne by the agent himself. All profits go to the person who gave the commission, unless otherwise agreed upon. The agent must repair all damages resulting from his culpable negligence in handling the commission.

The person *giving* the commission has the following obligations. He must fulfill all obligations lying within the scope of the contract. He must pay all necessary expenses connected with the execution of the commission, according to the terms of the contract. He must also reimburse the agent for all damages sustained without his fault, but not for damages brought on by some accident.

A *loan* is a contract by which the ownership of an object consumable in first use is transferred to another with the obligation that an object of a similar nature and quality be returned at some specified time. The loaned object is consumable 'in first use.' This element may be taken in the sense that the object is destroyed physically when used, such as grain or wine; or in the sense that it is used in a way which makes it impossible that the identical object be returned, such as money for purchasing or cloth for making a garment. In a loan the ownership of the object is transferred, because the object is destined to be consumed

in first use and only an owner has the right to destroy an object.

Charity demands that one person come to the assistance of another person in distress; hence, charity may demand that the *loan* of an object be granted to a person in need of it, and that *without compensation* for the loan. It follows that one is obligated by charity to make a loan to an indigent person, if the latter needs the loan and is able to repay it later, and if it can conveniently be done; if there is little hope for repayment, it will suffice to give him an alms. Charity may also obligate a person to make a loan to a wealthy man if he is in momentary need. But charity never obligates anyone to make a loan, so that the borrower can make a profit out of the loan; need, not profit, is the reason for charity.

Since ownership is transferred in a loan, the *lender* has the obligation to notify the borrower of any important defects in the article loaned. If he is morally delinquent in his failure to give proper notification, he is responsible for any damage resulting therefrom. He may not demand the return of the object before the expiration of the time fixed by mutual agreement; if no time was fixed, he must at least give the borrower enough time to use the object. If the borrower desires to return the object before the expiration of the specified time period, he should accept the object when offered.

On his part, since he has received the ownership of the borrowed object, the *borrower* assumes all responsibility for the object once it has passed into his possession. He must return an object equivalent in kind and quality at the

time stipulated; if he fails to do this through his own fault, he is responsible for all losses suffered by the lender. If a general inflation sets in between the time the loan of money was made and the time the contract calls for repayment, the borrower, in all probability, has no strict obligation to pay more than the sum loaned, because the calamity of a general inflation affects all people alike.

Strictly speaking, a loan is a *gratuitous contract*, so that it would be *unjust to exact a fee* for the use of something which is consumed in first use. Such an object has no value except its use, just as the value of the substance of wine is identical with the value of its use as a beverage. Whoever, therefore, would demand a price for the use of a loaned object would be like a wine merchant who would charge a price for the wine and also a price for the use of the wine; the wine merchant would act unjustly, because he would charge two payments for one and the same thing. *Per se*, therefore, to charge interest for money loans is usury and morally wrong.

Per accidens, however, because of the methods of modern business, there are a number of *extrinsic titles*, based on *just compensation*, which make it morally permissible for a moneylender to exact interest on money loans. The objects of ordinary loans, for example, wine, grain, wood, coal, cloth, are destroyed or substantially altered in first use; but money as a medium of exchange is a commodity in a class by itself. The lender loses the gains he might have made if he invested his money instead of loaning it to another; according to some authors, this is the extrinsic title of *cessation of gain*. The lender runs the risk

of losing his money because the borrower may be unable to repay the loan; this constitutes the extrinsic title of danger of loss. The lender may suffer a positive detriment to his finances by the very fact of making the loan; this constitutes the extrinsic title of emerging damage. Then there is the necessity of forcing the borrower to return the loan at the specified time, since borrowers are notorious for desiring an extension of time; this gives rise to the title of a *conventional penalty*. The floating of large loans is a practical necessity in modern times in order to stimulate extensive industries for the benefit of the population in general; as a result of this trend toward large-scale business, governments have encouraged people of means to invest their capital in such enterprises, permitting a moderate interest return on their investment. Many authors, therefore, add the *title of civil law* to the others. Economic conditions thus justify the taking of interest, provided the interest rate is not exorbitant.

Just what rate of interest should be considered 'reasonable and just' depends to a great extent on the circumstances of time, place, and person. The general judgment and practice of conscientious business people ordinarily will be a good norm for estimating a 'reasonable and just' rate of interest. Usually civil laws, reflecting the attitude of the average citizens, regulate prevailing interest rates, so that usurious rates are proscribed and punishable in court.

While the question of charging a fee for a loan pertains mainly to money loans, other types of loans may often acquire the same status as that of money in business, so

that *just compensation* applies to them also; hence, the charging of a fee for them will also be justified.

As a rule, an interest rate of 5 or 6 per cent is reasonable and just. If considerable risk is involved, even an interest rate of 10 per cent or more is justifiable. To charge an exorbitant rate of interest, particularly when a person in need is practically forced to apply for a loan, is *usury*. Usury is really a form of theft and violates commutative justice; hence, the usurer is bound in conscience to make restitution, just as in the case of theft.

Buying and Selling

Buying and selling is a contract by which the two contracting parties mutually agree to deliver merchandise for a price. Three things are required for this contract: a mutual agreement between seller and buyer; a movable or immovable article whose possession is to be delivered by the seller to the buyer; a certain amount of money as the price of the article to be delivered.

There are a number of obligations incumbent on the *seller*. With regard to the *object* to be sold, he has the obligation to sell the kind of object the buyer wants to contract for. If it is not the identical kind of object, it must be at least morally the same, so that it serves equally as well for the purpose intended by the buyer. The seller must be the actual owner of the object he sells. If the object actually belongs to someone else, but the seller acts in good faith, he is naturally entitled to the purchase price until actual ownership is proved; if he acts in bad faith, he is

guilty of fraud and must make good all losses of the buyer resulting from the sale. With regard to *defects* which affect the value of the article, a distinction must be made. Defects which render the articles useless or harmful are 'substantial' defects and must be manifested to the buyer, because otherwise he would not be buying the object he requested; failure to reveal substantial defects makes the contract void. 'Accidental' defects, which merely render the object less suitable, do not make the contract void, so long as the price has been lowered in proportion. If the buyer asks about possible defects, the seller must make known even the accidental defects; in the latter instance, if the seller did not manifest the accidental defects, the contract is voidable. With regard to the *delivery* of the merchandise, the seller must live up strictly to the terms of the contract concerning the object, the time, the place, and the manner of delivery. The seller is the custodian of the merchandise until delivered. Damage done to it in the meantime must be repaired by the seller, if the damage occurred through his fault; if the damage occurred by an accident for which he was not responsible, both he and the buyer must abide by the decision of the civil court, provided the seller refuses to repair the damage of his own accord.

The *buyer* also has certain obligations. If the seller is unaware of the true value of the merchandise offered for sale, the buyer must either warn him or offer him the lowest just price. The buyer must pay at the time stipulated in the contract; if no definite time is set, he must pay when he takes possession of the merchandise. He must accept the merchandise contracted for and at the time set in the

contract; if no time limit was specified, the contract goes into effect immediately.

Buying and selling bring up the important question: What is a *just sales price*? The price of an article, theoretically at least, is supposed to be a measure of its value. The 'value' of a thing is the common estimation of its worth among people of a certain region, and this estimation depends mostly upon the usefulness of an object to satisfy some human need. This usefulness of a thing is its 'use value.' A just price, therefore, is a price which is equivalent to the value of a thing. Money is the universal medium of exchange. The use value of one thing in relation to the use value of another thing is measured in terms of money. The value of an article in terms of money, therefore, is the price which should be demanded and paid for that article. A 'just' price is thus seen to be the price judged to be equivalent to the value of the article which is offered for sale or which someone wants to buy.

Moralists distinguish between three kinds of prices: legal, natural or popular, and conventional. The *legal* price is the price fixed by the civil authorities. Price fixing is sometimes resorted to in times of national emergency, such as a war or a famine. Since the government fixes prices for the common good of all citizens, the legal price is a matter of conscience. The *natural* or *popular* price is determined by the common estimation of the people living at a certain time and in a certain region. The *conventional* price is the price of an article determined by the free agreement of the buyer and seller.

Under *ordinary* circumstances, in the absence of a price fixed by the government, the just price is the *natural* or *popular* price. Whatever exceeds the maximum natural price commonly paid or falls below the minimum natural price commonly paid is unjust. If an object has a special sentimental value for the owner, he may charge more than the maximum price.

And if the owner wants to get rid of his merchandise by all means, he may offer it for a price lower than the accepted minimum price. But if he intends to 'freeze out' his competitors from the market by drastic underselling, so as to control the market later on for his own profit, he acts unjustly. 'Bargains,' an institution common to most merchandising concerns, are intended to attract customers and are morally permissible, because their effect on the general price level is only temporary and does not force competitors out of business.

The *conventional* price prevails in the selling and buying of articles which lie outside the scope of ordinary business and have no legal or natural price. The conventional price is determined solely by the desire of the buyer to possess the article. Rare books, manuscripts, paintings, collectors' items, etc., belong under this heading. Here everything depends on what the buyer is willing to pay and what the seller is willing to accept.

Trusts and monopolies present a special problem. A *trust* is a permanent organization which controls the commercial policy of a number of independently operated companies; it is the purpose, or at least the tendency, of such a trust, if strong enough, to control the prices in its respective

commercial field by suppressing or disregarding competition. Trusts tend to effect a monopoly. A *monopoly* is the exclusive control of the supply of a particular commodity in a given market. Monopolies are either public or private. *Public legal* monopolies are authorized by the government for its own use. All governments have a monopoly of the postal service; some have a monopoly of the railroads, some of the telegraph or telephone services, and so forth. *Private legal* monopolies are operated by a private company with the permission of the government; for example, some companies are granted the exclusive right to furnish light, electricity, streetcar service, water, and so on. A *natural* monopoly is one which results from a natural limitation of resources, as when one company controls the entire output of a commodity, such as gold, aluminum, uranium, diamonds, and so on, due to the limited area in which these raw materials are located. *Organizational* monopolies result from the sole possession of certain facilities, making competition impossible or impractical, such as telegraph and telephone service, railways and steamship lines. Sometimes organizational monopolies arise through the use of a secret process in the manufacture of goods, the secret being held by a single person or company.

Public legal monopolies are instituted for the general welfare and for the purposes of revenue; almost any price may be charged for the services given, because only legal justice, not commutative justice, is involved. *Private legal* monopolies may charge only a reasonable price. *Natural* monopolies may not charge more than the maximum price which would prevail if no monopoly existed. The same

principle applies to *organizational* monopolies. Just what the maximum price would be is not always easy to determine. Since the common good is directly involved, the civil authorities have the right to control trusts and monopolies and fix a reasonable price.

Renting and Hiring

Renting and hiring are contracts by which one party obtains the right to the use and usufruct of a thing (except money) or of services or of labor for a definite price. The thing rented may be movable property, such as an animal or a machine, or immovable property, such as land or a house; it may be certain services, such as the use of water power; and it may also be the labor of a person. The direct dominion of the thing hired still belongs to the owner; what is rented or hired is the indirect dominion of the use or usufruct of the property.

This type of contract is a form of *sale*, because the right to the use and usufruct of certain things is bought by one party and sold by the other. The principles governing buying and selling also govern renting and hiring.

A *landlord* is entitled to a reasonable return on his investment; but he may not charge an exorbitant rental because of The *third* type of partnership is the *holding company*. Holding companies own and control the stocks or securities of a number of companies or corporations; the interest or dividends derived from these stocks or securities constitutes the income of the members of the holding company. Since the ownership of 51 per cent or more of the

stock gives control of a company or corporation, it will readily be seen how a holding company can control a number of subsidiary corporations through the medium of a capital investment much smaller than the combined capital investment of the subsidiary corporations as a whole. Furthermore, holding companies can be pyramided, so that one supreme holding company can control a number of other holding companies, while these in turn control a large number of subsidiary corporations; the control is usually exercised through the medium of 'interlocking directorates.' While holding companies, in and for themselves, are legitimate and licit associations, it is obvious that they tend toward *monopolistic control* with an octopus-like strangle hold on all the business in a given field. Holding companies are thus a distinct menace to the social welfare of a nation and may even threaten the very existence of organized government. When this happens, they must be regulated by *civil law* for the common good or, if regulation is ineffective, even be dissolved as detrimental to the state and public welfare.

Exchange

Exchange is a contract by which money of one kind is changed into money of another kind with a moderate fee for the service rendered.

The money-changer may do a hand-to-hand business, changing one kind of money into another kind on the spot, as is the custom at stations along the frontier dividing two countries. It is a convenience for the benefit of people

passing from one country into another. There is, however, also a type of long-distance exchange, usually conducted by banking houses with international connections, for the convenience of persons desiring to send money to persons or business concerns in other countries.

To be *just* and *equitable*, the money given must be of the same value as the money received, with due regard to possible fluctuation in the rate of exchange existing in the currency at the time. The fee exacted for exchange must not be exorbitant but proportionate to the service rendered. This fee is determined by the customary practice prevailing at the time among reputable money-changers. As in most types of contracts, the civil law may prescribe what constitutes a maximum fee.

The contracts just treated are the main types of bilateral contracts based on a definite event. Each type has many varieties, depending on the terms incorporated in the contract.

Besides these contracts there are bilateral contracts of a totally different character based on an event determined by the *element of chance* as the deciding factor in the terms of the contracts.

In the bilateral contracts just considered there is almost always an element of uncertainty involved; that is why it is necessary that contracts bind both contracting parties. But the uncertainty is the uncertainty which accompanies all human activities. These contracts are concerned with definite objects, definite persons, and definite services; in other words, an equality exists between what a party gives

and what the same party receives in return. There is always a service rendered and a price for it.

In contracts based on a chance event there is *no service rendered* for which one is entitled to receive payment. Such contracts have this in common that they offer a reward without any service, of benefit to the other contracting party, having been performed. And these contracts grant no absolute right to any particular object, but only to the *hope* of being lucky enough to win something which depends entirely on a fortuitous event over which no one, if the affair is conducted honestly, has any control. The outcome of the contract is the result of *chance*.

There are five main types of contracts based on chance: betting, gaming, lottery, insurance, and speculation. A few words on each.

Betting

A *bet* is a contract by which two or more persons, disputing about the truth of a thing or about an event, agree among themselves that the winner of the dispute shall receive a reward.

By the very terms of the contract, therefore, it is presupposed that a real (not a feigned) dissension exists among the disputants concerning some fact. The fact must be uncertain to both parties, so far as the *objective conditions* are concerned, although each person may be subjectively certain that he is correct in his judgment. It would be unjust for anyone to make a bet about a thing or an event, if he had previously verified the objective

conditions which are the point of the dispute. Such a person does not base his contract on a 'hope,' but on a 'certainty,' and so he really risks nothing; on the other hand, he actually deprives his opponent of all hope to win and forces him to pay without any chance of winning. To be just, therefore, there must be an *equality of risk* and also an *equality of reward*. If one of the parties spontaneously offers odds, the payment must be made according to the odds stipulated.

However, bets must not only be just; they must be *licit*. Bets are licit under the following conditions: if the matter of the bet is morally good or at least indifferent; if an honorable motive exists for the bet, such as recreation or the incentive to discover the truth about a fact; if the amount of the bet is not beyond reason and is within the means of the betters, so that no duties of charity or justice toward others are violated.

Gaming

Gaming or gambling is a contract by which two or more persons, engaged in a game of chance, agree among themselves that the winner of the game shall receive a certain reward. Almost innumerable varieties of gambling games exist, among them card games, dice games, roulette, bingo, slot machines.

To be *just*, gambling must be done without cheating, and there must be a moral equality for all persons with regard to the hope of winning and the risk of losing. The use of fraudulent means voids the contract and brings with it the

obligation of restitution. When the expertness of one player practically eliminates the element of chance in his favor, the equality of hope and risk is not in the game, and the loser is not obligated to pay, unless he was aware of the other's proficiency and still decided to play. Similarly, all parties must enter the game of their own free will. It would be an invalid contract, therefore, to force someone to play the game or to play with a person who is mentally incompetent, such as a half-drunken person or a half-wit. Finally, to be just, it is necessary that the player be entitled to risk the loss of the stakes with which he is playing. Thus, for example, if a player needs his money for the support of his family, he acts unjustly in risking it by gambling.

To be *licit*, the game must be honest in itself and in all its circumstances, and the stakes must not be too high. Ordinarily speaking, legitimate gambling debts, all things being equal and fair, bind in conscience. If the civil law forbids gambling, a distinction must be made: if it prohibits and voids all gambling contracts, the contract is simply invalid from the start; if it merely prohibits gambling by means of a penal law, the contract itself is valid, but the gamblers can have no recourse to the courts to enforce the contract.

Lottery

A *lottery* is a contract by which a person, upon payment of a certain sum of money, acquires the right of obtaining an article or money, if the chance he holds wins.

A lottery, to be *just*, must be conducted without fraud. If the lottery is manipulated so that one or the other person is made to win, injustice is committed against the other participants, and their money must be refunded. Furthermore, in order that a lottery be just, there should, theoretically at least, be an equality between the money taken in and the value of the prizes given out, so that the price paid is proportionate to the possibility of obtaining a prize. In practice, however, this proportion is seldom found. Private concerns run. a lottery for a reasonable profit; governments, for revenue; charitable organizations, for funds to carry on their activities. This being understood, all participants are aware that their chances of winning a prize are mathematically below theoretical equality; it is assumed, therefore, that they are willing to make a donation of the money which is in excess of the value of the prizes offered in the lottery. If deception has been practiced in this respect by those who operate the lottery the lottery is conducted under false pretenses, injustice is committed, and the participants are entitled to reimbursement.

Insurance

Insurance is a contract by which one of the contracting parties obligates himself, upon the payment of a premium, to compensate another for any damage or loss in his person or property resulting from some untoward event.

The matter of an insurance contract is the danger of damage or the risk of loss which is constantly present with respect to persons and things. Persons and things can,

therefore, be insured against almost any kind of damage, injury, or loss. The insurance company makes statistical surveys of the various kinds of risks and charges its premiums accordingly. Civil law demands compliance with certain very definite regulations, so that insurance companies will always be solvent under normal conditions of operations and be able to meet their obligations. Since future contingent events, unforeseen at the time the contract is made, are a vital factor in the contract, neither contracting party can be certain if or when compensation for damage or loss will have to be made; it may occur soon or late or never, depending on the type of insurance and the vicissitude of circumstance.

In order that an insurance contract be *just*, a number of conditions must be fulfilled. There must be proper proportion between the risk accepted by the company and the premium demanded for insurance. The insurance company is entitled to a moderate profit on its capital investment and to the necessary expenses for equipment, management, salaries, etc., all of which will naturally be included in the premium money received. It would, however, be unjust for a company to charge excessive premiums in order to be able to give enormous salaries for officials. Furthermore, fraud must be excluded from the transactions. If the applicant fails to reveal any important circumstance which notably increases the risk assumed by the insurance company, so that the company would not have issued the policy had it known of this circumstance, the contract is void because of a substantial defect. Failure to reveal a minor defect does not automatically void the

contract, provided the insurance company would in all probability have made the contract anyhow; but the insurance company, upon discovery of the added risk, may raise the premium rate or apply to the courts for annulment of the contract. Finally the insurance company must possess the necessary funds to cover any damage specified in the policy, because its right to the payment of premiums is dependent on its ability to pay the indemnities stipulated in the contract. This does not mean that the insurance company must have enough funds on hand to pay all indemnities at once, so that, for example, it were able to cover the losses of all houses in a city destroyed simultaneously by a complete destruction of the city through bombing during a war; its liabilities are calculated on the basis of *probable* losses in *normal* times, and that is all the risk it can be expected to assume at the time the contract is made.

Insurance of persons and things has a tremendous social value. For this reason the civil authorities have the right and the duty to make laws safeguarding the interests of both the public and the investors, and these laws are binding.

Market Speculations

The *exchange* is a forum in which the buyers and sellers of stocks, bonds, and other commodities congregate for negotiating contracts of purchase and sale relative to these items. We thus speak of the stock exchange, the grain exchange, the cotton exchange. Exchanges are a practical

necessity in our times, due to the existence of the number of investors in large corporations. It is convenient to have a central forum for the quick purchase and sale of such commodities and for the determination of a fair price in buying and selling them. There is, therefore, nothing inherently wrong in the operations of an exchange, such as the stock market or the grain market. Operators often desire to buy or sell large quantities of stocks or provisions, and the logical place for these transactions is the exchange, because it is there that operators with ample funds are to be found. The mere fact that the amount of shares transferred involve huge sums of money is of no particular moral significance in itself; the moral principles governing buying and selling on a small scale also govern buying and selling on a large scale.

When such commodities are bought and sold on the exchange, with a direct and immediate transferal of the ownership of the commodities themselves, the contract is a contract based on a certain event. However, oftentimes contracts are made with the sole end of amassing a fortune through reliance on a *contingently future* increase or decrease in the price; since no one can predict with certainty what the price of commodities will be, the element of chance enters into such contracts, and the operation becomes speculation, with the possibility of gaining or losing a fortune in short order. Speculation on the exchange is thus a form of *gambling*.

In itself, the endeavor to make a profit through buying and selling, even when chance enters into the transaction, is something indifferent and therefore not morally wrong.

However, unscrupulous speculators, in their greed for sudden riches, sometimes do not hesitate to employ fraudulent devices and methods to influence the rise and fall of prices and twist the market to their own advantage. Gain for one means loss for another. The unjust enrichment of the speculator means the unjust impoverishment of someone else. Through his nefarious manipulation of the market the speculator in all too many instances wipes out the savings of hundreds and thousands of small investors who 'played the market' in a desire to increase their savings. Injustice does not cease to be injustice, simply because a clever speculator is a respected citizen and does not have a personal acquaintance with the persons he has robbed of their possessions. The principle ruling the transactions of the speculators on the exchange may be the jungle law of 'dog-eat-dog,' but the moral law of justice is still the supreme law of humanity and binds the stockbroker as well as it does the butcher and baker.

These, then, are the various titles which confer ownership of a specific, determinate thing on a person. Entire books could be written, and have been written, on each of the modes of acquiring private property. Space does not permit more than the briefest outline of the main kinds of titles and the moral principles involved in their operation, but the outline given should be of some help in understanding these basic factors in the relationship of individuals and groups of individuals toward one another.

Summary of Chapter XVII

Without a title there can be no ownership. This chapter treats of the various titles to ownership. For details, consult the text. There are *three original* titles: occupation, accession, and labor. There are *two derived* titles: prescription and contract.

1. *Occupation*. This is the effective seizure and possession of an ownerless object with the intention of making it one's property. *Three conditions* are required: that the thing have no owner; that the thing be seized; and that there be the intention of making it one's own.

2. *Accession*. Accession is the mode of acquiring ownership by means of some addition to one's property. This addition will be either *natural or industrial or mixed*.

3. *Labor*. Labor is human industry which produces goods of some sort. Only with respect to its own proper fruits can labor be regarded as a natural and original title of dominion.

4. *Prescription*. It is the mode of acquiring ownership or extinguishing a debt by the continuous possession of a thing for the time and in the manner prescribed by positive law. Prescription is either *acquisitive or extinctive*.

The *conditions* required for the validity of 'acquisitive' prescription are: aptness of the object; good faith; a title; continued possession; proper time. The conditions required for the validity of 'extinctive' prescription are: prescriptibility of the right or debt; non-use of a right; good faith; proper time.

5. *The Nature of Contracts.* A contract is the agreement between two or more persons to transfer a right to do or not to do something. It refers either to a 'thing' or to an 'action.' *Four conditions* are essentially necessary for a valid contract: suitability of the matter; competence of the contracting persons; mutual consent; and cause of the consent.

6. *Kinds of Contracts.* From the standpoint of their effect, contracts are either 'unilateral' or 'bilateral.' From the standpoint of their *purpose*, either 'gratuitous' or 'onerous.' From the standpoint of their *mode* or manner, either 'consensual' or 'real.' From the standpoint of their *matter*, they are either based on a 'certain event' or on 'chance.' From the standpoint of their *conditions*, they are either 'pure' or 'qualified.'

All contracts can be grouped under *three headings*: unilateral contracts; bilateral contracts based on a certain event; bilateral contracts based on chance. The unilateral contracts are: promise, donation, and testaments.

7. *Promise.* It is an act by which one person obligates himself gratuitously to another to do or to omit something, and the promise is accepted by the one to whom the promise is made. Whether the promisor is obligated from fidelity or justice, depends on his intention.

8. *Donation.* It is the act by which one person transfers the perfect dominion of all or part of his property to another. To be valid, the donee must express his acceptance of the donation.

9. *Testaments.* A testament or last will is the act of a person by which he ordains what disposition shall be made

of his goods after his death. In virtue of the natural law the descendants of a person possess the right of hereditary succession. Hereditary succession is either 'testamentary' or 'legal.' The heir must 'accept' the inheritance in order to succeed to all rights and obligations of the inheritance.

10. *Deposits. Bilateral* contracts imply an obligation binding on both contracting parties. Bilateral contracts based on a *certain event* are: deposits, commodates, commissions, loans, buying and selling, hiring, partnerships, and exchange.

A *deposit* is a contract by which some thing is taken over by a person to be guarded and to be returned later to its proprietor in its natural condition.

11. *Commodates.* A commodate is a contract by which a thing is turned over to someone with the right to use it for a certain time and with the obligation to restore it to the owner after use.

12. *Commissions.* A commission is a contract by which one person accepts the agency to do business in the name of another.

13. *Loans.* A loan is a contract by which the ownership of an object consumable in first use is transferred to another with the obligation that an object of a similar nature and quality be returned at a specific date. *Charity* may demand that the loan of an object be granted to a person in need of it, and that *without compensation*.

Due to a number of *extrinsic titles*, based on just compensation, it is morally permissible for a moneylender to exact *interest* on money loans. If an exorbitant rate is exacted, it is 'usury.'

14. *Buying and Selling*. It is a contract by which the contracting parties mutually agree to deliver merchandise for a price.

A *just sales price* is mandatory. A price is either *legal*, fixed by law; or *natural (popular)*, fixed by popular estimation; or *conventional*, determined by the free agreement of buyer and seller. Ordinarily, the natural or popular price is the just price.

Trusts and *monopolies* have a tendency to control the price of commodities beyond reasonable limits, to the detriment of public welfare.

15. *Renting and Hiring*. These are contracts by which one party obtains the right to the use and usufruct of a thing (except money) or of services or of labor for a definite price. These contracts are a form of *sale* and are governed by the principles of buying and selling.

16. *Partnership*. This is a contract by which two or more competent persons place their money, effects, labor, and skill, or at least some of these items, in lawful commerce or business, with the agreement that the profits and losses shall be shared between them in definite proportions. There are three main types: the firm or company; the corporation; the holding company.

17. *Exchange*. Exchange is a contract by which money of one kind is changed into money of another kind with a moderate fee for the service rendered.

Besides these contracts there are bilateral contracts based on an event determined by the *element of chance*: betting, gaming, lottery, Insurance, and speculation.

18. *Betting*. Betting is a contract by which two or more persons, disputing about the truth of a thing or about an event, agree among themselves that the winner of the dispute shall receive a reward.

19. *Gaming or Gambling*. This is a contract by which two or more persons, engaged in a game of chance, agree among themselves that the winner of the game shall receive a certain reward.

20. *Lottery*. This is a contract by which a person, upon payment of a certain sum of money, acquires the right of obtaining an article or money, if he should happen to hold the right number.

21. *Insurance*. Insurance is a contract by which one of the contracting parties obligates himself, upon payment of a premium, to compensate another for any damage or loss in his person or property resulting from some untoward event. Liabilities are calculated on *probable* losses in *normal* times.

22. *Market Speculation*. Commodity exchanges are a necessary convenience in our day of 'big business.' But *speculation* on the exchange is a form of gambling. When fraudulent methods are used to influence the rise and fall of prices, speculation is unjust.

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Chapter 18

WORK AND WAGES

LABOR IS A TITLE TO OWNERSHIP OF PRIVATE PROPERTY. LABOR adds value to an object upon which human energy is expended. If, then, the workman also owns the raw material or object to which he applies his productive energy, he naturally owns the entire object. The vast majority of workers, however, do not own the materials or machines of industry. They hire out their labor for a definite wage. In this way industry and labor cooperate in the production of material goods. Usually this cooperation is effected through a wage contract.

Since both industry and labor share in the production of the material goods sold to the consumer, the question naturally arises: What share of the returns belongs to industry and what to labor? The problem is one of the most prominent issues disturbing the human relations of present-day society. An impartial analysis of the economic and moral principles involved alone can hope to solve the vitally human problem underlying the relations of industry and labor.

Liberalism and Labor

Economic liberalism and economic individualism are the same thing. Individualism was a reaction against the system and theory of mercantilism in vogue in France during the eighteenth century. The mercantilists maintained that all industry is of such vital importance to the public welfare of a nation that the civil authority of the government has both the right and the duty to supervise and regulate it for the national good. The physiocrats, a group of French thinkers, opposed mercantilism with the doctrine that the authority of the government is a necessary evil and that individual liberty is the greatest good; hence, the authority of the government must be curbed and individual liberty must be given free rein. The physiocrats coined the phrase '*laissez faire*' which, literally, means as much as 'Let (people) do or make (what they choose),' and everything will be for the best. In other words, they advocated *governmental noninterference* in economics, labor, manufactures, industry, commerce, and every kind of business. The physiocrats were followers of F. Quesnay (1694–1774), who propounded a system of political and economic doctrines based on the supremacy of the powers of nature as the source of national wealth and prosperity. The government, therefore, should never interfere with the natural laws which affect the processes of society and industry.

The system of *laissez faire* is termed *economic individualism* in as much as it maintains the political and economic independence of the individual and emphasizes the necessity of the complete liberty of individual initiative,

action, and interests, especially in industry and business. It is termed *economic liberalism* in as far as it maintains that the sole regulative principle of economic life is the law of supply and demand and free competition in the market place. In applying the principle of *laissez faire*, economic liberalism demands freedom of trade, freedom of contract, freedom of competition in the open market, freedom for operation of the economic laws of supply and demand, freedom from interference and restraint on the part of organized social groups and the government. Under such conditions, liberalism claims, the prosperity of the individual will merge into the social and economic welfare of society as a whole. The great protagonists of liberalistic capitalism, who sought to give a scientific and philosophic foundation to the theory and policy, were Adam Smith, Malthus, David Ricardo, Jeremy Bentham, John S. Mill, Herbert Spencer. And so the doctrine of individualism and liberalism, from the latter part of the eighteenth century, became the economic dogma of 'big business,' controlling the greater part of industry up to our day. The jungle law of untrammelled competition forced the weaker business concerns to the wall, so that industry became concentrated in the hands of a few magnates and enormous wealth flowed into the coffers of a small number of families.

The effect of the individualistic and liberalistic policy of industry on *labor* was disastrous. Sweatshop conditions, with long hours of arduous labor and bare subsistence wages for the individual laborer, became the common lot of the workingman. Because he could not support his family on his wages, the mother of the family and even the small

children were compelled to work in the mines and factories at reduced wages, thereby depressing the wage scale to a still lower level and often forcing the father into the ranks of the unemployed. The profits of the industrialist mounted higher and higher, while the living conditions of the laborer became worse and worse. Hiring was done on an *individual* basis, and the laborer had the dire choice of being employed at whatever wage rate the employer offered or starving to death for want of a job.

Every attempt on the part of the wage earners to form a union for mutual protection was fought tooth and nail by most industrial concerns as being contrary to the liberalistic dogmas of free competition and free contract. In all too many instances the laborer had to accept the 'yellow dog' contract which made it a condition of employment not to join a labor union or organization whose purpose it was to bring about better wages or better working conditions. Labor had indeed fallen on evil ways; the average worker in industry was no more than a *labor slave*: his economic oppression was complete.

In sheer desperation and under extreme difficulties the laborers in some industries managed to band together into *labor unions*. Wherever these unions flourished, the condition of the worker, both as to wage rate and to personal safety, improved. Little by little the movement grew. Instead of the individual free wage contract, *collective bargaining* between industry and labor unions assisted the workingman in wresting recognition of his human and social rights from reluctant management. The

laborers ceased to be mere 'hands' and became 'persons' again.

The Champion of Labor

Above the din of the titanic struggle between industry and labor a voice rose championing the *human rights* of labor on *moral grounds*. It was a call to the conscience of mankind. Pope Leo XIII, in his famous encyclical *Rerum Novarum* in 1891, attacked the basic doctrine of economic individualism and liberalism and proved to the world that it was immoral and indefensible. In particular, he attacked three basic concepts of liberalism — freedom of competition, freedom of contract, and noninterference on the part of the state.

He pointed out that *free competition*, within proper bounds, is a source of progress; but when free competition becomes unrestrained and excessive in dealing with human beings, it is a menace to society. Unrestrained competition in the labor market leads to injustice and to the degradation of the human person.

Next, he attacked the liberalistic concept of the *free contract* between employer and employee. Starvation wages, even though agreed upon in a free contract, are unjust; and starvation wages have always been the result of free competition on the part of a heartless and inhuman industrial system which looks merely to profit and the accumulation of wealth in the hands of the owners and considers labor a mere commodity to be hired in the open market at the lowest available price. The laborer in this

concept is a human machine capable of doing work, and his dignity as a human person is completely ignored. Liberalism overlooks the fact that human labor has both an *individual* and *social* character, and the oppression of the individual is always disastrous to the general welfare of society. *Social justice*, therefore, must be an essential element in the attitude of industry toward labor; when social justice is omitted from the human relations of employer and employee, the common good must inevitably suffer and eventually collapse. The employer-employee problem is definitely a *moral problem* and must be solved on the basis of moral principles; to view it as a purely economic problem affecting the individual relations of employer and employee is a grave error, because the general welfare of society, of which industry and labor are integral parts, is overlooked.

Liberalism demanded that the state or government follow the policy of *noninterference* in matters of business and labor, except in the case of breach of contract. This liberalistic doctrine degraded the state or government to the position of a policeman protecting the wage contract, and the contract, needless to say, almost always was made for the benefit of industry and not of labor. Pope Leo inveighed against this perversion of the nature of the state and restored its true purpose of protecting all citizens, especially the poorer classes. "To the state," he said, "the interests of all are equal, whether high or low. The poor are members of the national community equally with the rich; they are real component parts, living parts, which make up, through the family, the living body; and it need hardly be said that they are by far the majority. It would be irrational

to neglect one portion of the citizens and to favor another; and therefore the public administration must duly and solicitously provide for the welfare and the comfort of the working people, or else the law of justice will be violated which ordains that each shall have his due.

When there is a question of protecting the rights of individuals, the poor and helpless have a claim to special consideration. The richer population have many ways of protecting themselves, and stand less in need of help from the state; those who are badly off have no resources of their own to fall back upon, and must chiefly rely upon the assistance of the state. And it is for this reason that wage earners, who are, undoubtedly, among the weak and necessitous, should be specially cared for and protected by the commonwealth."¹ In these words Pope Leo outlined the functions of government, especially in relation to labor. He recommended social and labor legislation to alleviate the harsh conditions of the laboring class, but he did not favor a paternalistic government which would carry all the burdens of the workingman. Rather, wherever possible, workingmen should try to secure their rights through the activity of voluntary associations or *unions*. However, the government should always be ready to step in and secure their rights, when necessary or advisable, by means of legislation and assistance.

Pope Leo's encyclical became the Magna Charta of labor. Since his pronouncements on the errors of liberalism and rugged individualism, governments have turned more and more toward labor and its rights, so that today liberalism in its extreme form is discredited and labor is well on its way

toward proper recognition and treatment. We are now in a better position to formulate the *moral principles* which should govern the problem of industry and labor.

The Factors of Industry

The problem of 'labor' is an integral part of the broader problems of 'production.' It is through taking an active part in the production of goods that labor is entitled to a share of the income derived through the production of goods. Obviously, all who contribute to the production of goods are entitled to a share in the income derived therefrom. Now, there are *four factors* involved in the productive process, and correspondingly there are four classes of *agents* responsible for the productive process. These four factors are land, capital, business management, and labor; and the four classes of agents are the landowner, the capitalist, the businessman, and the laborer.

The *landowner* contributes land as a factor in the productive process from which national wealth is derived. The land may contain mines or timber, or it may be used for agricultural purposes, or it may be used as a building site for a home, a shop, or a factory. His income from land is *rent*, i.e., the price paid for the use of the land. The capitalist contributes his wealth as a factor in the productive process of goods, for wealth employed directly for the production of new wealth is 'capital.' If a capitalist employs his own money in his own enterprise, he is an active capitalist; if he lends his money to others for use in their enterprise, he is a loan capitalist. In either case his

contribution is a factor in the productive process of goods. His income from capital is *interest*, i.e., the price paid for the use of his capital. The *businessman* or *entrepreneur* contributes his energy and ability as a factor in the productive process, because he manages the production and sees to the proper distribution and sale of the finished product. His income from management consists in *profits* or a *salary*. The *laborer* contributes his energy and skill as a factor in the productive process, because he is the one who is immediately engaged in the actual making of goods. It is the laborer who actually tills the soil, does the mining, processes the timber, and operates the tools and machines. His income from labor is his *wages*.

Since there are four factors in production and each contributes its share to the product, each factor has a corresponding *claim to remuneration*, even if more than one factor is contributed by one person or group of persons: the landowner is entitled to normal rent; the capitalist, to normal interest; the businessman, to a reasonable profit or salary; and the laborer, to an adequate wage.

A distinction, however, must be made between these factors and agents, when one judges their relative importance. It is true that all four factors contribute their respective share to the productive process as a whole. However, when each factor is contributed by a different person or group of persons, the factors of land and capital are *passive* factors, while the factors of management and labor are *active* factors. The landowner and the capitalist do not expend their personal energy in the actual

productive process; but the business managers and the laborers actively produce the commodity itself through their knowledge, skill, and energy. In such a case, the landowner and capitalist can use their time and energy for other gainful pursuits, while the businessman and the laborer must give practically all their time and energy to the production of the commodity upon which their livelihood depends. From a moral standpoint of justice, therefore, the businessman and the laborer, as actual co-producers, have the first and greatest claim to remuneration.

The managers of a business or industry have, absolutely speaking, priority for an adequate livelihood from the income of the product, even with respect to the laborers, because they operate the business or industry as such, have a greater responsibility, and assume the risks. Next to the managers, the laborers have priority for an adequate livelihood, because they do the work of production and it is their *sole means of earning a livelihood*.

A Just Wage

It has been the great economic and moral error of individualistic and liberalistic industry to view labor as a mere commodity. Labor is more than a certain amount of energy and skill considered in the abstract. Labor in the concrete is *human* labor expended by a rational human being for human purposes. As such it is immeasurably superior to the energy of an animal or the operation of a machine. The laborer does not work in a factory or on the

farm or in a mine because he enjoys it; he works because he has both the right and the duty to *obtain a livelihood* for himself and, if he is married, for his wife and family. Due to the economic structure of modern society, the only way he can earn a livelihood for himself and his family is to hire out his working capacity to business and industry by contributing his own factor to the productive process and thereby assisting in creating a portion of the national wealth from which all incomes and all prosperity flow for the commonwealth at large. Without his creative activity the nation would sink into utter stagnation and the common welfare would collapse.

Labor, therefore, has a double aspect. It has both an *individual* and *social* function. For the individual it means wages for a personal livelihood, and for society it means the creation of values and the production of goods which are indispensable for the common welfare. On both grounds, therefore, the laborer is entitled to a *just wage*. A laborer is not merely an individual who must be able to live so that he can work and be able to work so that he can live; he is an integral part of society who is supposed to contribute his share to the common good of all and in return share in the benefits of the common good of all. Anything less is an injustice.

The *primary title* or moral claim to a share in the material goods of the earth is the *satisfaction of human needs*. It is precisely the fact of the existence of human needs requiring satisfaction that furnishes the right to private ownership through 'occupation,' through 'production of values,' through 'purchase,' through

‘inheritance,’ and so forth. Human needs are the foundation and justification for all specific titles to the material goods of the earth.

Three principles must be considered in this regard. The *first* fundamental principle is that the earth and its natural wealth were created by God so that *all human beings might sustain life* from the bounty of nature. As a result, all human beings have an inherent right to live off the material goods of the earth. All men possess the same dignity as persons, and in this dignity as rational beings all are equal. Because of this dignity as a person, no human being may be looked upon as inherently inferior to another or as a mere instrument to further the convenience and advantage of another. To look at man in any other way is to lower him to the level of a brute or of a machine. The *second* fundamental principle is that the earth will not yield its riches to man except through the *expenditure of human energy*. The natural fertility of the earth may, in certain localities and climates, offer sufficient food for the bare necessities of life, but even then man must exert himself to reap the harvest. Food, clothing, shelter, and the fashioning of tools will always require labor, so that man, as a universal rule, will not be able to lead a life consonant with his requirements as a rational being without much effort and exertion. Labor, therefore, is necessary in order to turn the potentialities of nature into actualities. The *third* fundamental principle is that all human beings, since they possess the natural right to subsist from the bounty of nature, also have the *right of reasonable access* to the goods of the earth in so far as these goods are necessary for

a livelihood. This means that every person who has the capacity and willingness to work for a livelihood has the natural right to earn his livelihood through work, especially if his labor is the only means at his disposal to earn a livelihood, provided there is the opportunity to exercise this natural right. Whoever hinders him from exercising this right through fraud or force treats him as an inferior being not entitled to the common gifts of the Creator; and whoever employs him at a wage rate which will not enable him to earn a livelihood befitting a human being who is equal in dignity to every other human being, also treats him as an inferior being and uses him as a mere instrument of convenience and advantage. On the basis of these principles it is clear that a *starvation wage* or a mere *subsistence wage* is not in accord with morality, because the essential dignity of man as a human person is violated. More is required to make the laborer's wage a 'just wage.'

The Living Wage

A just wage implies a wage that will give the laborer a *decent livelihood*. The right to a decent livelihood is on a par with the right to life and the right to bodily integrity. Every person, by the very fact that he has the dignity of a human person, possesses the natural, inherent right that his life and the integrity of his bodily members be respected by others. 'Life' and 'bodily integrity' do not mean mere 'subsistence'; they mean a 'reasonable life' befitting his dignity as a human being, and a reasonable life means normal *health* and the opportunity of *self-improvement*

through the development of his *bodily, mental, spiritual, and moral faculties*. These faculties were bestowed on him by the Creator for the realization of his temporal and eternal happiness as the end of his existence, and he has the right to the means which will further this realization, at least in so far as the ordinary conditions of life reasonably permit. To deprive him of these means is a violation of his dignity as a person just as much as to deprive him of life or bodily integrity. Hence, the laborer has a natural, inherent right to a wage which will enable him to share in the material goods of the earth to an extent which will insure for him a decent livelihood, because only a decent livelihood is worthy of a human being.

This does not mean that all persons must have an equal amount of income. Opportunities are not the same for all; nor are the powers, talents, and abilities of all men equal. Wealth, therefore, will of necessity be unequally distributed among men. However, each worker is entitled to a certain *minimum of income* which will enable him to meet the *minimum requirements* of a decent life. These requirements may be summed up as follows: food, clothing, and shelter of a quality and quantity which will give the worker health and reasonable comfort and enable him to live in surroundings conducive to good morals and to the exercise of religion; enough income to provide, through savings, for a modicum of security for the future, according to the ordinary course of human events; and sufficient opportunity for reasonable recreation, self-education, and membership in his church, so that he can improve his higher rational emotions and faculties. Every thinking man will realize that the average

human being, taking time and place into consideration, needs these things to develop his personality.

The just wage necessary for a decent livelihood, as outlined in the preceding paragraph, is termed a *living wage*. Such a wage does not admit of anything approximating mathematical precision, because circumstances change and needs differ with different classes of people. Certainly the *adult male laborer* of average health and physical and mental endowment, if unmarried, is entitled to a living wage, so that he can lead an independent life of his own, without the necessity of having recourse to charity to supply the essential needs of a decent life. The *adult female worker* who is forced to seek employment to support herself also is entitled to a living wage, sufficient to live independent of relatives. Hence, whether industry or the state employs a laborer, he is entitled to a living wage. Ordinarily, of course, a person or company or corporation engaged in business or industry hires the laborer, and they have the moral obligation to supply a living wage out of the income derived from the business or industry; otherwise they unreasonably hinder the laborers access to a decent livelihood on reasonable terms, and his human rights are violated. The reason is clear. The only means to a decent livelihood for the ordinary workingman is his wages, because he gives practically all his time and energy to the productive process as it exists in business or industry. He therefore has the right to be supplied with a living wage by the business or industry to which he contributes his entire services. Without a living

wage he is incapable of meeting the requirements of a decent livelihood.

The employer, quite obviously, is entitled to a decent livelihood himself, according to the standards of the class to which he belongs. He need not cede his right to a decent livelihood to the right of his employees to a decent livelihood. He also has a right to a reasonable return on his investment and also to the interest which he must pay for loans. If, after deducting all necessary expenses, he cannot give his employees a living wage, because the income of the business is not sufficient for this, his moral obligation ceases, so far as paying a living wage is concerned. But he has the duty to improve his business methods, if possible, in order to be able to pay a living wage. If all methods fail, his business is 'uneconomical' and he had better abandon it, because it is a detriment to social welfare. If there is a general 'business depression' throughout the country or in his particular field which makes it impossible for him to pay a living wage, then no moral delinquency is involved and the laborer must suffer with everyone else. The times are simply abnormal. When the 'hard times' give way to better prices and normal wages, the obligation to give the laborer a living wage also returns.

It should be evident that an employer is not obligated to employ any particular person who applies for a job. Hence, he need not employ a person whose ability is below the average and who would not add sufficient value to the product through his labor to warrant his employment; and he may also discharge the below-average laborer who is already employed. If he were to employ such a person or

keep him in employment, the employer would suffer a loss himself, and he cannot reasonably be expected to do this. Under such conditions he may employ a below-average person for less than a living wage, and no injustice is done; the employer has the option of either not employing such a person or of not paying him the full wage given to competent employees.

Under normal conditions, then, an employer is bound in justice to give normal employees a living wage.

The Family Wage

Due to an awakened social conscience, it is now almost universally conceded that the individual worker is entitled to a living wage. We contend, on moral and social grounds, that a living wage, as a rule, implies a *family wage*.

The average male is constituted in such a way by nature and, as a consequence, by the Creator, that he cannot lead a normal life and reasonably develop his personality except in the married state. The average man cannot lead a normal life outside the family; family life is one of his essential requirements for a reasonable existence as a human being. He has the natural, inherent right to take a wife and raise a family. Granted this right and its use, the obligation to support his wife and family in reasonable, frugal comfort follows as a necessary corollary; this obligation is natural and is quite as stringent, on moral and social grounds, as his obligation to maintain his own existence. A man who cannot support a wife and children has no right to get married. However, as was just pointed out, the average man

has the natural, inherent right to get married and raise a family, because that is a demand of nature and a human need which he is entitled to satisfy. Such being the case, and since the support of the wife and family is a natural responsibility of the husband and father, a 'living wage' must be interpreted to mean a *family wage*. Now, the existence of human beings is dependent on the material goods obtained from the bounty of nature, as intended by the Creator of man and of the earth. Hence, the normal man is entitled to reasonable access to the bounty of nature for the reasonable support of himself and his family. In the structure of modern industrial society, however, the great majority of men cannot earn a livelihood except through their wages; only through their wages can the majority of men effectuate their right to a decent livelihood. Hence, the worker has a right to a wage that will not only support himself but also his wife and family. Unless he receive a 'family wage, he cannot maintain his human dignity. A 'living wage and a 'family wage,' therefore, amount to the same thing, because man's need for a family is a personal need and he must be able to satisfy every reasonable need of his personality. To deny him reasonable access to the material goods of the earth, so that he can satisfy the reasonable needs of his personality, would involve a violation of his dignity as a human person. Consequently, his dignity as a human person demands that he be given a wage from the income of industry, to which he contributes all his time and energy in the production of wealth, to support himself and his family.

The *objection* is made, that a worker is entitled to no more than the *value of his services* to industry. This may be good economics, but it is poor ethics. The problem of labor is not a mere matter of economics, because a human being is not a brute or a machine; he is a human person who has definite moral rights and duties, and these rights and duties cannot be ignored in any consideration of the problem of labor. Morality is an integral part of economics. The objection is also made that the *employer has no obligation* to support the family of the laborer because the family is not in his employ and contributes nothing to his products. This, of course, is true. But the laborer has a natural, inherent right to a family and also a natural, inherent obligation to support his family. Since family life is one of his own normal needs, and since he cannot satisfy this need except by means of his wages, he is entitled to a family wage as his legitimate share of the products of industry.

Even from the standpoint of *social welfare*, it must be obvious that a family wage is necessary. Of what practical use is a reasonable living wage for the man as an individual if the family as a social unit cannot have reasonable living conditions? The social welfare of the commonwealth is no better than the social welfare of its constituent basic units. Now, the basic unit of the commonwealth is the family. Hence, if the social welfare of the commonwealth is to be sound, the social welfare of the majority of families must be sound. The majority of the families in the commonwealth, however, are the families of the laborers. The families of the laborers, therefore, must be able to enjoy reasonable conditions, or the social welfare of these families will be in

jeopardy. These families, however, depend upon the wages of the husband and father for their subsistence in reasonable conditions. Consequently, the social welfare of the commonwealth demands that the 'living wage' be a 'family wage.'

In some countries the *Family Allowance System* has been inaugurated, to take care of the family wage. Either as the result of legislation or of voluntary agreement among employers and employees, each employer contributes to a general fund a sum of money determined either by the number of his employees or by the amount of his payroll. At the birth of a child in a family, the wage earner automatically receives an increase in wages, and this increase in wages continues in effect until the child reaches a certain age. In some instances the state contributes its share to this general fund, so that the burden of payment is more equitably distributed among all the citizens of the commonwealth. Voluntary agreements, as a rule, are better than state aid; but, if necessary, state aid should be forthcoming in the interests of social well-being.

Labor Organizations

The view is becoming quite prevalent that society owes every man a living. While this view is patently wrong, society does owe every willing and capable worker the opportunity to earn a livelihood. Industry is not the free and private enterprise of a profit-making economic system that liberalism claimed it to be. The common good of all is not a private affair; it is the responsibility of all citizens of the

commonwealth whether they be industrialists or laborers. All must work together for the common good of all.

So long as the worker has the right to a decent livelihood for himself and his family, he has the duty to work and the right to a job. He has the right to seek a job and working conditions which will assist him in developing his potentialities as a human being. He is not a robot, an animated machine. Industrial relations are not mere dollar-and-cents relations; they are *social* relations, *human* relations. Industry is not an end in itself; it is a means to an end, and the end is the progress and betterment of the human beings engaged in industry, whether on the side of management or on the side of labor.

Management has always been organized. Because of the competitive nature of liberalistic industry, it had to organize to preserve its existence. Industrialists had the right to form organizations, and they never hesitated to use it. The same fundamental right is vested in the workers.

The right to organize is a natural human right.

Man is by nature a social being. By nature man is endowed with the need, the capacity, and the tendency to band together with his fellows and work conjointly for their common interests. Legislation does not confer this right; it is conferred by the very nature of man upon every human being. Legislation merely acknowledges and defends this natural human right. Laborers have as much right to protect their labor interests by *forming labor unions* as they have the right to form a bowling club or a singing society. More so. Because in forming a labor organization they are defending their natural, inherent right to life and a decent

livelihood for themselves and their family as befits their fundamental and essential dignity as rational beings. To deny them this right is to treat them as inferior beings.

The laborer has the right to *decent human treatment* on the part of management with regard to wages, hours of labor, and working conditions. Even when he works, he is a human being and not a machine or slave. Hence, both in the nature of the work assigned to him and in the hours of work demanded of him he may not be used in a manner which would endanger life or limb unnecessarily or exhaust his energy unreasonably. Because industry has neglected its social responsibility in this respect in the past, the workers were forced to fight their own battle for better conditions by joining with their fellow workers in unions. In doing so, they merely exercised a natural right. Neither industry nor the state may hinder them from forming a union for the protection of their common interests and rights.

The natural right to form a union brings with it the further right to have the union defend and promote the interests of the union members. A natural consequence of this right is the election of union representatives upon whom the members confer the authority to act in their name. *Collective bargaining*, therefore, is a perfectly legitimate union activity. In unity there is strength, and in numbers there is power. The individual worker is a helpless creature before the gigantic force of industry. Only through collective bargaining can he hope to attain justice for himself and his fellow workers in all the matters that affect his livelihood for the present and the future, such as adequate wages, job security, decent working conditions,

and provisions against unemployment, accident, sickness, and old age.

It is a false notion to consider management and labor as natural antagonists. Both are required for the success of industry, and the success of industry is necessary for the welfare of everybody. Management and labor must come to the realization that *co-operation*, not conflict, is essential to social welfare. Management has a right to a fair share of the income derived from the products of industry; but so has labor. Nothing is gained when management and labor view each other as enemies who seek to deprive the other of a fair share in the fruits of their joint endeavor. Since both are partners in production, fullest production is of benefit to both, because profits and wages depend on production. Hence, management and labor should co-operate to procure fullest production. Unfortunately, the difference of interests often leads to conflict.

The Right to Strike

A *strike* is an act of quitting work on the part of organized laborers, for the purpose of forcing the employers to comply with their demands for higher wages or better conditions or both.

The *moral justification* of the strike rests upon the accepted principle that individuals, groups, and nations possess the natural right to defend themselves against an unjust aggressor. The strike is a method of defense against injustice.

Voluntary arbitration is the common sense and truly rational way of settling industrial differences between management and labor. Whenever possible, both parties should seek a settlement through arbitration. At best, a strike is open warfare. Obviously, warfare is not preferable to peace. Neither management nor labor desire a strike, because a strike harms both. Labor unions go on strike to correct injustices. Some strikes, of course, are not justifiable, but many, perhaps most, are. Since the laborer has a natural right to a decent livelihood for himself and his family, he also has the right to lay down his tools and refuse to work whenever conditions are such that his right to a decent livelihood is violated, especially when collective bargaining and arbitration fail to do justice to his reasonable demands.

Oftentimes the strike is the only weapon left to the workers to enforce social justice.

In order that a strike be morally justified, certain conditions must be fulfilled. The cause of the strike must be a matter of *strict justice* concerning the welfare of the workers. For labor leaders to call a strike simply to show their power in the industrial world is an injustice against society and the laborers. Since the laborers are the ones whose families suffer most through work stoppage, a strike should not, be called except after a free and secret vote of the laborers themselves. Only after every reasonable method has been used to acquire justice by means of peaceful arbitration, is it permissible to use the drastic weapon of a strike; it must be the *last and only resort* remaining. There must be a reasonable *hope of success*;

otherwise the condition of the worker will be worse afterward than before and his sacrifices will have been made in vain. The *advantages* to be expected from a strike must be noticeably greater than the harm that is prudently anticipated, for the same reason. Extremely grave reasons must be present to justify a strike in industries essential to the welfare of the nation and of the world, such as the coal mining industry, public utilities, and transportation, because such a strike automatically tends to paralyze all other industries and jeopardize the welfare of everybody. The strike must not violate an existing *valid contract*; to violate a contract previously made by collective bargaining is an injustice, and it is morally wrong to seek to remedy one injustice by committing another. *Violence* must be avoided, except in extreme necessity in self-defense against unjust aggressors. *Peaceful picketing* is permissible as a medium of calling the attention of the public to the rightful demands of the workers; it dramatizes the workers' right to just treatment, to freedom of speech and assembly. When picketing leads to violence against persons or property, to disturbance of the peace, or to resistance against lawful authority, it becomes a public menace and is unjust.

The *sit-down strike*, as usually carried out, is morally wrong. It is a bad means to gain a good end. To occupy another man's property against his will is forceful invasion of his rights and a form of violence. A sit-down strike could be morally justified if the workers were part owners of the industry and its machinery of production.

The *sympathetic strike* is one in which workers quit their own work out of sympathy with other workers who are out

on strike. Those engaged in a sympathetic strike have no grievances against their own employers; they go on strike in order to add their support to the demands of the other workers. If the cause of the primary strikers is just and the sympathy strikers do not violate their own contract through work stoppage under the circumstances, they act out of charity in supporting the just cause of the other strikers, and this action is justifiable. However, if the sympathy strikers violate a valid contract to continue working for management, and this contract has been freely agreed to by both management and laborers, they violate justice; to violate justice for the sake of practicing charity is morally wrong. The sympathetic strike, therefore, would be justified in an industry where the unions are organized horizontally according to crafts and the contracts for all crafts terminate simultaneously, so that both the original striking crafts and the crafts striking out of sympathy would no longer be bound by a just and valid contract at the time of the strike. However, to extend a sympathetic strike to several businesses or industries will usually be unjust, because it inflicts serious injury upon employers who have done no injustice to their own workers.

The *general strike*, in which practically all union members of a nation quit work, can hardly ever be right. It is a fight against society, and injustice could scarcely be so general that all workers would be forced to strike in order to obtain justice. However, if the unjust situation is really general and extreme, a general strike may be justifiable on moral grounds.

The lockout, whereby the employer shuts down his business or plant as a protest against what he considers to be unjust demands of those of his workers who are striking, is justifiable, provided he does not violate a valid contract with other workers not on strike. It would, however, be unjust to close down several or all factories, mines, etc., because of the unfair demands made by the workers of one factory, mine, etc.; in this way he would inflict serious harm upon innocent workers without just reason.

The *jurisdictional strike* is called because of a dispute between two or more unions as to which union shall have exclusive jurisdiction over the workers of a certain factory or industry and exercise their bargaining rights. Jurisdictional strikes are not morally justifiable, because there is no just reason in calling such a strike in view of the serious harm done to the employer, the worker, and the public. The matter of jurisdiction should be settled by the vote of the workers; a strike does not settle the issue.

A *boycott* is the concerted action of a group of persons, withholding patronage and purchase of goods from an individual or business concern, for the purpose of forcing the correction of unjust conditions; it is usually combined with deterring others from purchasing the goods of the boycotted individual business concern. A boycott may be morally justifiable. Sometimes the workers of a business or industry have a just cause of complaint, but all efforts on their part to induce the employer to correct the unjust conditions are of no avail. They have not only the right to strike and to refrain from purchasing the employer's products, they also have the right to persuade others not to

patronize the unjust employer; everybody has the right to purchase or not to purchase a certain product, and the worker merely persuades him, because of the prevailing unfair conditions, to exercise this right by not purchasing the product of the unjust employer and thereby forcing the employer to do justice. *Secondary boycotts*, by which economic pressure is brought to bear on other businesses or industries to boycott an unjust employer under threat of boycotting these businesses or industries themselves if they refuse, is usually wrong; these businesses and industries have done no injustice and should not therefore be penalized. It might happen, however, that conditions are so unjust that even other concerns would be bound in charity to support the primary boycott, so as to remedy the original injustice.

Strikes, lockouts, and boycotts are weapons of industrial warfare that are like two-edged swords; they harm both the guilty and the innocent. Because of the emotional atmosphere in which they are used, they can easily lead to disorder and injustice. Self-discipline and a strong sense of morality are required for their proper use and with due respect for the rights of all concerned. Like war, they have no place in a civilized world, unless as a last resort to obtain justice and to defend oneself against an invasion of basic human rights. Unscrupulous and radical labor leaders are all too ready to use these drastic weapons to further their own nefarious ends. While the aims and purposes of unionism in themselves are good and praiseworthy, the actions of radical leaders and labor racketeers have at times thrown discredit on the labor movement. If labor

unions are to gain and hold the respect of the citizenry at large and effectively promote the true welfare of their members, they must clean house by eliminating the radical element in their leadership and show the world that they want nothing more than social justice and genuine industrial democracy. Abuse of power is always obnoxious, whether it exists in industry or in labor.

Closed Shop and Closed Union

The 'closed shop' and the 'closed union' are two of the most disputed questions in industrial relations today. By a *closed shop* is meant a 'union shop.' The employer makes an agreement with the union that all workers in his shop shall be union members in good standing; if they refuse to join the union or sever their connection with the union or fail to remain in good standing they are to be discharged. According to some closed-shop contracts, the employer may hire no one but a union member; according to other contracts, he may hire whom he pleases, but the hired employee must join the union. A 'closed union' is something totally different. A *closed union* limits the number of persons allowed to join the union; when the stipulated number of members has been reached, no new members are admitted to the union until there is a vacancy.

What is the *morality* of the 'closed shop' and the 'closed union'? We are not concerned here with 'legal right,' but with 'moral right.'

In principle, there is *no moral objection* to the 'closed shop,' provided it is freely agreed upon by both

management and labor and is not established by force, fraud, intimidation, or other high-pressure methods of dishonesty. The closed shop is undoubtedly the best means for effective collective bargaining. If handled rightly, it has a definite tendency to stabilize harmonious industrial relations between the employer and his employees, because two such single agencies can co-operate much more efficiently for the mutual benefit of both industry and labor than either one alone. Unionists base their moral right to a closed shop on the social necessity of unions for the protection of the human rights of the workers and on the dictates of justice. It is not just, they claim, that non-unionists should share in the benefits procured through the efforts and sacrifices of the unionists; to deserve these benefits, they should also share in the burdens of union membership. Non-unionists, who oppose the closed shop, claim that the necessity to join the union is an infringement on their freedom and independence of action. There can be no doubt that a certain amount of moral coercion is exerted on the non-unionists in forcing them to join the union or be discharged. It must be remembered, however, that the right to work and to freedom and independence of action is not an absolute right, but a right which is subject to the conditions of social justice and of the common good. Social justice and the common good may demand that a minority group of workers cede personal privileges to the welfare of all concerned. Most of the benefits and privileges enjoyed by non-unionists were not obtained by them through their own individual efforts, but through the bargaining power of the union as an organization. If, then, the closed shop is a

practical necessity for the common good of all workers in the shop, private views and preferences of the individuals and minority groups should, it seems, give way to the priority of the common good of all workers as a body. While this might not perhaps be a matter of strict justice, it can easily be a matter of equity or fairness toward the union workers. The medieval guilds were in a very definite sense closed shops. No one was obliged to join a guild, but only a guild member was allowed to ply his trade or craft within the territorial limits or jurisdiction of the respective guild.

The *morality* of the *closed union* is more difficult to defend. It places a monopolistic control over skilled labor in the hands of a particular union, so that a skilled craftsman who is denied union membership or who applies for membership after the list has been closed cannot find work or ply his trade on a job done under a union contract. Similarly, since the number of apprentices is also limited in a closed union, many persons are hindered from learning the trade. Is this morally justifiable? Does not this discrimination entail an injustice toward other workers?

That the closed union opens the door to serious abuses and is an invitation to labor racketeers to use it for unjust discrimination and bribery, is obvious. And these abuses have occurred. However, abuse is never a valid argument against proper use. Granted, then, that abuses are absent, the *principle* of the closed union, all things being equal, can be defended as *morally justifiable*.

While every capable and willing man has a right to a job in order to earn a decent livelihood, he has no right to a specific job from a specific employer. In some industries the

number of specific jobs for a particular craft is definitely limited. To train more men for jobs than the number of jobs available would place a drag on the labor market, and some skilled craftsmen would thereby be thrown into the ranks of the unemployed. Under such circumstances it is in the interest of these craftsmen themselves that the number of craftsmen be limited to the number of jobs; and that is what a closed union accomplishes. After all, when over a period of years or decades the members of a particular union have fought strenuously to gain benefits and have built up large funds out of their wages for their own financial, educational, and social welfare, it can hardly be called unjust if they refuse to permit an applicant to join their union and share in their hard-earned advantages.

It is a totally different matter if a particular industry is expanding and needs more workers, but the closed union refuses to open its ranks in order to create an artificial scarcity of skilled labor, thus boosting the wage scale and slowing down work in favor of its own privileged members. Due to this artificial scarcity and monopolistic control, the privileged members of the closed union are in a position to loaf on the job or produce inferior work or demand exorbitant wages, without fear of being discharged. This condition is an injustice toward the employer, toward the fellow workers, and toward the consumer who ultimately pays the bills. At the same time the officials of the closed unions are in a position to connive with management (for a consideration, naturally) and suppress every attempt of the rank and file of the workers to better their conditions and exercise their fundamental rights as unionists for an honest

and independent voice in the government of their own affairs. If the leadership is radical, much harm can come to the members of a closed union.

The closed shop and the closed union are not immoral in themselves. Circumstances, however, can make them immoral in practice. Every case will have to be judged on its own merits and demerits. No ironclad rule will fit all instances. So long as management and labor is composed of imperfect human beings, with all the virtues and vices of human beings, the closed shop and the closed union may be either a boon or a bane.

Industry, Labor, and the Public

All too often in the past, industry has exercised a dictatorial policy toward labor and treated its workers as animated machines to be used and discarded at will. And its policy of profit-taking with regard to the welfare of society has been tersely summed up in the slogan of one of its tycoons: "The public be damned." That period of industry is almost over.

As a revolt against the inhuman treatment on the part of management, the labor unions were formed. Their fight against industry was a battle for bread. Unfortunately, unions frequently forget that this battle for bread is a battle for human rights rather than a struggle for industrial advantage.

Both management and labor in all too many cases come to look upon their mutual relations as a private matter affecting only themselves. Each seeks to get all it can from the other, and the *welfare of the general public* is usually

ignored. That day, too, must and will pass. The relations between industry and labor are human and social relations; the welfare of both is an integral part of the welfare of society. The public is a third party in every industrial dispute and settlement.

Some disputes are only remotely connected with public welfare; others, however, are intimately connected, and they affect the public welfare directly and vitally. Among the latter are disputes in the coal industry, the steel industry, the oil industry, the railroad industry, the food industry. Any prolonged interruption of work in such industries causes untold suffering and misery to the people at large. The human rights of the general public must receive prime consideration and may not be disregarded by either industry or labor.

It is the first duty of the *state* to safeguard the common good. The state may not discriminate between one person and another, between one group and another. Before the state all are equal. The state must protect the personal and property rights of all parties. The state, therefore, must favor the common welfare of the public in all disputes between industry and labor. Hence, the state has the duty to avert disaster, and this means that it should endeavor to stave off crippling strikes through *mediation* whenever possible. Industry and labor should be encouraged to settle their differences amicably among themselves, without undue interference on the part of the state. When, however, the public peace and welfare is imperiled, the state has the right and the duty to use *legal coercion* if necessity demands such action. As Pope Leo XIII² put it: "The laws

should fore-stall and prevent such troubles from arising; they should lend their influence and authority to the removal in good time of the causes which lead to conflicts between employers and employed."

When the private rights of industry and labor interfere with the common good, they must give way to the common good, because the latter has precedence by natural law over the former.

The human relations between industry and labor must be grounded on two essentially moral and social concepts: the inviolable dignity of the human person and the supremacy of the common good or public welfare. On this basis alone can their problems be solved to the benefit of all.

Industry and labor will continue to war against one another until each side learns that their interests are interrelated and must be fostered through mutual good will and understanding. Not division, but unity, must become the basis of procedure. Mediation, co-operation, labor-management councils, partnership, and co-ownership in industry will have to take the place of hostility in the human relation of these two supreme groups, or both industry and labor will lose their independence and find themselves engulfed in the chaos of social and economic revolution.

Summary of Chapter XVIII

Labor is a title to ownership of private property. For his work the laborer receives wages.

1. *Liberalism and Labor*. Individualism was a reaction against mercantilism and advocated the liberalistic doctrine of *laissez faire*, with the complete political and economic independence of the individual, demanding freedom of trade, of contract, of competition; freedom for the operation of the laws of supply and demand in the open market; and freedom from interference on the part of government in industry. The effect of this policy of industry on labor was disastrous. The wage earner became a *labor slave*. Finally, in defense of their human rights, the workers formed labor unions.

2. *The Champion of Labor*. Pope Leo XIII, in his encyclical *Rerum Novarum* in 1891, attacked the basic doctrine of economic individualism and liberalism, particularly the concepts of *free competition*, *free contract*, and *the noninterference of the state*, and showed that this doctrine was immoral and indefensible.

3. *The Factors of Industry*. Four factors are involved in the productive process: land, capital, business management, and labor. Among these factors, land and capital are *passive* factors, while management and labor are *active* factors. In *justice*, management and labor have the first and greater claim to remuneration, because their claim rests upon the *intrinsic title* of the creation of new values through the expenditure of personal energy and

skill. For the worker labor is the sole means of earning a livelihood.

4. *A Just Wage.* Labor has both an *individual* and *social* function. The primary title to a share in the material goods of the earth is the 'satisfaction of human needs.' *Three principles* must be considered in this regard: the earth with its wealth was created by God for the sustenance of all men; the earth will not yield its riches except through the expenditure of human energy; all human beings possess the natural right of reasonable access to the goods of the earth in so far as these goods are necessary for livelihood. Since the laborer has only his labor whereby to earn a livelihood, it follows that he is entitled to a *just wage* as his share of the income of industry, and this wage must be more than a 'starvation' wage or mere 'subsistence' wage; otherwise he is treated as an inferior being or mere instrument of convenience and advantage.

5. *The Living Wage.* A just wage will give the laborer a *decent livelihood* befitting his dignity as a human being. *The minimum requirements* of a 'reasonable life' are: food, clothing, and shelter sufficient for health and reasonable comfort in decent surroundings; provision, through savings, for a modicum of security for the future; sufficient opportunity for reasonable recreation, self-education, and membership in his church, so that he can improve his higher rational emotions and faculties.

6. *The Family Wage.* A just and living wage means a *family wage*. Every normal man has the natural, inherent right to take a wife and raise a family, because he cannot lead a normal life and reasonably develop his personality

except in the married state. The obligation to support his wife and family in reasonable, frugal comfort follows as a necessary corollary. Hence, a living wage means not only a wage sufficient for himself, but for his family.

7. *Labor Organizations.* The right of the laborers to organize and *form a labor union is a natural human right*, because by nature man is endowed with the need, the capacity, and the tendency to form a society with his fellows and work conjointly for their common interests. *Collective bargaining* is a legitimate union activity, because it is only by this means that the workers can obtain their just demands.

8. *The Right to Strike.* The *moral justification* of a strike rests upon the morally accepted principle that individuals, groups, and nations possess the natural right to defend themselves against an unjust aggressor. The strike is a method of defense against injustice. In order, however, that a strike be morally justified, certain *conditions* must be fulfilled: the cause must be just; it must be the last resort, after peaceful methods of adjustment have failed; *hope of success*; the *advantages* must outweigh the disadvantages; no existing valid contract may be violated; violence must be avoided; *picketing* must be peaceful.

The *sit-down* strike is, as a rule, wrong. The sympathetic strike may be justified under certain circumstances. The *jurisdictional* strike is morally wrong. The *general* strike can hardly ever be right. The *lockout* may be justified. The boycott may be morally justifiable; but the 'secondary boycott' is usually wrong.

9. *Closed Shop and Closed Union.* In principle, there is no moral objection against the closed shop, provided it is freely agreed upon by both management and labor. The principle of the *closed union*, all things being equal, can be defended as morally justifiable. In *practice*, however, in the case of serious abuses, the closed shop and the closed union can easily become wrong.

10. *Industry, Labor, and the Public.* The relations between industry and labor are human and social relations; the welfare of both is an integral part of the welfare of society. The *public* is a third party in every industrial dispute and settlement. The human rights of the general public, therefore, may not be disregarded by either industry or labor.

It is the first duty of the *state* to safeguard the *common good*. Hence, the state should endeavor to stave off crippling strikes through *mediation*. When the public peace and welfare is imperiled, the state has the right and the duty to use *legal coercion*, if necessity demands such action. When the private rights of industry and labor interfere with the common good, they must give way to the common good, because the latter has precedence by natural law over the former.

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1 The quotations given in the text are taken from the encyclical *On the Condition of Labor* (*Five Great Encyclicals*, The Paulist Press, New York).

2 *Rerum Novarum*

Chapter 19

DOMESTIC SOCIETY

SO FAR WE HAVE CONSIDERED MAN IN HIS DUTIES TOWARD GOD and also in his rights and duties as an individual in relation to other individuals. Man receives his existence as an individual person and continues at all times to live as an individual person. In his capacity as an individual, each one possesses definite personal rights and duties.

But man is by nature not only an individual person; he is also a social being, destined by nature to live with other persons in societies of various kinds. History is witness to the universal fact that men, everywhere and at all times, have lived together socially, whether it be in the more restricted society of the family or in the wider organizations of highly developed communities of individuals and families.

Man simply cannot live alone. He depends on others and needs their assistance to develop his full personality in all its potentialities. This mutual dependence and need of assistance is the reason and ground for the formation of social organizations. Chief among these are domestic and civil society. In this chapter we treat of *domestic* society.

The Nature of Society

A *society* in general is the stable union or association of a number of persons for the mutual realization of a common end.

It is a '*stable union or association of a number of persons.*' A single person is not a society. Nor is any sort of association a society, in the strict meaning of the term. A crowd of people gathering together to witness a spectacle or hear a concert is not a society; they meet for the occasion and then disperse. In order that an association of persons be termed a 'society,' their membership must be a relatively permanent association, a stable union.

It is a 'stable union or association of a number of persons *for the mutual realization of a common end.*' The common end to be realized may assume many forms, but it is always of such nature that it is the common bond which holds all the members of the society together, so that they unite in the mutual endeavor to *bring* about its realization as a good to be achieved and shared by all.

The nature of a society, therefore, involves the *active cooperation* of all members of the association toward the realization of the common end, in so far as each member, in his own individual manner and according to his position as a member of the society, strives to further the interests of all members as determined by the end or purpose which led them to unite.

A society is thus seen to constitute a *moral unity*. The members of a society retain their personal individuality in relation to each other; they do not merge their separate

personalities into one single physical person by becoming a society. However, by banding together for the realization of a common purpose or end, they become 'one' in this respect and in this concrete endeavor. In other words, though they do not form a physical unity, they do form a 'moral unity' as members of the same society striving for the same goal.

Authority

The concept of *authority* is essential to the nature of a society. 'Authority' may be viewed either in the abstract or in the concrete. Abstractly considered, 'authority' is the *right* to lead the members of the society toward the attainment of the common end to be realized, namely, the power to regulate the actions of the members in the direction of the end through laws or ordinances which the members must observe and carry out. Concretely considered, 'authority' means the *bearer* of this right and power, namely, the person or persons entitled to direct the members toward the realization of the common end.

Authority is *essential* to society.

That authority is essential to society follows from the very nature of a society. Every society consists of a number of persons, and each one is an autonomous individual; these individuals, taken together, form the 'moral unity' of the society of which they are the members. In order that autonomous individuals can form a moral unity existing in concrete reality, *a concrete principle* of unity must be present which correlates their individual efforts toward the

realization of the common end. This concrete principle of unity is demanded, because all persons are endowed with a free will which is intrinsically indifferent in its activity and can direct its activity toward various goals. In order, then, that the free will of men be directed toward the specific goal which is the basis of membership in a particular society, a concrete principle must determine this indifference and lead the activities of the various individuals toward the specific goal. Besides, the activities of the members are by no means identical. Even though all members strive toward the realization of the common end, these activities will vary according to the nature of the individuals and the position they occupy in the society as a whole. These varying activities must therefore be coordinated in such a manner that they will all conspire to bring about, through mutual understanding and free decision on the part of all members, the realization of the common end. As a consequence, the activities of the individual members must be regulated by laws and ordinances which will effectively realize the common end; otherwise each individual will act according to his own inclination and decision, and the common good of all which is the end and goal of the society will not be achieved. Hence, authority, as a principle of unity determining the activities of all members according to the laws and ordinances required for the effective realization of the common end, is necessary in every society for its proper functioning. And, since a society is a concrete reality, not an abstract entity, this authority must reside in a person (or persons) as the *bearer* of the authority, because only a

person (or persons) can direct other persons in their activities toward a common goal by means of laws and ordinances. Without such a concrete authority, no stable and permanent union of individuals striving for a common end, which is the essence of a society, can exist and function. It follows, then, that authority is essential to society.

Kinds of Society

Now, all human beings possess the same rational nature and are destined by the Creator for the same eternal ultimate end. Whatever particular ends men may have as the immediate purposes of their activities, they must be subordinated to this eternal ultimate end. In this respect all human beings living on earth form a *universal* society which is usually referred to as *human society or the society of the human race*. God Himself, as the Creator of the human race, is the bearer of authority, directing and regulating the activities of all men toward their ultimate end by means of the natural law implanted in their rational nature.

Within the framework of this universal society there exist many *particular* societies. Particular societies follow certain definite ends to the exclusion of others, and the authority regulating the activity of the members is vested in human beings as the immediate bearers of authority. Depending on the standpoint of division, we distinguish between various types of particular or special societies.

From the standpoint of its *material* composition, a society will be either 'simple' or 'composite.' A *simple*

society is composed directly of individual (physical) persons; such, for instance, is a choir, a bowling club, a debating society, a family. A *composite* society consists of a number of societies (moral persons) as its proximate component parts or members; such, for instance, are national or international labor unions composed of a number of separate unions, and the state which is made up of a large number of families and communities.

From the standpoint of *origin*, a society is either 'natural' or '*pactitious*.' A *natural* society is one which is formed as a result of man's very nature, as something which is necessary for the proper attainment of the perfection suitable to his rational nature and without which he would, under normal circumstances, find it very difficult to develop his personality in due measure; such, for instance, is the conjugal society and the state. A *pactitious or conventional* society is one which has its origin, formation, and continued existence in the mutual free consent of its members for the attainment of an end specifically agreed upon; such, for instance, are a political party, a labor union, a corporation, an athletic league.

From the standpoint of its controlling *authority*, a society is either 'equal' or 'unequal.' An *equal* society is one in which all members share the authority in an equal degree, because the society itself is the bearer of social authority, even though the members may delegate a certain person or assemblage of persons to exercise this authority in their name; such, for instance, is a democratic government. An *unequal* society is one in which the social authority is vested by special right in one or more persons to whom the

members are subject; such, for instance, is the society of the family, since the father is the natural social head of the family.

From the standpoint of the *realization of its end*, a society is either 'perfect' or 'imperfect.' It is *perfect*, if it possesses within itself all the means necessary for the realization of its end, so that it is not directly dependent on any society of a higher order for the attainment of its end; such, for instance, are the state and (presupposing the supernatural order) the Church. It is *imperfect*, if it does not possess within itself all the means required for the complete attainment of its end; such, for instance, is the family, because it needs the assistance of the state to supply some of the means required for the full realization of its end.

Man a Social Being

Man, it is often stated, is a 'social animal.' Though an individual, he must fulfill his destiny as an integral member of *society*.

There is in man the *natural aptitude, propensity and need* for a permanent union and companionship with his fellow men, so that he cannot escape membership in society without doing violence to his human nature and running the serious risk of frustrating the purpose of his existence. Man is not born perfect; but he is born with a perfectible nature. It is his right and duty to perfect his nature; he cannot perfect his nature, however, except in a stable union with others throughout the course of his life.

That man has the *natural aptitude* for society, can be seen from the fact that he is gifted with speech. Speech enables men to communicate with one another, to exchange ideas, and to make known their needs and achievements; they can, therefore, give mutual assistance and work for the common good of all concerned. That he has the *natural propensity* to combine his efforts with others for the realization of a common end, is also evident; he dislikes prolonged solitude and isolation, he seeks companionship, and he is inclined to consult others for the solution of important problems. That he has the *natural need* of association with his fellow men, is obvious; he simply cannot receive life and grow to the full status of his bodily, mental, spiritual, and moral maturity except in community with others within the framework of society. To be a member of society, therefore, is a requirement of his *nature* as a human being.

Membership in the community does not entail depersonalization of the individual. The individual possesses inalienable *rights*, flowing from his nature as a rational person, and these rights are never lost or forfeited by belonging to a society. Society must respect and safeguard the rights of the individual, because its fundamental purpose is to work for the welfare of all members through mutual co-operation and the pooling of resources for the benefit of all in the fullest measure attainable. The individual, however, also has *social duties* toward the other members of the community. If he is to receive the services of others for his own benefit, he must give his services for the benefit of the others. Society makes its contribution to

his personal development, and he in turn must make his personal contribution toward the furtherance of the interests of society. Community life is thus grounded on the principle of mutual benefit through mutual service, because of the natural limitations and needs of man as an individual who must work out his destiny by developing all his powers, so far as possible, to their full capacity. Now, a society based on the natural aptitude, propensity, and need of man as a human being is a *natural society* and is a *mandate of the natural law* inherent in man's rational essence.

The original and most fundamental natural society is the domestic society of the family, because it is the one in which all other societies have their roots and from which they are supplied with a constant growth of membership. Aristotle and St. Thomas speak of the family as the natural society which has as its end the attainment of all the things man needs for his daily life and existence. In its most elementary form domestic society appears in the *conjugal* relationship of husband and wife united in marriage. The result is 'conjugal society.' The natural extension of the conjugal relationship is *parental* relationship, when the husband and wife become the parents of a child. We then have the *family* in the proper meaning of the term.

A number of important problems arise from the relationships just enumerated, and these must now receive separate treatment.

Conjugal Society

The fountainhead of social life lies in the union of man and woman in marriage. Marriage or conjugal society is defined as the permanent union, lawfully formed, of man and woman for the procreation of children and their proper education.

Man is naturally sociable. In virtue of his nature, as constituted by the Creator, man naturally and primarily tends to form the conjugal society for the purpose of raising a family. Since human beings act in this manner because of a natural aptitude, propensity, and need, marriage is a *natural society*.

Men and women possess the natural aptitude to form the conjugal society of husband and wife in marriage. Physiologically and psychologically the two sexes are complementary to one another. The sex organs of man and women are physiological counterparts. Taken separately and individually, the sex organs of neither man nor woman have meaning. Viewed in relation to one another, it is evident that the Creator intended each to supplement the other. The anatomical structure and the physiological function of these organs reveal their manifest purpose, namely, the conception and development of a child. Only in conjunction are the sex organs of man and woman capable of fulfilling the intrinsic purpose of their existence as organs of reproduction. Psychologically, too, the sexes complement one another. Perfect equality between the sexes never has existed and never will, due to the natural difference of position in the divinely ordained scheme of life. The man is the breadwinner, the worker, the explorer, the inventor, the governor; he represents the rugged strength needed for

success and achievement in life. Woman is essentially the homemaker and mother of the race who gives, nurtures, forms, and rears the new life; she represents the affectionate love necessary to soften and temper the harshness of life. Masculinity and femininity are emotionally opposite and as such naturally attract one another. There can, then, be no question about the natural aptitude existing in man and woman to form the conjugal society of marriage.

Man and woman also have the natural *propensity* to unite in marriage. This propensity shows itself in the mutual attraction of the sexes. There is no necessity of belaboring the obvious. The Creator placed a strong and imperative instinct in both sexes, regulated by reason and understanding, drawing them irresistibly together, so that love and the sex urge prompt the man and woman to enter into the union of conjugal society for the purpose of supplying the function required for the perpetuation of the race according to the plan of God.

Man and woman, furthermore, have the natural *need* to unite in marriage. Both are sexually incomplete beings; only in their conjugal union do they become complete, each supplementing the physiological and psychological deficiency of the other. Together they form a harmonious unit. The deeper reason for this need, of course, lies in the plan of the Creator of the human race to perpetuate mankind through the coordinated activities of both sexes. Children are helpless almost up to the time they reach maturity. They require continuous care for the maintenance of life and for suitable physical, mental, spiritual, and moral

development; and this requires the constant attention of both father and mother firmly and permanently united in conjugal society.

The aptitude, propensity, and need of the sexes proves beyond the shadow of a doubt that conjugal society is a *dictate of the natural law*.

Men and women are rational beings and as such are superior to the brutes. Unlike the brutes, therefore, they must be guided in their conjugal relations by reason rather than by instinct. Their relations are 'human' relations and consequently possess a *moral* character, based on the dignity and requirements of the human person. Their dignity as persons demands that their union be *permanent* and *exclusive*. Promiscuity in sexual relations implies a gratification of the sexual instincts on a level with the brute. Only a permanent and exclusive union is in accord with the dignity of man as a rational being, because only in such a type of union can the sexual instincts be regulated in a manner conducive to the fundamental interests of mankind. If God selected the sexual relations of husband and wife to be the natural instrumentality for the procreation of children, He also must have intended that the parents continue in their care for the proper and complete development of their children through the years of their growth as persons. Hence, parents have the natural duty to procure the proper and complete development of the child, through the prolonged period of their growth as persons. This is borne out by the universal fact of parental love and filial affection existing between the parents and their offspring and also by the universal fact of the care which

parents customarily give to the upbringing and education of their children. As husband and wife are the natural progenitors of the child, they must also be the natural custodians of its welfare. Someone must certainly have the definite obligation of procuring the proper and complete development of the child, and who, according to the dictates of reason, should have this obligation but the two who are responsible for its life? It follows, then, that God intended the parents to protect and further the welfare of the child, at least so long as the child is in need of their active assistance. Hence, it is the intention of the Creator that the conjugal union of husband and wife be a permanent and exclusive society. Whether this union must extend throughout the lifetime of husband and wife will be treated later. So much is clear, however, that conjugal society must be exclusive and at least relatively permanent.

The sole purpose of the sex instinct and of the sex organs is the procreation of children and the preservation of the race; and if the sex function is performed naturally and normally, as intended by the Creator, it will inevitably tend to produce this result. Hence, the gratification of the sex instinct *outside the conjugal union* of husband and wife, whether it be through fornication or masturbation or in any other manner, is *contrary to nature* and morally wrong. If such acts were morally permissible, few persons would feel inclined to assume the onerous duties of parenthood, and the welfare of mankind would suffer irreparable harm. All *extra-marital* relations must be condemned as a serious abuse of the natural function of sex, because they are

directly contrary to one of the primary purposes of the sexual relation, namely, the proper education of the child.

While it is true that the primary end of conjugal society is the procreation and education of children and the preservation of the race, there are, according to the plan of nature, *secondary ends* to be realized in marriage which are directed toward the welfare of both husband and wife in the conjugal union. Just as husband and wife supplement one another physiologically and psychologically to become a unified principle of reproduction, so, too, they supplement one another personally through mutual love and assistance. An intimate comradeship should exist between them, based on mutual affection and esteem, so that each may lead the other to the spiritual and moral perfection of a full and complete life as a human being destined by God to an eternal beatitude. A further secondary end of marriage consists in the possibility of satisfying the sexual instincts in a normal and legitimate manner, without husband and wife sacrificing their human dignity or acting contrary to the dictates of reason. This consideration is important in all cases where sterility makes the procreation of children impossible. Sterility is not an obstacle to the normal use of the marriage function, even though the function under the circumstances is accidentally hindered from producing its natural effect. The normal, not the abnormal, is intended by nature.

From the above it should be clear how we are to judge the morality of *sex pleasure*. Sex pleasure has been added to sex function as an incentive for married people to perform the sex function. If the sex function is performed

normally and naturally, as dictated by instinct and reason, it will be in conformity with the design of the Creator of man and bring about the result He intended by instituting conjugal society and the sexual relations of husband and wife, namely, the procreation of children and the subsequent preservation of the human race. To indulge privately in sex pleasure, therefore, since it frustrates the primary purpose of the sex function, is in disconformity to right reason and the purpose of the Creator and is always immoral. Only those have the right to enjoy sex pleasure who have the right to perform the sex function; only those have the right to perform the sex function who have the right to procreate children; and only those have the right to procreate children who are lawfully united as husband and wife in the conjugal society of marriage.

Celibacy

In as much as marriage was ordained by God for the preservation of the human race, and sex, with its insistent urge for satisfaction, is present in every human being, the question arises whether all persons have the obligation to enter the marriage state. To put the question in another way: Is celibacy permissible, or must it be condemned?

By *celibacy* in a *wider* sense one understands the simple abstention from marriage, the condition of being unmarried. Anyone is a celibate in this sense who has the capability of being married but is still unmarried, whether this be due to lack of desire or opportunity or to any other reason. In a narrower and *proper* sense, 'celibacy' is

permanent abstention from marriage chosen as a state of life from motives of virtue. Celibacy in this latter meaning is practiced especially by the clergy and members of religious communities in the Catholic Church; they bind themselves by a vow to remain celibates all the days of their life. The two kinds of celibacy are obviously quite different in character. To pass a proper judgment on their morality, they must be considered separately.

Celibacy, taken in the wider sense, is morally permissible. Not every human being is obligated to enter the state of marriage. We must distinguish between right and duty. Every-one, absolutely speaking, has per se the 'right' to enter the married state; but not everyone has the 'duty' to do so.

That everyone has the *right* to enter the married state, all things being equal, follows from the simple fact that everyone is endowed by the Creator with the faculties and instincts of sex. A natural power implies the natural right to exercise this power, according to the conditions intended by God. Now, the exercise of a person's sexual power is conditioned by entry into the conjugal union of marriage. Everyone, therefore, has the right *per se* of entering the marriage state.

Granted the right, *not* everyone has the *duty* to exercise this right. The individual is not obligated to concern himself actively with everything pertaining to the human race. The duty to render a *particular* service to the race is incumbent on an individual only, when something is necessary for the race and cannot be achieved without his co-operation. The tilling of the soil, for instance, is necessary for humanity, so

that men can have food and live; however, not every individual must become a farmer. In a similar way, marriage is necessary, according to the design of God, for the propagation and preservation of the race; hence, some men and women must enter marriage, in order to fulfill this purpose of the Creator. An individual person would have the duty to enter marriage and raise a family only if the race could not otherwise be preserved. There is, of course, no danger that the human race will die out because certain individuals abstain from entering the marriage state; the sexual instinct is so strong that the majority of men and women, as experience proves, are always willing to marry.

The mere fact that God implanted the sexual instinct in human beings is no proof that he intended to obligate everyone to assist in the preservation of the race. It proves nothing more than the truth that every person, due to his or her sexual capability, possesses the biological power and therefore also the natural 'right' to marry and contribute toward the propagation of the species.

Hence, celibacy in the wider sense of the term, whether voluntary or involuntary, is morally permissible. Obviously, if celibacy is a proximate occasion of serious sexual offenses for men or women, they have the moral obligation to reduce the proximate occasion to a remote occasion or, if that is of no avail, they must remedy the situation by seeking a suitable mate to marry.

Religious celibacy is also morally permissible.

If celibacy in general is morally justifiable, celibacy practiced from motives of virtue must, with greater reason, be permissible. The value of a state of life must be judged

according to the value of the good it seeks to achieve. Marriage is morally good, because it strives for the temporal welfare of the human race. Religious celibacy is morally good, because it strives for the *spiritual welfare* of the individual soul and for the *higher interests* of mankind. Persons who bind themselves to celibacy by a vow can dedicate themselves completely to the exclusive service of God and humanity; and this is a good superior to assisting in the propagation of the race.

The Unity of Marriage

It is of the essence of conjugal society that husband and wife in their sexual union become the one and undivided principle for the procreation and education of children. Here we have the primary source from which all the properties of marriage issue forth. There are two essential *properties* of marriage which deserve careful consideration, the *unity* and *indissolubility* of the matrimonial bond.

The 'unity' of the matrimonial bond is that property which demands that only one man be married to only one woman simultaneously. The unity of matrimony is violated by *polygamy*, in which one person simultaneously possesses more than one mate. Polygamy is called *polyandry*, when one woman has more than one husband; and *polygyny*, when one husband has more than one wife.

The *unity* of the matrimonial bond is an essential property of marriage, if violation of this property involves the frustration of the natural end of marriage. Now, the natural end of marriage is twofold: the 'primary' end is the

procreation and proper education of the children; the 'secondary' end is the mutual compensations of a community life for husband and wife, namely, an equal and preferential love and comradeship capable of leading husband and wife to the spiritual and moral perfection of a full and complete life. Polygamy, whether in the form of polyandry or polygyny, frustrates either the primary or secondary end of marriage or both. Hence, unity, which is violated by polygamy, is an essential property of the matrimonial bond.

Polyandry frustrates both the primary and secondary end of marriage. If one woman has a number of husbands, it is practically impossible to determine who is the father of the child and has the natural duty to provide for it. Since paternity is doubtful, paternal duty is doubtful. As a consequence, the proper education of the child is nobody's particular duty, and the upbringing of the child as befits its dignity as a human person is bound to be neglected. To bring a child into the world in this manner is not in accordance with right reason and is, therefore, contrary to natural law. A plurality of husbands also frustrates the secondary end of marriage. A union of this sort involves rivalry, discord, and disorder, because of the uneven distribution of affection and attention. Polyandry is a rare occurrence among people, and it is universally viewed with abhorrence.

Polygyny is not as much in opposition to the natural law as polyandry. When one man has a number of wives, paternity and maternity are definitely established, and so parental duty is never in question. Both the father and the

respective mother have the duty of providing for the proper care and education of the children, and this is not impossible of attainment. Polygyny, however, violates *per se* the secondary end of marriage, because it frustrates the mutual compensations necessary for married community life. There is no real equality between the husband and his wives, as called for by the purpose and contract of married life. Each of the wives gives herself fully to the husband, but the husband gives himself only partly to each of his wives; the wives are thus deprived of their full marital rights and privileges. There is no possibility of a complete and equal *comradeship* between one husband and a plurality of wives. History shows that in polygynous marriages one wife is preferred and holds a dominant position in the household, the other wives being reduced to the position of mere servants or virtual slaves. Envy and discord are prevalent in the relations of the different wives and their children, because it is virtually impossible for the husband to extend to all his wives and their children the same measure of devotion, love, and considered attention. Although polygamy in the form of polygyny is practiced quite frequently in some oriental countries and uncivilized nations, monogamy is the rule; polygamy is tolerated, but not prescribed.

As was just pointed out, the primary end of marriage is sufficiently safeguarded in polygyny. The *secondary end*, however, suffers harm in polygynous marriages, because the mutual compensations of conjugal community life, which is a means in the furtherance of the common end of human life, is rendered practically impossible. A plurality of

wives has the *effect* of frustrating the mutual compensations of married life, even though the plurality of wives in *itself* is not the *formal cause* of this result. God, in special circumstances and with the special assistance of his graces, can so strengthen human wills that, with proper co-operation, it would be *per se* possible to safeguard the secondary end of marriage even with a plurality of wives, especially when rapid propagation is advisable. This is probably the reason why God permitted the patriarchs of the Chosen People to have more than one wife.

The Indissolubility of Marriage

Indissolubility is that *essential* property of marriage in virtue of which the conjugal bond between husband and wife cannot be dissolved or broken by any human power during the life-time of either of the two. In other words, neither the married couple nor the state has the power in its own right to dissolve the matrimonial bond, once a marriage is lawfully contracted. God, the Supreme Lawgiver, can dissolve the bond, because He is the Author of all rights and duties existing in the married state. Divorce is in opposition to the indissolubility of marriage.

Ethicians speak of *imperfect* and *perfect divorce*. 'Imperfect' divorce amounts to 'separation from bed and board,' so that husband and wife are freed from their marital community life, although the matrimonial bond remains intact; they live apart, but they are still husband and wife. 'Perfect' divorce entails the dissolution of the matrimonial bond itself, so that both parties are free to

marry again during the lifetime of the other. That circumstances may at times justify a *separation* from bed and board is conceded by all moralists. That perfect divorce is also at times permissible, is a hotly debated question. Most modern states grant divorces for what the secular law considers to be sufficiently grave reasons. Notwithstanding recent laxity toward divorce on the part of some Christian denominations, Christ proclaimed the indissolubility of the marriage bond and forbade perfect divorce in the words:

“What God hath joined together, let no man put asunder. Whosoever shall put away his wife and marry another, committeth adultery against her. And if the wife shall put away her husband and be married to another, she committeth adultery” (Mark 10:2—12). Here, however, we are concerned with the purely ethical question whether the marriage bond, from the standpoint of the *natural law*, is indissoluble, so that it cannot be dissolved by any human power.

From the standpoint of the natural law, *no human authority has the power to grant a perfect divorce*.

If perfect divorce, in principle, frustrates either totally or partially the adequate and intrinsic end of marriage, it is contrary to the essence of marriage; indissolubility is then an essential attribute of the marital bond. Such, however, is the nature of perfect divorce.

Marriage has a *double end* or purpose. One, the secondary end, is concerned with the mutual compensations intended for the good and welfare of the married couple. The other, the primary end, is concerned with the procreation and proper education of the children

intended for the common good and welfare of mankind. Natural law forbids everything which, in principle, tends to frustrate the natural end, because the law has the purpose of safeguarding the interests of the community of persons under the general and ordinary circumstances which prevail in human life. While, then, under exceptional circumstances, the indissolubility of marriage might be detrimental to a particular couple, this result would be only accidental and incidental; the *common good and welfare of mankind* would still demand that perfect divorce be prohibited. In individual cases separation from bed and board would suffice to remedy an adverse situation existing between a particular married couple. The common good and welfare of mankind, however, would prohibit complete dissolution of the marital bond, because perfect divorce frustrates the primary end of marriage, and the natural law must foster the attainment of the ends of natural institutions.

If marriage were not indissoluble, *proper education* of the children begotten by the parents would *per se* not be possible. The proper education of the children demands constant, harmonious co-operation of both father and mother; not merely the efforts of one of the parents. Experience proves this abundantly. The children of divorced parents are all too frequently problem children who become juvenile delinquents, because they have been robbed through divorce of the proper atmosphere of a morally stable home. The bad example of the parents deprives them of a sorely needed respect for the laws of

God and of the state. Thereby the common good and welfare of human society is definitely harmed.

Difficulties are bound to arise in a family during the course of the years. How can mutual love and respect grow and flourish between a married couple if the possibility of perfect divorce hangs continuously over their heads as a permanent threat to the stability of their married existence? The possibility of perfect divorce reduces the married state to the level of transitory cohabitation. It is a constant invitation to an emotionally unstable mate to seek fresh experiences with a new partner, once the fires of physical passion have burned low. Divorce also places a premium on marital disorders of all kinds. The very possibility of the dissolution of the matrimonial bond thus makes the attainment of the intrinsic ends of marriage very difficult, if not practically impossible.

The *great error* underlying the possibility of divorce is the false attitude toward human welfare. Reason dictates that the good of individuals must be subordinated to the good of society. Unfortunately for everyone concerned, we have reversed the principle; the good of society has become subordinated to the good of individuals. So long as this attitude prevails, there can be no hope for a healthy national life. It is far better that a few individuals suffer the effects of their folly than that the nations go to ruin. The common good demands the indissolubility of the marriage bond, because in no other way will the common good of mankind be safeguarded. Such is the natural law.

The Marriage Contract

Every person, absolutely speaking, possesses the right to enter the married state; but no one is compelled or obligated to marry. Similarly, no one is compelled to marry one person rather than another. Hence, if a man and woman decide to enter conjugal society as husband and wife and be conjoined into one individual principle for the generation and education of children, they can do so only by means of a free consent which is true, internal, mutual, and manifested to each. This free consent of the two is the 'efficient cause' of their permanent union or 'bond' as husband and wife. And since, by means of this free consent, each party confers equivalent rights upon the other and assumes equivalent duties in justice, the free consent of marriage is a *strict contract*, not a mere resolution or promise. This contract involves as its 'matter' the right of each to the use of the body of the other for the proper functions of marriage and the duty of each to concede this right to the other whenever legitimately and reasonably demanded. Both parties, in virtue of this contract, also assume the mutual obligation to impart a proper education to any and all children which may issue from their union and to render to one another those mutual compensations which constitute the secondary end of matrimony.

In order that the contract of marriage be *valid*, therefore, a number of *conditions* must be antecedently present and fulfilled. Because the marriage contract is based on free consent, error, force, and fear must be absent. There must be no error regarding some presently

existing quality of the person, provided the presence of the quality was made a positive condition of the consent. *Physical force* may not be used; the consent given under duress would not be a true and internal consent. Grave fear, the result of unjust intimidation, would also invalidate the marriage. Both physical force and grave fear are nothing but a form of extortion and coercion and as such deprive the consent of the element of freedom. The contracting parties must be *physically capable* of performing the acts required for the generation of children. Hence, both must have reached the age of puberty; and they must be physically constituted in such a manner that no antecedent, incurable impotency renders either party incapable of the marriage function as intended by nature. Finally, there may be no *close blood relationship*. A marriage between persons related in the first degrees of consanguinity in a direct line, for example, between father and daughter or mother and son, is certainly prohibited by the natural law; such a relationship would be incompatible with the physical intimacies which are natural to the conjugal union. How far the impediment of consanguinity should be extended, it is impossible, from the standpoint of natural law, to decide. Since marriage affects the public welfare of church and state, they can enact positive laws regulating the conditions of a valid marriage not otherwise determined by the natural law.

The Family

In marriage the purpose of the sex of man and woman reaches its natural fulfillment in the procreation of a new human being similar to themselves — the child. The child is the concrete embodiment of their marital love. The parents now submerge their individual interests and their interests as husband and wife into the higher and more unselfish love of both for their child. The child and its interests enjoy a primacy. The life of the parents is renewed in the life of the child; the personality of the parents is duplicated in the personality of the child. The presence of the child brings about an extension of the community life of husband and wife into that of father, mother, and child. There now exists the *family*.

The family is the *basic unit of human society*, because the family is the source of life for all members of the human race and the primary institution for the bodily, mental, moral, and social development of man from birth to maturity.

Men and women have the natural aptitude, propensity, and need to enter into the bond of marriage and establish a family; this is the physiological and psychological completion of their personality in their natural development as human beings. Nature prepares them for parenthood, and the vast majority of persons seek their life's vocation in the establishment of a family. In doing so, they merely follow the dictate of their nature. Hence, the family is a *natural society* dictated by *natural law*.

The child comes into this world as a most helpless creature and for many years is dependent on others for the preservation and development of its being. The rearing and

training of the child is a tedious and difficult task, one which few persons will undertake, unless it be the parents themselves. That nature intends the parents to rear and train their offspring, is evident from the fact that parents are prompted by an ineradicable *instinct* to give every reasonable care to their child. And parents the world over assume this responsibility without question, as something demanded by the very nature of things. Since they are the agents through whose action the child has received life, they are conscious of their obligation to rear and train the child as befits its status as a rational being. By nature, generation creates a bond between parents and child more intimate than even that between husband and wife as spouses, because this bond is founded on the relation of cause and effect, so that the child is flesh of their flesh, bone of their bone, and blood of their blood. Due to this relationship of generation, the child is a part of their very being, and the parents have a definite *dominion* over the child.

Because of the mutuality present in this unique relationship of generation, parents have certain rights and duties with respect to their child, and the child has certain rights and duties with respect to its parents. The right of the parents implies a corresponding duty on the part of the child, and the right of the child implies a corresponding duty on the part of the parents. A moral union thus exists between parents and child, and this union has as its purpose the realization of a *common good*, namely, the proper rearing and training of the child through a complete education and the perfect development of the personalities

of the parents and of their child through mutual love and co-operation. It follows, then, that the moral union between parents and child is a true *society*, the domestic society.

The natural dominion of parents over their child gives rise to *parental authority*. This authority is not a matter of proprietary rights.' A child is not a thing, but a person. The child, as a person, is a rational being and as such is endowed with all the inalienable rights common to all human beings, and parents must respect these rights. The extent of parental authority is regulated by the 'common good' which is the end and purpose of domestic society.

Parental authority is *necessary*, because every society must be directed toward its end by means of authority, and this presupposes a concrete bearer. Both parents are the common bearers of authority in the family, because both, by the very fact of generation, are responsible for the child's well-being in every respect. In virtue of their authority, the parents have the right and the duty to use the means necessary for the proper upbringing of the child. Authority is given in all societies, so that the members of the society will be efficaciously directed toward the attainment of the end which is the reason for the existence of the particular society; the more important the society and the end to be attained, the stronger must be the authority necessary to attain this end. Parents, therefore, have the authority to use whatever means, *moral and physical*, are conducive toward the attainment of the end of domestic society, namely, the common good of all, but mainly the common good of the child who needs their efficacious direction for its complete physical, intellectual, moral, and social development. Even

corporal punishment may be necessary at times, especially in those years when the child is governed by sense impressions rather than by reason. The right of correction, however, is limited by the requirements of the child's education. Parental authority does not entitle the parents to treat the child with cruelty; punishment must always be just and reasonable, and should always be tempered with love and mercy.

It is universally recognized that parental authority is *primarily* vested in the *father*. No society can function properly under divided authority: a body with two heads is a monstrosity. By nature the father is the head of the family. Physiologically and psychologically, the father, as a rule, is endowed with those characteristics which are required for the proper maintenance and protection of the family, while the mother possesses the qualities of sweetness and affection so necessary for the internal direction of the home and for the winning of the confidence of the child. In every case, however, the strength of the father and the tenderness of the mother should supplement one another, so as to form a unitary principle of authoritative education for the child. The child needs both parents, not only for its generation, but also for its education.

Since the family is the union of parents and child established by nature for their common good, it will be necessary to determine this 'common good' in more detail. The *primary end* is the *good of the child*. This is evidenced by the fact that parents always consider the good of their child as the principal objective of all their endeavors. No effort is too laborious and no sacrifice too great for the

parents, when it is a question of the well-being of their offspring. The *secondary end* is the happiness of all the members of the family, brought about by the combined love and co-operation in every phase of family life on the part of father, mother, and child. By the realization of this intrinsic proximate end of domestic society, the welfare of civil and human society, as the remote natural end, is also achieved.

A consideration of the common good, which is the natural end and purpose of the family, will determine the rights and duties of the parents in reference to the child and also the rights and duties of the child in reference to its parents. Rights and duties are reciprocal.

Rights and Duties of Parents

The rights and duties of parents can be summarized under a few main headings. A child is a human person, a composite of body and soul. In both phases of its being it has a claim upon those who gave it life; it has the right to a proper upbringing both as regards its body and its soul. Correspondingly, parents have duties toward the *body* and *soul* of the child.

First of all, then, parents must see to the proper care of the *bodily life* of their child. A sound body is an important factor in the well-being of every child. Parents, therefore, have the grave duty of maintaining the health of the growing child, even in the prenatal period of its existence. They must take reasonable precautions to preserve the child from sickness and injury; and if, through unfortunate circumstances, the child becomes subject to sickness or

injury, they must use reasonable means to restore the health of the child. They must also, so far as their financial condition permits, furnish adequate food and clothing. Proper exercise is necessary for the development of a strong body; hence, parents should neither pamper the child nor impose excessive work upon it, for the child's health will suffer by too little and too much physical exertion. In general, parents must keep a watchful eye on the living habits of the child, so as to insure normal bodily development.

While the bodily welfare of the child is without question very important, its mental and spiritual welfare is far more important. In virtue of its *soul* the child is a human, rational being, destined by God for an eternal happiness as its ultimate subjective end. The child has the natural right to be trained in such a manner that it can effectively strive to realize this supreme end of its existence. And the parents, by the very fact that they are the cause of the child's existence, have both the natural right and duty to educate the child and prepare it for achieving its supreme end.

To 'educate' means much more than the mere funneling of knowledge into the child's mind. Knowledge alone is barren. *True education* is the development of the *total personality* in accordance with the dictates of right reason. It implies the training of all the cognoscitive and appetitive powers, both on the sensuous and spiritual level. Since sense life is the foundation of intellectual life, parents have the obligation to give the child such a training that its external and internal senses are properly developed and placed in the service of intellect and will. Especially,

however, must the parents teach the child in the early years of its life to control, regulate, and discipline its *emotional life*; otherwise it will be ruled by emotions instead of reason and morality, to the detriment of its behavior as an adult. Criminal tendencies often have their roots in neglected emotional reactions. The emotional training of the child, to be truly effective, must be begun in the pre-school period of the child's home life and carried through during the years that follow.

Knowledge, of course, is a vital part of education, because it involves the development of the child's mental powers and prepares it for the time when it must take its station in society and make its own way through life. Without proper schooling the child will be seriously handicapped in its future struggle for a livelihood and a home. Mere theoretical knowledge is of minor value; the knowledge the child receives should be of such a nature that it will be enabled to find a solution for the many intellectual, religious, and moral problems which are bound to arise.

Most important of all, for the development of the child's total personality, is a solid training in *religion and morality*. The child is more than a superior type of animal; it is a rational person. Its soul is an immortal soul with an immortal existence in the life after death. The primary educational duty of parents, therefore, is to train their child in both theory and practice so that it will understand its true position in the world and permanently endeavor to lead the kind of life which will bring it to eternal happiness. Religion and morality alone are capable of giving the life of

the child the direction necessary for the realization of its immortal destiny in union with God, the Supreme Good of the rational soul. Any other kind of education is misdirection and misguidance and a serious dereliction of duty on the part of parents. If parents fail in the religious and moral training of their child, they fail completely in their sublime calling of being the primary educators of their own child in the things that have real and everlasting value. Religion and morality, more than anything else, will make the child fit to lead a life in keeping with its high dignity as a rational person and as a child of God and prepare it, by means of the virtues acquired and the good deeds accomplished, for the enjoyment of that never ending beatitude which God has prepared for those who love Him. To assist their child in achieving its ultimate end is indeed the crowning glory of parents.

This, then, is 'education' in the true sense of the term: to *teach* and *train* the child toward the complete development of its *total personality*, so that it will be enabled to realize the proximate and ultimate ends of its existence and being. And this is what is meant when it is said that the primary end of marriage is 'the procreation and education' of the child and that the primary end of domestic society is the 'common good' of the child.

Since parents are by nature the cause of their child's very existence, and since the family is the first and most fundamental form of society, prior to every other form of society (the sovereign state included), it is evident that natural law imposes upon the parents before all others the *absolute duty of education* with respect to their child. This

duty is absolute, not conditional. Since the child has the natural, absolute, inalienable right to an education befitting its inherent dignity as a rational person, the parents have the corresponding natural, absolute, inalienable duty to furnish this education to their child. And for the same reason, the parents have the natural, absolute, and inalienable *right*, prior to the right of any other person or society (the sovereign state included) to educate their child. They may, of course, delegate their authority to others, if circumstance make this measure advisable; but they may not be deprived of this authority, except in the case of gross neglect or incompetence, without a grave offense against commutative justice. If, for good and sufficient reasons, parents delegate their authority to teach and train the child to others, they retain the fundamental right to send their child to the school of their choice, because they are bound in conscience by natural law to give their child that type of education which, by the proper means of teaching and training, tends to equip the child for the achievement of its temporal and eternal destiny. Whoever possesses the right to a particular end also possesses the right to all the means suitable and necessary for the realization of that end; and whoever has the duty to realize a particular end also has the duty to use all the means suitable and necessary for the realization of that end. The child has the right to an education from its parents which is suitable and necessary for the realization of its temporal and eternal destiny; hence, the parents have a corresponding duty. The parents, therefore, and not the state, have the primary right to educate the child. Consequently, parents also have the

primary natural right to build their own educational institutions, select the teachers, decide on the methods and principles of education, and in general determine the type of education they desire that their child receive, without interference on the part of the state.

Rights and Duties of the Child

By having received existence from its parents, the child has the right to a complete education of its total personality. On the other hand, since the child owes its existence and its bodily, intellectual, moral, and social education to its parents, it is *subject* to the parents and has definite *duties of piety* toward them. These duties, in particular, are respect, love, and obedience.

The child owes its parents *respect*. Respect consists in the dutiful acknowledgment of dependence on the parents. This respect must be both internal and external: internal in so far as it is a genuine sentiment existing in the heart and mind of the child; external in so far as it expresses itself in exterior behavior. In sentiment, word, and deed the child must exhibit filial reverence and good manners toward its parents, no matter what their condition or character may be.

The child owes its parents *love*. No one is closer to the child than its parents. No one, next to God, has given the child so much. The child has received life, food, clothing, shelter, education, and the great privilege of knowing and loving God, together with the practical training enabling it to possess God for all eternity in everlasting beatitude. The

parents spend themselves, their time, their energy, and their financial resources in endless sacrifices for the welfare of their child. The love of the child should show itself especially in good behavior, in the practice of virtue, and in rendering joyful assistance to their parents in all things and at all times.

The child owes its parents *obedience*. Since the child has its existence and very being from its parents, it is by natural law subject to them in all matters pertaining to its education and the order of the home. It has the duty to follow the admonitions and corrections of the parents with humility, to accept the domestic chores imposed upon it with a spirit of co-operation, to observe the order of the household with internal submission. Even when the child has reached the age of personal maturity and independence, it must accommodate itself to the rules and regulations laid down by the parents, so long as it lives under the parental roof; the home belongs to the parents, and they have the authority to decide what order shall prevail for the benefit of all members. Parents, of course, have no authority to command or ask that their child do something sinful; if they should, the child must refuse obedience, because the authority of God, in that case, supersedes the authority of the parents. In all matters, however, that are legitimate and reasonable, the child has the duty of obedience.

God intended the home to be the training school of life. So long as the family is ruled by the spirit of religion and the practice of morality, the well-being of society is secure. But as soon as the home is permeated by religious

indifference and lax morals, society becomes decadent and is headed for disaster.

Contraception

There can hardly be any doubt that the greatest evil threatening the foundations of the family in present-day society is the practice of *contraception*. Theodore Roosevelt, former president of the United States, aptly called it 'race suicide.' The defenders of the practice use the more euphonious names of 'birth control' and 'planned parenthood.' The scientific name is 'contraception,' and it is defined as the voluntary prevention of conception by the positive use of artificial means which hinder the generative cells from uniting during the sexual act. It is immaterial whether the method employed be chemical, physical, or mechanical; the effect is the same.

What is the *morality of contraception*?

There are three elements or determinants which contribute to the morality of a human act, making it morally good or morally evil: the object, the circumstances, and the end of the agent.¹

A human act, to be intrinsically and by nature good, must preserve the *hierarchical order* of the powers and functions of man's nature as intended by the Creator. And it must also be in accordance with the *natural tendency and function which is proper to the power* or faculty of man which is used in the act. The nature of man as a whole will indicate the proper function and tendency of a particular natural power and the place which it is to occupy in the hierarchical

order of powers and functions.² A human act, therefore, which violates the proper hierarchical order of the powers and functions of man's nature or which contravenes the proper natural tendency and function of a particular natural power or faculty, is intrinsically and by nature morally evil; neither the circumstances nor the good intention of the agent can make it morally good, because such an act is *intrinsically* and *antecedently* evil in itself and contrary to *natural law*.

These preliminary principles having been given, it should not be difficult to judge the morality of voluntary, artificial contraception.

According to these principles, *contraception is intrinsically evil*.

A consideration of the anatomical arrangement of the sex organs and of the function of the sexual act makes their 'intrinsic purpose' manifest. If the sexual act between man and woman is performed normally and naturally, the semen will inevitably be placed in a position which makes it possible and probable that the male cells (*spermatozoa*) can meet the female cells (*ova*), can unite with them, and can *effect the conception* of a human being. Any other natural and intrinsic purpose is excluded from the sexual act as intended by the Creator. Hence, if the sexual act is performed normally and naturally, it is in accord with the intention of nature and of God and as such is morally good, provided, of course, that the man and woman are husband and wife, so that they have the right to perform the act at all. Whether conception actually occurs or not is immaterial to the sexual act as much; but the sexual act must be

performed, if performed at all, in such a manner that conception can occur, if nature does her part. Whoever performs the sexual act in a manner that renders conception impossible, *frustrates its normal and natural purpose* and therefore acts contrary to the intention of nature and of God. Such a person uses a natural power or faculty contrary to its intrinsic purpose, and the sexual act thereby becomes intrinsically evil. Now, contraception renders conception impossible through the positive application of chemical, physical, or mechanical means. Hence, contraception is the frustration of the intrinsic purpose of a natural power and its function, and as such, therefore, it is *intrinsically evil*.

No circumstances and no good intention can make an intrinsically evil act good, because evil may not be done to accomplish good. Consequently, contraception is always and under all circumstances a grievous offense against nature and the natural law and therefore morally wrong. Contraception can never be justified.

Very different from contraception is the practice of *periodic continence* or, as it is popularly called, *rhythm*. It is based on the independent discoveries of two scientists, Hermann Knaus of Prague, Czechoslovakia (1929), and Kyusaku Ogino of Niigata, Japan (1930). According to the Ogino-Knaus findings, a 'rhythm' exists in the menstrual period of every woman in the course of each lunar month (28 days), in virtue of which she is normally fertile during certain days and sterile during the others. These definite periods of fertility and sterility can be determined with relative certainty. Hence, if married persons practice

‘periodic continence’ during the period of fertility and perform the conjugal act only during the period of sterility, they can perform the conjugal act normally and naturally and yet avoid conception with certainty. Here, then, is a method of ‘spacing births’ in a rational manner according to the laws of nature implanted by God Himself in the very sexual system of man.

But what about the *morality* of ‘periodic continence’? It must be borne in mind that the primary end of marriage is the procreation and education of children. Persons who enter the state of matrimony must include in their intention this primary end of marriage, or it is no marriage in the real sense of the term. That, however, does not mean that married people must procreate as many children as it is physically possible for them to have. While married couples should cooperate with the creative power of God in giving the boon of life to a number of children proportionate to their own health, economic means, and conjugal happiness, circumstances may exist at times which make it advisable to regulate or restrict the number of children. It is not regulation or restriction itself which is morally evil, but the frustration of a natural act, as the unnatural means of regulation or restriction, which is wrong. Contraception is the abuse of nature’s laws, while periodic continence is a *rational use* of nature’s laws.

Besides the primary end of marriage, the *secondary ends* also have their definite and legitimate place in married life, so long as the primary end is safeguarded and maintained. To circumvent the primary end out of sheer pleasure-loving selfishness would be contrary to right

reason and therefore morally indefensible. But to 'space births' through periodic continence, according to biological laws inherent in the human constitution itself, so long as the conjugal act is performed normally and naturally, is not *intrinsically evil*, provided the spouses have *good and sufficient reasons* for the regulation or restriction of births. Under such conditions the use of the Ogino-Knaus method would be in accord with right reason and therefore morally justified, for the secondary ends of marriage would be achieved.

There are quite a number of 'good and sufficient reasons' which would make the use of periodic continence morally permissible. The reasons may, for example, be *eugenic*; as when it is practically certain, from previous experience, that the children would be afflicted with grave physical or mental defects. The reason may be *personal*; as when the wife is in very poor health, or when the mother has proved incapable of fulfilling her ordinary duties in the physical or moral training of the children. The reasons may be *economic*; as when sickness, misfortune, unemployment, or poverty makes it practically impossible to raise a larger number of children on the insufficient income of the father. Such and similar reasons would be 'good and sufficient' to justify periodic continence.

Parenthood in marriage is a high and noble calling. Parents participate with God in the creation of immortal souls and are instrumental in placing eternal beatitude within the grasp of human beings who, except for their love and devotion, would never receive existence. The 'I' of individuality becomes the 'We' of conjugal society in the

marriage of man and woman, until it is expanded into the trinity of domestic society in the family, where father and mother and child are united in mutual love and affection to carry to completion the sublime purpose of God in the wonderful designs of His Providence.

Summary of Chapter XIX

Chief among the natural societies are domestic society and civil society. We treat here of the *domestic society*.

1. *The Nature of Society*. A *society* in general is the stable union or association of a number of persons for the mutual realization of a common end.

2. *Authority*. Authority, in the 'abstract,' is the *right* to lead the members of the society in the direction of the common end to be realized. In the 'concrete,' it is the *bearer* of this right and power. Authority is essential to society.

3. *Kinds of Society*. There is the 'universal' society of the entire human race. All others are 'particular' societies. From the standpoint of their material composition, societies are either 'simple' or 'composite.' From the standpoint of origin, they are either 'natural' or 'pactitious (conventional).' From the standpoint of controlling authority, they are either 'equal' or 'unequal.' From the standpoint of the realization of their end, they are either 'perfect' or 'imperfect.'

4. *Man a Social Being*. Man has the natural aptitude, propensity, and need for a permanent union and companionship with his fellow men.

The original and most fundamental natural society is the domestic society of the *family*. In its most elementary form domestic society appears in the 'conjugal' relationship of husband and wife united in marriage; its result is *conjugal society*. The natural extension of the conjugal relationship is

‘parental’ relationship, when spouses become the parents of a child; the result is the family proper.

5. *Conjugal Society. Marriage* or conjugal society is defined as the permanent union, lawfully formed, of husband and wife for the procreation of children and their proper education.

Their dignity as persons demands that the union of husband and wife be *permanent* and *exclusive*; otherwise there is no possibility for the proper and complete development of their children through the years of their growth as persons.

Since the sole purpose of the sex instinct and of the sex organs is the procreation of children and the preservation of the race, any gratification of the sex instinct outside the conjugal union of husband and wife is *contrary to nature* and morally wrong.

The *primary end* of marriage is the procreation and education of children. The *secondary end* is the welfare of husband and wife in mutual companionship and assistance.

6. *Celibacy*. Celibacy is abstention from marriage. It is morally permissible.

7. *The Unity of Marriage*. The unity of marriage is that essential property which demands that only one man be married to one woman simultaneously. Unity is violated by *polygamy*, in which one person is united simultaneously to more than one mate. A plurality of husbands is *polyandry*; a plurality of wives, *polygyny*.

Polyandry frustrates both the primary and secondary ends of marriage. *Polygyny* violates *per se* the secondary

end of marriage, because it frustrates the mutual compensations necessary for married community life.

8. *The Indissolubility of Marriage.* indissolubility is that essential property of marriage in virtue of which the conjugal bond between husband and wife cannot be dissolved or broken by any human power during the lifetime of either of the two. *Divorce* is in opposition to the indissolubility of marriage. 'Imperfect' divorce is separation from bed and board, but the matrimonial bond remains intact. 'Perfect' divorce is the dissolution of the matrimonial bond itself, so that both parties are free to marry again during the lifetime of the other.

From the standpoint of natural law, *no human authority has the power to grant perfect divorce*. Divorce frustrates the adequate and intrinsic end of marriage. If marriage were not indissoluble, proper education of the children would *per se* not be possible. The *common good* of society will not be safeguarded, if the bond were dissolved.

9. *The Marriage Contract.* Because there is no compulsion to marry any particular person, marriage must be entered by two persons through a *free consent* which is true, internal, mutual, and manifested to each. Error, force, and fear must be absent.

10. *The Family.* With the arrival of offspring, conjugal society expands into parental society and the *family*. The family is the basic unit of human society; it is a 'natural' society dictated by natural law.

The *primary end* of domestic society is the good of the child. The secondary end is the happiness of all the members of the family.

11. *Rights and Duties of Parents.* First of all, parents must see to the proper care of the *bodily life* of the child. They must also see to the proper education of the soul of the child. True *education* is the development of *total personality*. The parents alone have the absolute duty and the absolute right of education with respect to their child.

12. *Rights and Duties of the Child.* The child has the *right* to complete education of its total personality. But it also has the *duties of piety* toward the parents; these duties, in particular, are respect, love, and obedience.

13. *Contraception.* This is the voluntary prevention of conception by the positive use of artificial means which hinder the generative cells from uniting during the sexual act. *Contraception is intrinsically evil.* It frustrates the normal and natural purpose of the sexual act and is contrary to the intention of nature and of God. *Periodic continence* is permissible for good and sufficient reasons.

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¹ See Chapter 5

2 See Chapter 7

Chapter 20

CIVIL SOCIETY

MEN HAVE A TENDENCY TO UNITE INTO GROUPS, CLUBS, associations, and societies of various kinds, for the purpose of realizing some special end. Many societies are conventional in character, depending in their formation and existence upon the voluntary agreement of their members. A society which has its origin in a dictate of human nature is a 'natural' society. The family is such a 'natural' society.

Just as it is natural for man to form domestic society, it is also natural for him to form *civil society*. In general, civil society is the permanent union of a multitude of families and individuals, under a common authority, for the purpose of promoting their public welfare. Civil society is found in many forms, such as village communities, tribal governments, and similar organizations. Civil society assumes its highest form in the complex organization of the sovereign state. For the purposes of ethics, therefore, no distinction will be made between 'civil society' and the sovereign 'state.'

The Concept of the State

The *state* is a form of *society*, and a society is the stable union or association of a number of persons for the mutual realization of a common end. This definition of a society in general must also be verified in the state. Depending on the nature of a particular society, this definition will have to be modified in a manner which befits the nature of the society in question. The full nature of the state will be understood best at the end of our discussion. However, a definition must be given now, even though many of its elements will only be established in the subsequent sections of our analysis.

We *define the state* as a natural and perfect society, consisting of many families and individuals, established for their common good under the direction of the supreme authority of a common ruler. Each item of the definition calls for explanatory remarks.

The state is 'a *natural* society.' It is not a mere 'conventional' society like a bowling club or a labor union, but a 'natural' society in the same sense that the family is 'natural,' namely, because man is ordered by the natural law to form civil society.

The state is a natural and *perfect* society.' It is self-sufficient and contains within its organization all the means required to realize its proper end, namely, the common good of the community in general.

It is 'a natural and *perfect* society, consisting of many families and individuals,' because its constituents are primarily the families and secondarily the individual persons.

It is 'a natural and perfect society, *consisting of many families and individuals*, established for their common good.' The proper and specific end and purpose of civil society is the 'common good' of all or 'public welfare'; not the particular good or welfare of any special groups or classes.

In our definition of the state we claim that the state consists essentially of a ruler and those ruled, and the *common ruler has the supreme authority* to direct all members of the state toward the realization of the proper end of civil society by exacting from all full co-operation in the use of the means necessary to the attainment of this end of the state.

The inclusion of these various items in the definition of the state is obviously not self-evident. Their necessity will have to be proved.

The State a Natural Society

Since the state consists of human beings and is intended for the welfare of human beings, it will have to be either a 'conventional' or 'natural' society. If it is a 'conventional' society, it is the result of a voluntary convention or agreement of men, and this agreement is prompted by *expediency*; men unite in such a society, for instance, an orchestra or labor union or business association, because it is to their advantage to gain a particular end by pooling their efforts. If it is a 'natural' society, it is the result of a dictate of human nature, and its formation is based on *moral necessity*.

The state, we claim, is a natural society.

Man has the natural aptitude, propensity, and need to associate himself in a permanent union and companionship with his fellow men for the purpose of attaining temporal happiness or felicity. But such a permanent union and companionship is found in the state; and any society which is formed under the impulse of such a natural aptitude, propensity, and need is the result of a *dictate of man's nature* and as such is a *natural* society. Hence, the state is a natural society.

No two persons are alike in every respect. The two sexes differ greatly, whether viewed from a biological, physiological, emotional, or mental viewpoint. All persons differ in ability, talent, tastes, temperament, character, and personal requirements. The one thing which all persons, no matter what their condition, have in common is their *human nature*; they are rational animals, with a composite nature consisting of a material body and a spiritual soul. Now, the existence of the state is a constant and universal fact. Such a constant and universal phenomenon demands a constant and universal explanation, and this explanation can be found only in the one changeless and constant thing present in man — his human nature.

Man's uniform nature manifests itself in a natural aptitude, propensity, and need to live in the state. That man is by nature a 'social being' has been proved in the preceding chapter. Conjugal society is a 'natural' society, because man has the natural aptitude, propensity, and need to live in conjugal society, in order to develop the

potentialities of his nature and thus realize the natural end of his life. For the same reason the state is a natural society.

That man possesses the *natural aptitude* to live in the state is evident from the very fact that everywhere and always, as history and experience show, he actually lives in the society of the state. Notwithstanding all selfish interests present among human beings, they practice mutual love and benevolence, assist one another in mutual helpfulness, unite into various groups and associations for mutual advancement and welfare.

The societies people form in consequence of this natural aptitude are manifold. The members place themselves under definite rules and regulations and let themselves be directed in their activities by a president or board with authority to govern the members in all matters pertaining to the special ends for which these societies were formed. This same aptitude comes into play in the wider scope and larger organization of the state. If men had no natural aptitude to live in the state, the state simply would not function, and there would be no state. But the state exists everywhere and always. Therefore men have the natural aptitude to form the state.

That man possesses the *natural propensity* to live in the state is equally clear. Anarchy is a most uncommon phenomenon. People have often rebelled against their rulers and governments. However, when rulers and governments were overthrown, people never remained for any length of time without rulers and governments, but immediately set about establishing a state more to their liking. Men thus instinctively seek their common temporal

welfare by uniting in mutual co-operation under the directive guidance of some governing authority. If men possessed no natural propensity to live in the state, rebellion would be the rule, and they would seek to live without rulers and governments as their natural mode of life. Since the opposite is true, it is manifest that man, by his very nature, is impelled to live in the state as a normal mode of existence. That man possesses the *natural need* to live in the state is

evident from the fact that it is impossible for him to bring about the *physical, intellectual, and moral development* of the potentialities befitting his human nature except in the organized existence characteristic of the state. Neither the individual person nor the family is capable of supplying all the means necessary for the complete development of the human personality, although this development lies within the natural scope of the common end of human life as intended by the Creator of man. Individual persons and families cannot adequately cope with the dangers to property, bodily integrity, and life, which threaten them from the forces of nature and the evil intentions of criminally minded malefactors, without the organized protection of a properly constituted state. Nor are they, as isolated individuals and families, capable of procuring or manufacturing the things required for the proper development of their physical life and economic existence; only through the extensive co-operation of everyone for mutual assistance, as is found in the organization of all groups directed toward the common welfare, in the state, can this development be accomplished. The arts and

sciences are the outgrowth of the concentrated efforts of many generations working in dependence and unison; they are the result of coordinated observation, experimentation, exchange of ideas, and reasoning processes. Single persons and families, and even smaller groups, are incapable of inaugurating and maintaining the facilities necessary for bringing education to that high level of perfection which the innate potentialities of man can attain; to accomplish this, the personal and economic resources of a highly organized society, such as is found in the state as a stable and permanent union of a large number of families and individuals, are a practical necessity. To reach the plenitude of his moral capacities, man must be able to practice the social he is by nature a social being. The family, however, is too restricted in numbers to give full scope for the exercise of the virtues which are connatural to his human nature, because many social virtues. The moral growth of people, therefore, would be correspondingly restricted and stunted, if individuals and families lived more or less in isolation. By living the group life of civil society in the state in all its ramifications and diversified activities, man can exercise all virtues, personal and social, and thus attain to the full growth of his moral personality as intended by God. Even for the complete moral development of man, therefore, life in the state is a natural need.

Now, any society which man is prompted to form and in which he is required to live, in consequence of a natural aptitude, propensity, and need, is a dictate of his nature and of the natural law and as such is a 'natural society.' The perfection of man's physical, intellectual, and moral life is

always found in civil society and nowhere else, as is evident from the testimony of history and experience. Hence, *civil society or the state is a natural society*, a requisite of human nature.

The State a Perfect Society

There are two natural societies directing man toward the attainment of his natural end here on earth — the family and the state. The family is an ‘imperfect’ society, whereas the state is a ‘perfect’ society. A society is said to be ‘perfect’ if it possesses within itself all the means necessary for the attainment of its proper end, so that it is not dependent on any society of a higher order for the attainment of its end; it is ‘imperfect’ if it does not possess within itself all the means required for the attainment of its end.

The family of itself is incapable of providing for peace and prosperity in any full measure. The family cannot ward off a concerted attack on the part of a band of individuals or families, as is evident; it needs the active assistance of others. Nor is the family, by itself, sufficient to furnish all the means necessary for the complete physical, intellectual, and moral development of its members, as was pointed out in the foregoing section. These means must be supplied by the organization of civil society or the state. Since the family is thus dependent on the society of the state for its complete protection and the full attainment of its end, it is an ‘imperfect’ society.

On the other hand, the *state is a perfect society*.

The state possesses within itself all the means necessary for the attainment of its proper end, which end is the common good of peace and prosperity. In other words, the state is *self-sufficient* in its own sphere of activity; it is a 'perfect' society.

In the process of the development of man's social nature, the community of the family is the first and most natural. As the number of families increases in a locality, the physical, intellectual, and moral requirements lead gradually to a division of labor and social functions in different directions among the various families. A community, with community interests, is formed. And as various communities of families develop in a given territory, this division of labor and social functions becomes still more diversified. The interests of the various groups, though common in a general sense, will often conflict with one another, especially in the economic field. While co-operation is necessary, jealousy, discontent, and moral delinquency will often disturb the social order and threaten to disrupt the peace. The family as a society is evidently not sufficient to meet the rising demands of social charity and justice. A new community order is necessary in order to coordinate the social and economic activities of all families and communities and to safeguard the rights of everybody concerned. A greater authority than that of the father of the family is needed if peace and order are to be preserved and fostered; laws must be imposed on all for the common good, and justice must be maintained and administered. And thus the social process passes from the family to the political state.

The state does not abolish the family and the free associations of particular groups; but they are assimilated into the broader organization of the state which has a goal of its own and its own authority. The state is a unity of order, and in it man's social nature is able to develop in a more perfect manner. The self-sufficiency of the state is primarily *social* and *political*, a self-sufficiency of unity, order, and peace; it is a *legal* and *moral* self-sufficiency, for the regulation of internal matters and for independence in matters pertaining to other states. These are goals which the families and individuals could not attain through their efforts with the limited means at their disposal.

To effect this order and to achieve this unity, the state enacts laws and regulations through its legislative power; makes decisions and ends disputes through its judiciary power; and enforces the laws of the land and the decisions of the courts through its executive power. To protect the commonwealth from external attack and internal sedition, the state uses the might of its armed forces. The comprehensive order of the state and its constituents is thus a complete and self-sufficient order, capable of leading its members to the common good of peace and unity for the benefit of all as a self-contained community.

To say that the state is self-sufficient and perfect does not necessarily imply that it can provide for all the wants of its citizens, especially in the economic field. What is meant is that the state possesses the organization which normally is capable of providing or procuring the means necessary to satisfy the wants of the community in a reasonable measure, even if it must negotiate with other states to

import certain raw materials or finished products not available in its own territory.

Self-sufficiency also implies that the state is a complete organization in itself, with all the rights, powers, and competences necessary to carry out its activities, so that it is *independent* of any other society of a similar nature. That is why we see that people never set up a social order higher than that of the state for the attainment of temporal happiness. Some countries, for example, the United States, have a union of separate states. These states, however, are only semi-autonomous and are limited in their activities. The federal government, of which they are integral parts, is the real state, and it alone is self-sufficient and a perfect society.

The Origin of the State

When the problem of the origin of the state is raised, the problem does not refer to the origin of any particular state in the setting of its special historical circumstances. It is a question *here of the origin of the state in general as a social institution* with its supreme juridical moral power, with its right over life and death and over peace and war. Whence comes the institution of the state? Why do people found a state at all? What is the origin of the state?

The state is an institution composed of human beings. It is a *human* institution. It must, we claim, find its explanation in *human nature*. It must, therefore, have a natural origin derived from the peculiarity of human nature. The nature of man, considered in its full philosophical meaning, is both

bodily and spiritual, and the state must have its origin in the bodily and spiritual nature of man. Now, the nature of man is not something static; it is the dynamic principle of all the activities of man tending toward the realization of the inherent and native potentialities of man as the natural end of man's being and existence. Consequently, to live in the political status of civil society, in the state, is the necessary result of man's sociality as a part of his nature, for the attainment of man's natural end of being and existence. Because man seeks happiness in the completion and perfection of his personality, and because this completion and perfection can be achieved only through social living with his fellow men in the permanent union of political life, the formation of the state and life in the state is a moral necessity imposed on man by his nature. Civil society is thus an intentional disposition of man's nature which he cannot escape, if he intends to find temporal happiness in the completion and perfection of his personality while living here on earth.

It follows, then, that *human nature* is the *reason* for the existence of the state and the *cause* of its origin. The state is the necessary outgrowth of man's nature seeking its completion and perfection in the status of civil life. Since the development of man's nature is natural, the origin of the state, which is the result of this development, is also natural. God, therefore, is not the direct and immediate cause of the origin of the state, as if He established it through some superhuman, supernatural act. God, of course, wills the state as an integral part of the human and cosmic order, because He is the Author of human nature

and therefore indirectly and mediately also the Author of the state as an institution to the formation of which human nature naturally tends.

Man is a rational being, and rationality implies intellectual insight and freedom of the will. The normal life of man is based on his rationality, free will included, even if certain lines of activity are prompted by his nature. Conjugal life, and therefore conjugal society, are prompted by human nature; but in concrete instances the marriage of two individuals will only be effected by mutual free consent. So, too, civil life and therefore civil society, are also prompted by human nature; but, as in the case of marriage, the state cannot be formed and originated except through the co-operation of the free will of men. The origin of the state, therefore, cannot be the result of some blind, irrational, biological urge of man's nature, but must find its cause in the *free consent* of the men who form the state.

The *actual origin* of the state must be envisioned somewhat as follows. Man is by nature a social being who must seek the completion and perfection of his nature in dependence on other human beings. Since man in isolation and solitariness cannot achieve the full end of his being, because he would lack many aids necessary for his complete welfare, God ordered man's life in such a manner that he is born and reared in society. Primarily, man is born and reared in the family. Then, since the family is not self-sufficient, the families, upon increasing in number and as a result of diversification and specialization of interests and activities, combine to form the political community, because only the state possesses the self-sufficiency necessary for

the full development of human life as required by the family and the individual.

The state, therefore, originated through a natural growth out of the natural combination of *families*. Families of the same kin would gravitate into more or less concentrated communities. A single *clan* or *tribe*, as its population grew, would consist of a number of such communities, under the leadership of a chief or patriarch. The expansion of the clan and tribe, and possibly also the juxtaposition of other clans and tribes in the same general territory, would gradually develop a concord of interests in some matters and a clash of interests in others. The need for protection and security would become more urgent, so that the family organizations of itself, would be insufficient to meet the rising needs of all. Through imperceptible stages, then, the family passed over into a new form of society, possessing an autonomous sovereignty and sufficiency. This is the view expounded by Aristotle,¹ and it is the view almost universally accepted by the sociologists who have made a comprehensive study of primitive peoples and ancient states.

In later periods of history some states, no doubt, had their origin in virtue of a direct effort to form a state, and not as the natural outgrowth of families united through the ties of blood. Such, for example, was the formation of the Orange Free State in 1854. Here, however, we are speaking, not of the origin of a particular state, but of the rise of the state in general as a new form of social life superior to that of the social life of the family in general.

The Theory of Hobbes

Thomas Hobbes (1588—1679) also deduces the origin of the state from the nature of man. But his view of man's nature is pessimistic in the extreme. In itself, according to Hobbes, man's nature is essentially *anti-social*.

In the '*state of nature*,' prior to the existence of civil society, Hobbes contends, men had equal faculties of body and mind and used them for their exclusive personal advantage, to the injury of everyone else. "Hereby it is manifest," Hobbes argues,² "that during the time men live without a common power [the state] to keep them all in awe, they are in that condition which is called war; and such a war, as is of every man, against every man. . . . In such condition there is no place for industry, because the fruit thereof is uncertain, and consequently no culture of the earth; no navigation, nor use of the commodities that may be imported by sea; no commodious building; no instruments of moving and removing such things as require much force; no knowledge of the face of the earth; no account of time; no arts; no letters; no society; and, what is worst of all, continual fear and danger of violent death; and the life of man, solitary, poor, nasty, brutish and short."

Hobbes also pictures the life of man in this 'state of nature' from the *moral* angle. "To this war of every man, against every man, this also is of consequent; that nothing can be unjust. The notions of right and wrong, justice and injustice, have there no place. Where there is no common power, there is no law; where no law, no injustice. Force and fraud are in war the two cardinal virtues. . . . It is

consequent also to the same condition, that there be no property, no dominion, no 'mine' and 'thine' distinct; but only that to be every man's, that he can get; and for so long, as he can keep it."³

Due to the imperative impulse for self-preservation found in men, they seek peace; otherwise all would be destroyed. In order to end this continuous and self-destructive condition of warfare, they *found the state* with its sovereign power of control by means of a mutual *covenant*. Such is the origin of the state, the 'Leviathan.'

Evaluation. Needless to say, the harrowing picture which Hobbes draws of man living in the pre-state condition is altogether *imaginary* and *arbitrary*. Aside from this, it takes but little thought to realize that the picture is radically contrary to the nature of man as it must have been even in the pre-state condition.

According to Hobbes, man originally is *individualistic* and *anti-social*. He overlooks the vitally important fact that there could not be a 'state of nature' without the *family*. Family life, however, means *social life*. And the social life of the family means the *social virtues* which are natural to the members of the family. Family ties, even among primitive peoples who live without the benefit of the civil life under government authority, are the strongest in the world and are universally characterized by mutual love, mutual assistance, and mutual protection. Wherever families exist, there is industry and property, affection between husband and wife, respect and obedience of the children toward their parents, love and devotion between related families, and friendly feeling toward neighbors. Right and wrong,

justice and injustice are based, not on the positive law of the state, but on *natural law*, and natural law is the basis of the family. The substantial error of Hobbes consists in deriving the origin and nature of the state from a merely human covenant or contract, thus denying the natural *origin* of civil, political society and its authority.

The Theory of Rousseau

Jean Jacques Rousseau (1712—1778) viewed man in the 'natural state,' in opposition to Hobbes, as naturally and completely free, fully self-sufficient, and altogether virtuous. Each man was a peer among peers, endowed with equal rights, and no one was subordinate to anyone else. There was no work or toil of any kind, but all lived an idyllic, arcadian life of ease and comfort and tranquillity. If Hobbes's concept of man in the 'natural state' was pessimistic, Rousseau's was optimistic in the extreme.

Unfortunately, according to Rousseau, this paradisiac condition did not last. It was not 'sin' which disturbed the scene, bringing evil and misery in its train; at least not 'sin' in the Christian sense. Nature endowed man with the fatal gift of *perfectibility*. Slowly and gradually man began to learn the arts, acquire objects as his own, fashion tools of various sorts, and communicate and associate with others; and so he left the condition of the innocent savage for the more turbulent condition of social contacts and activities with his fellows. The result was fraud and deceit, dissension and conflict everywhere, and the loss of primitive peace and tranquility of spirit. Conditions became so bad that men

found it useful to establish the state in order to restore and preserve peace. The state came into being through the free consent and *social contract* of all concerned, whereby everyone grants all his individual rights and ruling power to the 'general will' embodied in the authority of the community. In this way, Rousseau thought,⁴ it was possible "to find a form of association which shall defend and protect with all the strength of the community the person and the goods of each associate, and whereby each one, uniting himself to all, may nevertheless obey none but himself and remain as free as before." To the question as to how men in the state can remain as free as before, Rousseau answers: "Each of us puts into a common stock his person and all his power under the supreme direction of the general will; and we receive in our turn the offering of the rest, each member as an inseparable part of the whole."⁵

Evaluation. There are many flaws in Rousseau's theory. As in the case of Hobbes, Rousseau's view of man's nature in the 'natural state' is purely imaginary and arbitrary.

Rousseau *confuses physical and moral freedom*. We admit that man possesses 'physical' freedom as an essential attribute of his rational nature, so that he has freedom of choice in the activities of his will. But this does not mean that he is free from all moral obligation. The *natural law* is in force at all times, and the natural law confers certain inalienable rights on persons, with corresponding moral obligations or duties on the others.

Like Hobbes, Rousseau conceived the pre-state condition of man as essentially *individualistic*; but, whereas, Hobbes considered primitive man to be 'anti-social,' Rousseau

considered him to be *non-social* by nature. Rousseau was guilty of a serious oversight. The family certainly existed at all times, and the family has not changed essentially. As was pointed out against the theory of Hobbes, family life is by its very nature *social* in character, not individualistic. Furthermore, the very nature of membership in the family precludes the possibility of perfect equality; the relation between husband and wife and between parent and child brings with it a natural individual *inequality*, with differences in rights and duties in domestic society which are ineradicable and unescapable. And family life naturally demands *private property*, so that private property did not have its origin in fraud and force, as Rousseau contended, but in the needs and requirements of the rational nature of man. These same needs and requirements prompted man to till the soil, to learn the arts, to associate with others, and finally to *form the state*, because the perfection of his nature demanded these things.

Since the formation of civil society, of the organization of the political state, is an outgrowth of man's natural needs, the origin of the state is a dictate of the natural law, not of an exclusively human agreement and social contract.

The Evolutionary Theory

The *basic principles* of evolution, in so far as they apply to the origin of the state, can be summed up briefly. Man evolved from the brute according to strictly deterministic biological laws. Biological laws, in the case of man's development, become sociological laws. The blind forces of

evolving nature developed the family out of sexual promiscuity; the same blind forces developed the state out of the family: the environment, and not reason and will, brought on the development, so that the state is merely an adaptation to the biological environment of man. Originally, men were governed by egoism and fear.

For self-protection they banded together. Egoism gives way to altruism, and altruism produces a sense of the common good governing all human relations. When the feeling of unity and mutual sympathy pervades a relatively large group of individuals associated together, the state, with civil authority as the capacity of expressing the general will, is present as an established fact. The prototypes of the human state are the anthill and the beehive.

Evaluation. Even if we granted the fundamental assumption of human evolution, the evolutionists are guilty of a *serious omission* in their calculation of the factors that assisted in the original formation of the state.

Quite obviously, the social life of the *family* preceded the formation of the state; the origin of government, on evolutionary principles, is a relatively recent development in the sociological evolution of man. The family was a universal and firmly established institution long before the first state ever appeared. While men and women are strongly influenced by the sex instinct in entering conjugal society and raising a family, it would be a grave error to think that blind instinct is the sole factor which determines their action. *Rational insight* and the decision of the *free will* play a far greater role than mere instinct in the choice of a mate and in conduct of family life, as experience amply

proves. Only a confirmed materialist will deny this fact, and he does so in violation of all evidence. Since the state evolved out of the family, it is clear that reason and will must also have played a dominant role in the original formation of the state. After all, man is more than an ant or a bee, and his reason and will give *initiative* and *direction* to all sociological changes that affect his welfare. Adaptation to environment was certainly a factor in the formation of the state, but only because the changing sociological environment made man intellectually conscious of new needs for his physical, intellectual, and moral perfection. It was to meet these needs, since they could not be taken care of sufficiently by the activities common to the family circle, that man formed the higher organization of the state. The state, therefore, was indeed an outgrowth of the family, but as a *natural demand of man's rational nature*, not as the blind result of blind biological forces.

A variant of the biological theory is the *racial theory* advocated by Adolf Hitler's national socialism. According to the basic concepts of this theory, the state originated through the blind struggle of the races as biological groups. Superior blood is the deciding factor in this struggle, so that the superior race wins out and eventually becomes a state. L. Gumplowicz was a typical exponent of this view.

Here, too, reason and will are excluded as factors in the formation of the state; nothing operates but the blind, irrational, non-moral forces of a biological process. The arguments against the general evolutionary theory are also valid here. Man is more than a sum of biological characteristics and tendencies. As a rational being, *his*

intellect, will, and moral inclination must always be figured into any social process of human development and improvement as initiating and directing factors.

Government by Consent

The contract theory of Hobbes, Rousseau, and others, and the biological theory of evolutionism and racism, are extreme in their basic concepts. The former overemphasizes reason and will, while it fails to take into account the tendencies and demands of human nature. The latter overemphasizes the biological tendencies, while it ignores the rational nature of man.

The *scholastic theory* of the origin of civil society avoids both extremes. The state originates in the native tendencies of human nature. With *moral necessity*, not biological inevitability, it grows out of the social life of the family, because human nature, in seeking to satisfy its increasing needs for self-perfection, cannot find the adequate means to satisfy these needs in the restricted activities of the family. It lacks self-sufficiency in the family, and so *human nature* tends to unite the families into the higher and self-sufficient organization of the state. Basically, therefore, the state finds its origin in human nature. However, since human nature is essentially rational, endowed with intellect and free will, the state could not actually and concretely come into existence except through the active participation of *reason and free will*. The interaction of the biological forces and of the rational powers of man's nature as a 'rational animal' are responsible for the origin, formation,

and organization of the state as the supreme realization of man's social life on earth.

Two *things* must be accounted for in the origin and formation of the state as a new form of human social life. The *first* is the *essence* of the state. The state is a new form of society, with an authority superior to that of the family and with an end different from that of the family. Hence the question: Why do human beings form the state at *all*? The answer is: Because human nature is so constituted that it must strive for ultimate self-perfection, which cannot be attained except in the new social form of the political state. The state, therefore, is a dictate of human nature and a mandate of the *natural law*; in so far it is independent of the human will in its origin. The *second* is the origin and formation of the *individual historical states* as they actually and concretely come into existence as historical events in definite localities on the globe (for example, in France, Italy, Greece, Mexico). Hence the question: How does a multitude of families and individuals actually and concretely bring about the origin and formation as it exists *here and now*? The answer is: Through the *mutual consent* of the families and individuals who freely decide to live in the society of the political state for the purpose of actively co-operating for the common good of all. While, therefore, the state in its metaphysical *essence* is a mandate of human nature and as such independent of the human will, the state in its historical *existence* occurring at a particular time and in a particular territory is dependent on the free consent, the mutual *pact*, of those desiring to form the state. Historically and concretely, then, the state is *government by consent*.

The parallel between conjugal society and civil society is obvious. The 'essence' of conjugal society and the family is determined by the natural law and as such is independent of the consent of the contracting couple when they unite in marriage. The 'existence' of a particular marriage between two persons, however, is dependent on their mutual consent, and there would be no existing marriage without their freely given consent. So, too, with the state; it is the combined result of a natural urge and a free decision.

This consent or pact may be *express or tacit*. 'Express' consent is given verbally or expressed in writing, as was done, for example, in the formation of the Orange Free State and of the United States, where the contracting members deliberately set about to establish their government. 'Tacit' consent is implied by the people accepting the given government or omitting to oppose it, as happens, for example, when someone assumes the ruling power or when a conqueror subjugates a people, and the people acquiesce in the new government.

The doctrine here proposed is that of *Robert F. Bellarmine* (1542—1621) and *Francis Suarez* (1548—1617), two eminent philosophers of late scholasticism. Most modern scholastics subscribe to this view. Their teaching, as it is now generally conceded, was adopted by the founders of the republic of the United States. It is expressed in the famous words of the Declaration of Independence: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness. That to secure these rights,

governments are instituted among men, deriving their just powers from the consent of the governed.”

We subscribe to the doctrine of Bellarmine and Suarez and contend that the concrete historical *state comes into existence through the consent, express or tacit, of the members contracting to form the state.*

The *formal* element characteristic of the state is the constant moral union of a multitude of families and individuals actively co-operating for the *common, public good* of all through the *bond of legal justice*. To establish this bond, the consent of the governed is necessary and sufficient.

Unless we wish to ascribe the origin and formation of the state to some blind, irrational biological or racial urge, we must assert that the bond of the moral union, which knits a multitude into the new social order of the state, must be *rational* in its origin. It can be rational only if those who unite to form the state have ‘knowledge’ of the common end involved and ‘will’ to co-operate to achieve this common end. These conditions mean definite *consent* of the members. The common end is public welfare, the peace and security and prosperity of all as a body. To belong to a state imposes the obligation on all to strive mutually and effectively for this common end. Obligation, however, presupposes the consent of the one obligated, because there can be no obligation to strive for the *common* welfare under *legal justice*, which is the mark of the state, unless one is aware of the obligation and accepts it; otherwise such an obligation would be irrational. Hence, consent is *necessary*.

This consent is also *sufficient* for the establishment of the state. Given the multitude of families and individuals desirous of seeking the common good of all through mutual and effective co-operation, the very fact of their consent puts them in the status of a civil society and obligates them to strive efficaciously for the common welfare through mutual endeavor and the use of common means. They then cease to be a mere multitude and become a 'society'; and since the end of this society is the public welfare of all as a body, a definite moral union is established with a distinct common end. Civil rights and duties now bind them in virtue of the natural law. This society is the state.

Pope Leo XIII, one of the greatest modern exponents of the state, expresses the doctrine of government by consent succinctly, as follows: "Diverse families, without abandoning the rights and duties of the domestic society, unite under the inspiration of nature in order to constitute themselves as members of another greater family, the civic society."⁶

From the above it is clear that a *double authorship* exists with regard to civil society or the state. The immutable essence of the state, of which every individual state is an expression and embodiment, has its foundation in the natural law. The Author of human nature and of the natural law is God as the Creator and Supreme Lawgiver. Hence, *God* is the primary and ultimate cause of civil society. The contingent existence of a particular state is due to the effective consent of those who associate together to form the state and obtain thereby the benefits to be derived from civil society. The *contracting members*, therefore, are the

secondary and proximate cause of the state as it actually and concretely comes into existence.

The Constituents of the State

Every society must consist of constituent members. They are the *material* cause of the composition of the state. While the state as a 'society' is a moral unity, it consists basically of a plurality bound into unity. Conjugal society is a simple society, because it consists of individual physical persons. The state, on the other hand, is a composite society, because it consists of subordinate societies or associations as moral persons.

The *matter in general* of the state is all those persons, moral or physical, who belong to the state and are its constituents. This matter is either 'proximate' or 'remote.' It is *proximate* if the persons are subject to the jurisdiction of the state directly, and not through the social bond of some subordinate society of which they are members. It is *remote* if the persons are primarily members of a subordinate society, and this subordinate society is proximately subject to the jurisdiction of the state.

Primarily, we contend, the *proximate matter* of the state as a natural society is the *families*.

Since civil society is a natural society, natural law determines both its proximate and remote matter. Hence, those persons who are ordered directly and primarily to assume the social bond of civil life in the state are the proximate matter of the state.

Now, the natural law orders the families directly and primarily to assume the social bond of civil life in the state. There are three natural units among men: the individual, the family, and the state. The individual is ordered by natural law to the family: the individuals are not only born and reared in domestic society according to the dictates of natural law; they also have the natural destiny to be the fathers and mothers of the race. Only in the family does the average person find the means to perfect his personality. And the families are ordered by the natural law to the social life of civil society in the state, because it is only in the political state that the families, and in the family the individuals, can find the perfection desired and sought as a result of the needs and demands of human nature. Families gather into communities, and communities gather into colonies and provinces; then they naturally take the final step and establish the state. Man, therefore, in seeking his connatural development, is directly ordered by the natural law with regard to the family; and the family, without any further sort of mediation, is directly ordered by the natural law to the civil society of the state. Primarily, therefore, the families are the proximate matter of the state.

It happens, of course, that *adult individuals*, who are unmarried, have left the domestic society of the parental roof and lead a life of their own. Since there exists no social bond mediating between them and the state, they, too, belong to the proximate matter of the state, but only *secondarily* and *per accidens*.

Children belong to the state through the mediation of the family of which they are members. Immediately and

directly they are under the jurisdiction of the father as the juridical head of the domestic society of the family; only 'mediately' and 'indirectly' as remote matter, do they belong under the jurisdiction of the state. This applies also to the wife, in so far as she is subordinated to the husband.

The state, therefore, is the natural expansion of the families, rather than of the individuals. The families are by nature and existence prior to the state and do not lose their identity by being incorporated in the state.

The Proper End of the State

It is not a question here of the 'ultimate' end of the state, because the ultimate end of the state coincides with the ultimate end of the family and of all individuals, namely, the glorification of God and the eternal happiness of man in the possession of God. What we seek to determine is the *proper and immediate end of the state*; it is that end which distinguishes the state from every other type of society and determines its specific nature. The concrete states may be monarchies, aristocracies, democracies, or blendings of these fundamental forms. Since, however, all forms agree in this that they are 'states,' there must be a 'proper end' of the state as such in all of them. And since the state is a mandate of human nature and of the natural law, the proper end of the state must be *determined by nature itself*.

Three main theories regarding the proper end of the state have been advanced. The theories differ according to the scope which the proponents ascribe to the state's activities.

The *first* general theory *restricts* the purpose of the state to the protection and furtherance of the *individual rights and liberties* of the subjects. The proper end of the state, therefore, consists solely in forbidding and hindering all those external acts which interfere with the exercise of the personal rights and liberties of other members of the community.

This is essentially the theory of *Kant*. According to Kant, the juridical order is divorced from the moral order. The moral order pertains merely to the 'internal' liberty of man as an autonomous being, while the juridical order pertains to the 'external' liberty of man as a social being. Hence, the proper end of the state is exclusively 'peace,' i.e., the preservation of the liberty of all subjects so that they can live in harmony. The individualistic, liberalistic *Manchester School* maintained that material prosperity is the highest good of man on earth. Private property is the keystone of a healthy social order, and each individual has the right to accumulate as much wealth as possible in free competition with others. Hence, it is the duty of the state to give free rein to personal initiative, and it is the end of the state to protect each one in the acquisition, possession, and enjoyment of private property.

Evolutionary utilitarians also advocate the restriction of the proper end of the state. In their view, mankind is in a continuous process of evolution toward the chiliastic state of the future. This process is a sociological 'struggle for existence,' in which the less useful members are gradually eliminated, until none remain but those ideally suited for the future ideal state. The 'survival of the fittest' is a

biological law governing the evolutionary process, and the state must not interfere with its operation. Hence, the state has as its end nothing more than the protection of individual rights. The welfare of all subjects cannot be the proper end of the state, or it would be forced to protect the weak and unfit and thus nullify the evolutionary process.

The *second* general theory *expands* the purpose of the state to such an extent that it considers the *state as an end in and for itself*, submerging all individual rights and liberties in the omnipotent will of the state.

This view was dominant in the political philosophy of classical paganism. Thus, *Plato* maintained that man existed solely for the state, and the state is the great pedagogue of the citizens; it is the purpose of the state to educate its subjects to virtue, and all subjects must subordinate themselves completely to the state. The state, therefore, has unlimited power over property, marriage, children, and family life. Even *Aristotle* conceded far too much power over the individual to the state.

Toward the end of the Middle Ages, *Niccoló Machiavelli* (1469—1527) revived the pagan concept of the absolutism of the state. Politics has nothing to do with morality. The individual virtues must give way to the interests of the state. The state is everything; and all things are good, if they are good for the state. Results count, not the means employed, because the moral law which binds the individuals does not bind the nations. Hence, treaties need not be kept and rights need not be respected, if they run counter to the objectives of the state. *Hobbes*, too, gave absolute power to the ruler, once the state is established.

The pantheists, such as G. Hegel (1770—1831) and *F. Schelling* (1775—1854), saw in the state the supreme embodiment of the Absolute in its internal deterministic evolution. The state is an end-in-itself, and the individuals are mere means.

In our day, the omnipotence of the state has been proclaimed by the totalitarianism of *national socialism* in Germany, fascism in Italy, and communism in Russia. The state is supreme, and everything and everyone is subservient to the interests of the state.

The *third* general theory is the one defended by most Christian thinkers and *scholastics*. It represents a middle course between the extremes of the foregoing general theories. They contend, in opposition to the first general theory, that the proper end of the state includes more than the mere preservation and protection of individual rights and liberties; they also contend, in opposition to the second general theory, that the state is not an end-in-itself and that the individuals and families must not lose their identity in the state. The proximate and proper end of the state is *public welfare*, namely, the common good of peace and prosperity, through the realization of a social status which offers the citizens security in their rights and the opportunity to achieve true temporal felicity by means of self-activity. True temporal felicity is achieved, when the citizens live *in peace*, which is tranquility of order internally and externally, and in prosperity, which is the abundance of all the means necessary for the complete self-perfection of the individuals and families in their physical, intellectual, social, and moral life. It is not the end of the state to furnish

temporal felicity ready-made to its citizens, because temporal felicity is not a commodity which can be manufactured and then handed over to a person. But it is the proper end of the state to furnish the opportunity and the means, so far as is possible with the material and human agencies at its disposal, to its citizens, so that they may find it possible of achieving temporal felicity *through free self-activity*. This possibility the state must strive to place within the reach of all its members, not only of a privileged class or group, because the proper end of the state is the 'common good' or 'public welfare' of all.

We subscribe to the scholastic theory and contend that the *proper end of the state is public welfare*.

If we desire to know what the proper end of the state is, we must go back again to the reason why people form the state. They do so because they come to the realization that neither the individuals nor the families nor the conventional voluntary societies are self-sufficient, since they are not able to supply the bodily and spiritual goods necessary for the developed life which man seeks and needs. To supply these necessary goods they combine to form the state; and the state is a new form of social living, a qualitatively different society, different from that of the family and all other conventional societies. The individual good merges in many ways with the common good sought in the state, for the simple reason that the state consists of and in the individuals and families and exists for their benefit. But there is a difference. The individual good is a 'private' good, and the individuals and families are best able to look after their own private interests in their own way. There is,

however, also a 'common' good which contrasts with the 'private' good, and it is the good of the *social body* as an organized community of individuals and families; it is the welfare of the 'society as such,' *public welfare*, and this cannot be achieved by the individuals and families but only through the state. It is, therefore, the proper end of the state to work for the 'public welfare' of the social body as a unit, and that is the reason why people combine to form the state.

M. Cronin⁷ explains what is contained in the 'common good' as the characteristic end of the state. "It is the business of the State to protect the community from enemies without, and to furnish the machinery and prepare the organization required for this end. Again, it is the business of the State to make laws for the community, to set up tribunals for administering justice, to establish a proper educational system, to regulate commerce so that the whole community may not suffer by the inordinate action of a few individuals. All these things are matters appertaining to the good of the community as such. Again, it is the business of the State to provide and maintain such an environment, physical and moral, as is required for the welfare of individuals, physical and moral, for though individuals may benefit by such an environment, it really is, properly speaking, a 'good' of the whole community, and the providing of it is wholly outside the capacity of individuals. Men could not be healthy in unsanitary surroundings. Virtue can prosper only with difficulty where the level of public morality is low and the atmosphere morally offensive."

It is obvious that the individuals and families are incapable of defending themselves, alone and by themselves, against the aggression of a powerful foreign enemy. An army is required for this defense, and an army requires the *conscription* of citizens as soldiers who can be ordered into *battle and death*, if necessary, for the preservation of the community. But this raising of an army and this ordering of fellow men into battle and death far exceeds the right and power of individuals and families. This one point alone is sufficient to disprove the contention of the first theory, mentioned above, that the state is nothing more than an institution to protect individual rights and liberties. The fact that citizens can be conscripted, and the fact that the soldiers must be ready to sacrifice their life in battle, is justifiable only on the supposition that the state has a proper end of its own and that this end consists in the *public welfare*, the common good of the community as such, distinct from the private good and the private rights of the individual. Radical *pacifists* are of the opinion that the state has no right to send citizens as soldiers into war, no matter how just the cause. However, the generality of men, and this includes the wisest and best, have always conceded this right to the state, and they cannot be wrong in a matter which affects the most vital rights of man.

We contend that the second theory, which defends the absolutism of the state as an end-in-itself, contradicts the *natural law*, because it reduces human beings to a mere means for the progress of the state; this is a violation of the *essential dignity of man*. The state exists for the benefit of man; not man for the benefit of the state. When men form

the state, they form it as an organization of *service* for themselves. The state is not a substance, an entity existing for itself apart from the individuals and families who compose it: they are the state. The destiny of the state is temporal and mortal, while the ultimate destiny of man is eternal and immortal; and the temporal and mortal must be in the service of the eternal and immortal; otherwise there would be a subversion and perversion of the right order. Totalitarianism is slavery of the people.

The proper end of the state has been well defined in the opening paragraph of the Constitution of the United States. "We the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America."

Authority and Power

The *authority* of the state and its power are, strictly speaking, distinct realities. The 'authority' of the state is the *right of jurisdiction*, or the moral competence to issue commands and impose obligations on the wills of its subjects in matters pertaining to the public welfare. The 'power' of the state is the *right of coercion*, or the legal competence to enforce obedience to these commands and fulfillment of these obligations. Since mere authority without power is an empty shell and mere power without authority is nothing but tyranny, the two are so closely

interwoven in actual fact that it is customary to consider them as synonymous, so far as all practical purposes are concerned.

Whence is this supreme civil authority and power of the state *derived*?

The question presents a distinct problem. In posing the problem, we are not concerned with the particular bearer or bearers of this supreme authority and power. Nor are we concerned with the particular type of government in which it is found. What concerns us in this connection is the *cause* of the supreme civil authority and power *as such* of the state in general.

The *contractualists*, such as Hobbes, Locke, Rousseau, and their followers, maintain that the supreme authority and power of the state arises from the individuals who originally set up civil society or the state; and they do this by yielding their individual rights to their ruler or by pooling their individual rights and efforts for mutual protection and advantage. *Evolutionists* maintain that the immediate cause of the state's supreme authority is collective human nature developing through biological necessity.

We subscribe to the *scholastic teaching* that the supreme civil authority and power *as such* proceeds *immediately and proximately from* God, without the intervention of any other cause, on the basis of natural law as a requirement of the *natural order*.

It is a valid principle of science and philosophy that no effect can be greater than its cause. No cause can produce an effect superior to itself, for the self-evident reason that

‘no one can give what one has not got. Now, it is obvious that supreme authority and power is an *essential element* of the equipment necessary for the state in the realization of public welfare. Without this authority and power it would be impossible for the state to direct *efficaciously* its members toward the *specific end* for which the state is formed, namely, the public welfare of the community as such. This specific end is a requirement of natural law, and as a consequence the supreme authority and power of the state is also a requirement of the natural law, because any society which by nature has a specific end must also be entitled by nature to the means necessary for the attainment of that end. But since the specific end of the state, in as much as it is prescribed by natural law, is independent of the will and consent of the persons forming the state, the supreme authority and power of the state, as an essential means to that end, is also independent of the will and consent of these persons. That the state is really a requirement of the natural law, was proved when it was shown that the state, like the family, is a ‘natural’ society.

The natural law, as was shown before, is a participation in the eternal law. The order of the natural law, therefore, is a *divinely established order*, with God, the Eternal Lawgiver, as its immediate, proximate Cause. In consequence of this fact, man is in no way the author or cause of the natural law, but is subject to it in all things, even without his consent. He may violate the natural law, but he still cannot on that account escape its binding force. Just as the essence of conjugal and family society is a mandate of the natural law and has God as its immediate

author, so the essence of the state is a mandate of the natural law and has God as its immediate Author; and since the supreme authority and power of the state is an essential element of the state, this authority and power must also have God as its *immediate Author*.

As soon, therefore, as men form the state by mutual consent, God, without their consent and intervention, gives to the new political body (the state) the supreme authority and power required by natural law for the attainment of its specific end. This does not demand a special supernatural act on the part of God; authority and power are given to the new political body (the state) by God in *virtue of the natural law*. The process, therefore, is natural, not supernatural, and belongs wholly to the *natural order* as instituted by God. The process is neatly characterized by I. W. Cox⁸ "Because in human generation," he says, "the parents initiate a procreative process which demands a human soul, and in consequence of which God creates a human soul, the parents can rightly be called the efficient causes of the concrete individual generated. So too, citizens constituting civil society start a process which demands supreme civil authority, and in consequence of which God grants *immediately* and as sole *proximate* cause this authority, although the citizens still remain the efficient cause of the concrete civil society. The members, who organize the state by their consent, place the foundation of the civilly social bond. This bond, by the Natural Law, descends *immediately* on those giving consent, and immediately there arises by the Natural Law supreme civil authority as an essential property of civil society."

The whole argument, of course, revolves around the question whether the state's supreme authority and power is *qualitatively and quantitatively superior* to the authority and power vested in the individuals and families who form the state. It is. The state's proper end being the public welfare, it can and actually does, in order to efficaciously realize this end, levy taxes upon its citizens, condemn private property when necessary, preserve peace and order through law enforcement agencies, enact general laws affecting all individuals and families, inflict capital punishment on those guilty of serious offenses against public order and the welfare of the community at large, establish military forces for the preservation of the state against internal and external enemies, declare war, and conclude international treaties. Since individuals and families possess no such authority and power, it is evident that they *cannot be the cause* of this authority and power in the state. Only God, through the natural law, can give such supreme authority and power to the state formed by the citizens.

We can now understand better why St. Paul⁹ wrote to the early Christians of Rome that they must obey their (pagan) civil rulers: "Let everyone be subject to the higher authorities, for there exists no authority except from God, and those who exist have been appointed by God. Therefore he who resists the authority resists the ordinance of God." And that is also why Christ¹⁰ said to Pilate: "Thou wouldst have no power at all over me were it not given thee from above."

When, therefore, a state has been legitimately established by its constituting members, its authority and power is present in virtue of the natural law, and the *duty of obedience and loyalty* is also incumbent on the members of the state in virtue of the natural law. This obedience is then not a servile submission to mere physical might, but a 'reasonable' obedience, because it is really an obedience to God, the Author of the natural law and of the authority and power of the state.

Such is the ethical concept of civil society or the state. It represents the culmination of man's natural tendencies in the sphere of social life. The state, since it consists of persons who are weak and often immoral, often falls short of the ideal. In itself, however, and as intended by the Creator, it is the perfect, self-sufficient society, endowed with the high purpose of working out the common welfare of all.

Summary of Chapter XX

Just as it is natural for man to form domestic society, it is natural for him to form *civil society* or the state.

1. *The Concept of the State.* The state is *defined* as a natural and perfect society, consisting of many families and individuals, established for their common good under the direction of the supreme authority of a common ruler.

2. *The State a Natural Society.* Man has the natural aptitude, propensity, and need to associate himself in a permanent union and companionship with his fellow men for the purpose of attaining temporal happiness or felicity. Such a society is a *dictate of man's nature* and as such is a *natural* society. This society is civil society or the state.

3. *The State a Perfect Society.* A society is *perfect* if it possesses within itself all the means necessary for the attainment of its proper end, so that it is not dependent on any other society for the attainment of its end. Such is the state; it is *self-sufficient*.

4. *The Origin of the State.* We are concerned here with the origin of the *state in general as a social institution*. The formation of the state and life in the state is a moral necessity imposed on man by his nature seeking its completion and perfection in the status of civil life. Since the development of man's nature is natural, the origin of the state, which is the result of this development, is also *natural*. And since the rationality of man implies intellectual insight and freedom of the will, the origin of the state must be the result of the free consent of the men who form the

state. It originated through a natural growth out of the natural combination of *families*.

5. *The Theory of Hobbes*. In the 'state of nature,' Hobbes contends, there existed a war of every man against every man; there were no rights, no property, no moral values. For the sake of self-preservation men founded the state through a mutual covenant.

Evaluation. Hobbes's picture of man in his pre-state condition is imaginary and arbitrary. Man is supposed to be *individualistic and anti-social*. But the family existed, and family life means *social life* with social virtues, rights and duties, and the order of natural law.

6. *The Theory of Rousseau*. Rousseau viewed man in the 'natural state' as leading an idyllic life, free, self-sufficient, and virtuous. Man was simply *non-social* at first, but had the gift of *perfectibility*. Through association with others, gradually fraud and deceit, dissension and conflict prevailed. In order to restore peace, the state was formed by a *social contract*.

Evaluation. Rousseau's view of man in his pre-state life is imaginary and arbitrary. He confuses physical and moral freedom. According to him, man's life before the founding of civil society was *individualistic and non-social*. The family existed then, and family life is essentially social in character. The formation of the state is based on *natural law*.

7. *The Evolutionary Theory*. Not reason and will, but the blind biological laws of evolution developed the state out of the family.

Evaluation. The *family* was a universal institution long before the state could come into existence. Since the state

developed out of the family, *rational insight* and *free choice*, not merely biological urge, must also have played a dominant part in the formation of the state.

8. *Government by Consent.* According to the *scholastic* theory, the concrete state finds its origin basically in human nature and comes into existence through the *consent*, express or tacit, of the *members contracting* to form the state.

Consent is *necessary*. The bond of legal justice must be 'rational,' involving knowledge and will. To live in the state imposes the obligation on all to strive mutually and effectively for the common end. Obligation presupposes the consent of the one obligated, because there can be no obligation to strive for the 'common' welfare under 'legal justice' unless one is aware of the obligation and accepts it. This consent is *sufficient*. Given the multitude of families and individuals desirous of seeking the common good of all through mutual and effective co-operation, their consent creates the moral union with a distinct common end which is civil society or the state.

9. *The Constituents of the State.* Primarily, the *proximate* matter of the state is the *families*. Adult, unmarried individuals belong to the proximate matter of the state only *secondarily* and *per accidens*. Children and wives belong to the state 'mediately' and 'indirectly,' through the mediation of the family, as *remote* matter.

10. *The Proper End of the State.* We contend that the proper end of the state is *public welfare*. People form the state because they realize that neither the individuals nor the families nor conventional societies are sufficient to

supply the bodily and spiritual goods necessary for a developed life. Hence, they unite and form the state as a new form of society, in order to attain their 'private' welfare together with the *public* welfare of the entire *social body* as a unit. The state has the ability and the means to procure many types of goods which lie outside the capacity of the individuals and the families.

11. *Authority and Power.* Authority is the right of jurisdiction; power, the right of coercion. The supreme civil authority and power as such proceeds *immediately and proximately from God* on the basis of the natural law as a requirement of the natural order.

Without this supreme authority and power the state could not direct efficaciously its members toward the *specific end* for which the state is formed, namely, the public welfare of the community as such. This specific end is a requirement of the natural law, and therefore the supreme authority and power of the state is also a requirement of the *natural law*, because any society which by nature has a specific end must also be entitled to the *means* necessary for the attainment of that end. The order of the natural law is a divinely established order, with God as its immediate, proximate Cause. And since the state is a mandate of the natural law, and since supreme authority and power is an essential element of the state, the authority and power of the state must also have *God as its immediate Author*.

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9 Romans 13:1 ff

10 John 19:11

Chapter 21

GOVERNMENT

THE STATE IS NOT AN ABSTRACT ENTITY, BUT A CONCRETE REALITY. It consists of human persons, of those who govern and who are governed. *Government* may be taken in two meanings. In the *passive* sense government means the actual organization through which the activities of the state are carried out. In an active sense government means the ruling and administration of the political body. Thus the state always appears as a 'government' in the concrete affairs of the world.

There are many things about government that interest the ethicist — the organization, the administration, the relationship between the ruling power and the people, their respective rights and duties, and similar matters. The moral philosopher obviously cannot take up the moral implications of government in great detail. He must be satisfied to uncover the *fundamental moral principles* upon which just government rests, because that is all moral philosophy is supposed to do.

Types of Government

History informs us that many types of government have existed in the course of human development toward political perfection. Sociologists recognize three main types.

One is the *monarchy*. As the name indicates, a monarchy is a form of government in which one person possesses the supreme rule over the political community. A monarchy is either 'absolute' or 'limited.' It is absolute if the monarch's rule is complete in every respect, so that his word is the sole law of the realm. The Roman emperors ruled in this fashion.

A dictator who assumes complete and exclusive rule is the same as an absolute monarch; in general, however, a dictator's power is not so extensive. A monarchy is *limited* if the monarch's power is curtailed in some respects. Monarchical power may be curtailed by a constitution, in which case the government is a 'constitutional' monarchy; or a parliament or similar governing body may possess partial governmental power, which arrangement would constitute a 'parliamentary' monarchy.

The *oligarchy* is another main type of government. It is ruled by a few persons or by a privileged group. Membership in the group may be determined by election or by birth. Oligarchy is often styled 'aristocracy,' because the nobility usually rules.

The third type is *democracy*. Literally, democracy means 'rule by the people,' and this is indeed the basic concept underlying the democratic form of government. In a democratic government the ruling power resides in the people themselves. This power is exercised either 'directly'

or 'indirectly' by the people. In a *direct* democracy every issue facing the political body is decided by all the members of the democracy. Such a government can manifestly exist only where the political community is relatively small and lives in a confined territory. Most democratic governments are *indirect* democracies, in as much as the people exercise only indirect control over government by means of the constitutional election of representatives to whom they delegate the direct rule. These representatives are deputies of the people, act in their name and authority, and are responsible for their acts to the people. In genuine democracies these representatives are elected to short-term offices, in order that the people can periodically express their governing will and exercise their basic governing power.

In a genuine democracy the techniques of government are not as important as the *spirit* which permeates the entire organism of the state. True democracy is based on the moral dignity of the human person; on the inviolable sanctity of the family and of family life; on the fundamental equality of all persons before the law, irrespective of class, creed, color, or national origin; the protection of personal rights and personal freedom for everybody; the right of minority groups to exist and work for their particular ends, so long as they are not in opposition to public welfare or public morals; equality of opportunity in the educational, economic, and political fields, all achievements to be the result of personal ability and initiative, and not of privilege; just and impartial administration of every department of government for the common good of all members of the

commonwealth, whether they be rich or poor, educated or uneducated, influential or un-influential.

From the standpoint of ethics, it is indifferent what particular type of government a people decides to live under as best suited for its conditions. Any type of government will be good if it constantly and earnestly strives to promote public welfare; and it will be bad if it fails in its endeavor to achieve its proper end which is the common good of all. *St. Thomas*¹ advocated a *mixed government*, with the dominant note on democracy, as the best in general. He says: "Two points are to be observed concerning the right ordering of rulers in a state or nation. One is that all should take some share in the government: for this form of constitution ensures peace among the people, commends itself to all, and is most enduring. . . . The other point is to be observed in respect of the kinds of government, or the different ways in which the constitutions are established.

The best form of government is in a state or kingdom, wherein one is given the power to preside over all; while under him are others having governing powers: and yet a government of this kind is shared by all, both because all are eligible to govern, and because the rulers are chosen by all. For this is the best form of polity, being partly kingdom, since there is one at the head of all; partly aristocracy, in so far as a number of persons are set in authority; partly democracy, i.e., government by the people, in so far as the rulers can be chosen from the people, and the people have the right to choose their rulers." This analysis of the ideal government, it will readily be seen, coincides closely with

the *representative democracy* of the United States. But from this it does not follow that such a type of government would be suitable for all nations. Here, too, circumstances alter cases.

The Reception of Authority

Many types of government have existed in the past and still exist in the present. Since the general authority to rule a state has God as its Author, the question arises: *How* do the rulers of this or that concrete form of government actually *receive* the supreme authority to rule? How does the supreme ruling authority *descend from God* to be a particular ruler? Does God communicate ruling power to governments *directly or indirectly*? The answer naturally has a vital bearing on the relationship between the ruler and those ruled, because it offers a rational basis for the distinction between legitimate government and tyranny.

Three main theories have been advanced in the course of the centuries as an explanation of how the actual rulers receive their supreme authority to rule the political community or state.

One is the theory of the *divine right of kings*. The theory goes back as far as the Byzantine emperors and was based upon a misinterpretation of the teaching of St. Paul regarding the origin of the authority and power of the state as coming from God. St. Chrysostom² pointed out the error of this interpretation, when he stated: "The Apostle does not say, there is no ruler who does not come from God; but,

speaking of the thing itself, he says, there is no power that is not from God.”

The divine right of kings was again defended in the Middle Ages by some court jurists and theologians who were partisans of Philip the Fair and Louis the Bavarian in the historic struggle between the emperors and the popes. The theory became widespread in the era of the Reformation, in consequence of the Protestant principle of *cujus regio ejus religia*. James I of England defended the doctrine most strenuously. It also became prominent again in the Restoration period and was at the bottom of Gallicanism in France, Josephinism in Austria, and Febronianism in Germany.

According to the theory of the divine right of kings, the supreme political power is conferred on the ruler by a special act of God, so that he rules by *divine law*. The ruling power cannot be abolished, nor can it be transferred from him to another, except again by a special act of God; he is, therefore, totally independent of the people he governs.

The second important theory is the theory of *translation or transference*. According to this view, all political authority, at the time the state is formed by the self-organizing members, rests in the *people* as a political body or community. Since all members are free and legally equal, there is no reason by virtue of the natural law, why any particular individual or group of persons should have the supreme power to rule in preference to any other. In order that the power to rule pass from the original self-organizing community to a certain person or group after the formation of the body politic, this power to rule must be *transferred*

by the politically organized community to that person or group. Originally, therefore, the politically organized community is a *non-representative democracy*; it is made into a kingdom or other form of government only through the free act of the people who transfer their supreme political power to the person or group of their choice by an express or tacit decision. Solely in virtue of the natural law, government is essentially immediate democracy as self-government of the people and by the people without representation; all other types of government are the result of human positive law, not natural or divine law. The transference of political power from the people to a particular person or group always implies the consent, the *pact of submission* (*pactum subjectionis*), on the part of the people to the ruler so chosen. In the case of the conquest of a people by a neighboring ruler, the conquered people become members of the state of the conqueror either by willing submission or by acquiescence to his imposed rule; they thereby give their consent.

While St. Thomas Aquinas did not expressly treat this topic, his disciple Aegidius Romanus (c. 1247—1316) elaborated on the doctrine. From this point on most scholastics adopted the transference theory with its 'pact of submission.'

The greatest exponents of the theory are undoubtedly Suarez and Bellarmine. Suarez³ argues as follows: man is by nature free in his acts, and this freedom inheres also in man when he forms a political community; hence, the political community, when first formed, is the master of its own acts, because supreme authority is a necessary

property of the community as a political body. Supreme authority, therefore, is born simultaneously with the birth of the political body and resides in it; the result is an immediate democracy. Since all men are by nature essentially and equally free, no one has the right to be the holder of supreme authority over his equals. If immediate democracy is changed into another form of government, for example a monarchy, it can only be because the people consider the change to be for their benefit, decide in favor of it, and then choose a ruler, either by acclamation or election or in some other manner, whom they are willing to obey in all matters pertaining to the common good. By selecting or accepting a ruler, supreme authority is automatically transferred to him from the people as a political community.

The transference theory held undisputed sway among scholastics until the time of the French Revolution, when many political philosophers, ascribing the horrors of the revolution to the doctrine of 'popular sovereignty,' moved away from the transference theory and adopted the theory of *designation*. These philosophers contended that the bearer of public authority is determined neither by the natural law nor by the consent of the people forming the state, but by the nature of the *historically given circumstances*. The person who, under the given circumstances, is destined to become the ruler may be a person eminently distinguished by talents, wisdom, wealth, esteem, and leadership, so that, at the time the state was formed, as a matter of fact he actually exercised such control over his fellow men as is essentially the same as that

exercised by a sovereign ruler. The acceptance of his political authority by the people, through election or otherwise, would not involve the transfer of ruling power from the people to the ruler their consent would be merely a necessary 'condition,' a *designation* of the ruler who is to hold political office, because the supreme power was never vested in the people as such. Following this 'designation,' God confers upon the person so designated, without any special act on His part, the supreme authority and power to rule the state. To show that free consent of the people is not required, the proponents of this theory refer to the patriarchal regime in primitive times. Originally families of the same tribe or clan lived together as a colony in the same general territory under the direction of their patriarch. Political authority was a demand of the natural law. Under such circumstances, one single person, the patriarch, had the necessary authority; and the colony had the duty, under those circumstances, to recognize him as their political ruler. He was the only one capable of ruling and therefore also the only one who had the right to rule; everyone living in his territory was in conscience bound to obey his rule. No consent or pact on their part was required to make him the ruler, and so no power was transferred by them to him.

Karl L. von Haller (1768—1854), mainly in opposition to the tenets of the French revolutionists, propounded an extreme version of the patriarchal idea. Another extreme version, in which history designates the ruler, was advocated by Joseph M. de Maistre (1754—1821). Among the prominent scholastic philosophers who defended the

‘designation’ theory against the ‘translation’ or ‘transference’ theory were Tongiorgi, Theo. Meyer, V. Gathrein, and M. Gronin. While probably most scholastics of the present time prefer the transference theory, based on the idea of immediate and inherent ‘popular sovereignty’ in the sense of Suarez, the respective merits of the two theories are still a controversial issue.

EVALUATION. THE THEORY OF THE *DIVINE RIGHT OF KINGS* HAS practically no defenders of importance today. If God appoints the ruler and confers the ruling power upon him directly, how are the citizens to know this? Only *divine revelation* could give the people assurance of this fact, as was done in the case of Saul of the Chosen People of Israel. This revelation, however, was an exception. Natural knowledge depends on natural events, and civil society is a natural institution. Divine revelation, as we know from experience and history, is absent in these matters. The theory of the ‘divine right of kings’ is simply a confusion of the natural and the supernatural orders.

The theory of *translation or transference* holds that authority passes from the people to the ruler, through express or tacit consent of the governed in changing from an immediate and non-representative government into a particular form of government. This theory seems more logical and more in accord with the fundamental concept that civil society belongs to the moral order. It stresses the freedom of the will, even in the choice of the form of government and its ruler, and thus makes the citizens

responsible for both, rather than having history and tradition make the decision for man. It is better able to account for the right of the citizens to throw off the yoke of tyranny and establish a new order of government — a right which is universally conceded by all when the cause is just and the change necessary for the public welfare of the citizens.

The *designation* theory emphasizes the fact that civil society is and should be a stable order in its own right; and that it should not be the plaything of the discontented and ambitious members of the citizenry who can whip up the frenzy of the multitude for the overthrow of an existing government, in order to satisfy their lust for power. If the supreme authority of the state resides basically in the people, the door is open to the grossest forms of demagoguery, as can be seen in the Jacobin machinations and excesses of the French Revolution.

While both theories are represented by prominent philosophers and have good arguments in their favor, we believe the *transference theory* is based on firmer philosophical ground. Civil society has as its specific end the attainment of public welfare; and supreme political authority is a necessary means for the attainment of this end. *Per se* and primarily, the political *community* has the right and the duty to seek the attainment of public welfare through the use of the proper and necessary means, and that in virtue of the natural law. Consequently, since supreme political authority is an essential means, which by its very nature is necessary for the attainment of public welfare, the political community must possess supreme

political authority as a right given to it by natural law. This authority, therefore, is a *natural right* of the political community as such. And since a natural right cannot pass from the primary subject to someone else, for example, a king or representative body, without being transferred, the political community must transfer its supreme authority to a secondary subject if it changes into a form of government with a ruler as its authoritative head. Thus, it is the political community which has the primary and natural right to determine the form of government, the constitutional limitation and distribution of governmental power, and the method by which this power shall pass on from one ruler to another. Once the machinery of government has been established and set into motion, the *formal exercise* of governmental power belongs to the representatives of the people, while the community as such retains the *radical* power of government. It will thus be seen that the source of just governmental power lies in the consent of the governed and that the rulers exercise their powers in virtue of a grant derived from the people as a politically organized civil society.

Some authors claim that there is a dangerous similarity between Suarez's theory of the origin of the state's governmental power and the social-contract theory of Hobbes and Rousseau. The resemblance is altogether superficial. The *differences* are essential.

So far as the *pre-state life* is concerned, Hobbes maintained that man was individualistic and anti-social; Rousseau, that man was individualistic and non-social (extra-social). According to Suarez, man is by nature social

and always had the natural destiny to form the state and live in civil society.

So far as *morality* is concerned, Hobbes and Rousseau maintained that a moral system of laws first came into being with the social contract. Suarez, like all scholastics, taught that natural law was in full force at all times among men, even before the state came into existence.

So far as *political authority* is concerned, Hobbes maintained that, once the social contract was made, the ruler had absolute power; Rousseau, that the people retained full authority, and the ruler became merely the magistrate of the people. Suarez taught that political authority in general comes from God, is vested primarily in the political community, and then is transferred from the community to the ruler, so that the ruler is neither vested with absolute power nor is he a mere magistrate; he is a true ruler with governing power, but this power is limited by natural law and by the will of the people.

So far as the *nature of the state* is concerned, both Hobbes and Rousseau maintained that it is an artificial institution, arbitrarily established by man as a matter of expediency. Suarez, together with all scholastics, taught that the establishment of the state was a moral necessity based upon the natural aptitude, propensity, and need of man's rational being; the state, therefore, is a natural institution, a demand of the natural law and as such intended by God.

The one point in which the theories of Suarez, Hobbes, and Rousseau agree is the *contract* or *pact*. In as much as Suarez lived before Hobbes and Rousseau, it is probable

that Hobbes and Rousseau copied the idea from Suarez and promptly proceeded to adulterate it almost beyond recognition.

Extent and Limitation of Power

It should be almost self-evident that governmental power is neither arbitrary nor unlimited. The intrinsic purpose of this power is the attainment of public welfare as the proper end of the state and of the people comprising the state as a civil society. 'Public welfare' determines both the extent and limitation of governmental power.

The state consists of persons, some governing and others governed. All persons without exception are subject in all things to the *divine* and *natural* law. The state, therefore, as an organized community of persons, is also subject in all things to the divine and natural law, and this constitutes a limitation of its power.

The state can issue a *command* to its subjects only in matters which are morally good or indifferent. It can *forbid* whatever is morally evil or indifferent; and also at times what is morally good in itself, but only when the subjects are not bound in conscience to perform this good, as happens, for example, when the state orders all schools and churches temporarily closed in the time of a serious epidemic. It can *permit* or *tolerate* a morally evil situation if this negative attitude is necessary in order to avoid more serious evils; thus, for instance, it may be in the public interest to concentrate houses of ill fame in a definite

district rather than have them operate clandestinely throughout a city.

The state possesses all rights and duties, and only those, which are pertinent to the attainment of its proper end, namely, *public welfare*. Hence, the state has no authority over the *purely internal acts* of the citizens. Such acts have a 'private,' not a 'public,' character. Since the proper end of the state is the 'common' good or 'public welfare' internal acts are outside the competence of civil authority. However, the state may have indirect jurisdiction over certain internal acts which are necessary for the proper performance of those external acts belonging to the jurisdiction of civil authority and over which it has the power of command. Thus, for instance, although loyalty is an internal act, the government may order so-called 'loyalty tests' for all persons engaged in important government work, especially in times of national emergency. It is well to note, too, that an act is not 'purely internal' when it manifests itself in some external manner. For example, law enforcement agencies need not wait until a crime is actually committed, but may act in behalf of public welfare whenever the preparations plainly indicate that the persons involved have the definite intention of committing the crime. Ordinarily, though, only *external acts* fall under the jurisdiction of public authority.

Furthermore, as a general rule the civil authorities have no right to demand of the citizens *morally impossible* acts — acts beyond the average capability of the subjects. This follows from the principle that it is the purpose and aim of the state's laws and authority to work for the welfare of its

citizens, and this welfare must be gauged according to the capability of the average citizen; otherwise the demands of the state would harm, not further, public welfare. On the other hand, public welfare may at times demand extraordinary efforts and sacrifices on the part of the citizens. During war, for instance, when the very existence of the state is in danger, the state has the right, because of the primary law of self-preservation, to demand greater sacrifices, even the risk of life itself, in the interests of the civil community as a whole.

The *protection of civilian rights* is one of the first and foremost duties of the state. The state, therefore, also has the right to use all reasonable measures to ward off unjust attacks upon the life, the bodily integrity, the health, the liberty, the honor, the morals, the security, and the property of its citizens, so as to insure peace and prosperity. Such rights pertain to the individuals, to the families, and to all other morally good or indifferent associations, secular and religious, found among the citizens. Not only has the state no authority to suppress these rights; it has the duty to protect them against all undue interference on the part of others.

Since it is the proper end of the state to seek the welfare of the citizens, it is one of the main tasks of the state to support and foster the *temporal welfare* of the citizens. It is precisely because of their lack of self-sufficiency that families and individuals combine to form the state. The state should *not be paternalistic*, as if the state had the duty to supply everything for everybody; that is not the purpose of the state. Individuals and families retain their identity in the

state and have the natural duty to satisfy their needs through 'self-activity.' Hence, the state merely has the duty, and the right, to assist them in their private endeavors to fulfill the purpose of their existence. Only in the case where entire classes or sections of the people are incapable of obtaining the necessary means to satisfy their fundamental needs should the state step in and assist them through special measures to work out their own welfare. *Social legislation* for the sick, the disabled, the aged, the unemployed, the mentally defective, and the victims of disaster, lies within the province of governmental activity, whenever these persons cannot otherwise be cared for in an adequate manner. Generally speaking, however, it is better that the citizens provide for such persons through voluntary charitable associations, if possible and feasible; but if such measures are inadequate, the state should provide for these unfortunate members of society through public assistance. The general principle which should guide the government in such matters is this: the citizens, both individuals and families, have the first duty and right to provide for their needs; only if they neglect their duty or are incapable of carrying it out, should the government, in the interests of public welfare, assist the needy in leading a life consonant with the essential dignity of man. 'Public welfare' embraces a rather wide field. Even when it seems that a certain activity involves only the welfare of an individual in his 'private' interests, the implications may have a decided bearing on the welfare of the community as a whole, and the state may act. Thus, it lies within the competence of the state to regulate trade, enact pure food

laws, control the pollution of water, forbid the sale of injurious articles, ban immoral shows, prohibit quackery in medicine, clear slums, install proper methods of sanitation on streets and in public places, insist on adequate protection against fire hazards, and a thousand similar things which pertain to the general welfare of the public.

In many instances it may appear that such actions of the state constitute an infringement of *personal liberty*. They do. But it must be borne in mind that personal liberty is not absolute. Whoever lives in civil society must co-operate for the 'common good,' of which his personal liberty is an integral part, and so he may be obligated to curtail the *exercise* of his personal liberty in order to bring it into harmony with public welfare.

Legislative Power

Governmental power is one and indivisible. Nevertheless, depending on the different objects that lie within its competence, the power of the government is exercised in three distinct spheres of activities or *functions*. After the lead of Montesquieu (1689—1755), three separate functions in the internal affairs of the state are customarily distinguished: the legislative, the executive, and the judicial.

The *legislative* power of government is the right to enact laws which are norms of action for the citizens. These norms regulate the conduct of the various citizens and groups in their relation to each other and to the community as a whole. These laws, considered in and for themselves in

general, *obligate in conscience*. To obligate in conscience, however, these positive laws must have their foundation in the natural law, either as deductions from the natural law or as specifications and determinations of the natural law.

Many writers on jurisprudence contend that the laws of the state have no moral character and are based solely on the ability of the state to enforce observance by physical power. Moral obedience and obligation in conscience lie entirely outside the purview of the law. Such, for example, is the theory of the *legal positivists*, prominent among whom in the United States was the former Associate Justice Oliver Wendell Holmes.

In opposition to legal positivism, we maintain that the government has the power to enact laws which *bind in conscience*.

The proper end of the state and of governmental power is public welfare. Consequently, the government must possess the means necessary to attain this end. The government, however, cannot attain this end *permanently and efficaciously* in dealing with free human beings except through the medium of laws which contain fixed norms of conduct binding in conscience.

If the laws were not binding in conscience, they would be mere *counsels or directives*. No one, however, is constrained to follow a counsel or directive. If a law would cause inconvenience (and what law does not?), a person could evade the law, whenever possible, through whatever means he could find, even by bribery, subterfuge, and deceit. That such a general attitude is not conducive to public welfare is obvious; it would put a premium on the

evasion and violation of the law. Mere police power will never suffice to compel obedience to the law, if the citizens are not bound in conscience to observe the law and do it willingly.

The state, as we have shown, rests on the *natural law*, and the natural law binds in conscience. Now, legislative action is one of the necessary functions of government, for without it the government cannot attain public welfare. Hence, the government, in virtue of the natural law, has the right to enact laws for public welfare, and the citizens are in conscience bound to observe these laws, provided the laws are in accord with the natural law. Obedience through mere physical force is a slave's obedience and unworthy of man as a rational, free being. As a moral institution, the state has the right to impose moral obligations.

Executive Power

The *executive* power of the government is the competence of the government to establish and maintain the agencies necessary to carry out the laws. The government, therefore, has the power to promulgate its laws, to supervise and compel their observance, to establish law-enforcement agencies, to organize and maintain an army, to levy taxes with which to pay the expenses of government and carry out social legislation, and in general to do everything necessary to insure the peace and prosperity of its citizens.

Since civil society is intended to be a stable and permanent union of citizens co-operating for the common good, many of the governmental functions will be

standardized and *permanent* in character. The fundamental framework of laws and governmental functions, therefore, will remain relatively the same throughout the existence of the state. Still, civil society is a dynamic, not a static, reality. Consequently, the executive power must be flexible enough to take care of all the situations as they arise.

On certain occasions *emergency measures* are required. Many conditions are exceptional but urgent. The citizens may suddenly be confronted by misery and disaster, due to floods, fires, earthquakes, wars, and similar calamities. The ordinary executive powers of the government are insufficient to cope with such conditions, yet the public welfare demands remedial measures for the benefit of this portion of the citizenry. Since the people themselves are incapable of providing for their needs, the government has the duty to protect life and public security to whatever extent is necessary and expedient. Hence, the government is endowed with *emergency powers* to meet such situations, and the citizens have the duty to submit to the regulations and measures imposed on them. In times of national danger or war, for instance, the government has the right to mobilize industry and to induct all able-bodied men into the military service for the defense of the country and to prosecute the war to a successful conclusion.

Judicial Power

The *judicial* power of the government is its competence to restore the legal order when disturbed. This order is disturbed when citizens enter into litigation among

themselves concerning some right, or when one citizen violates the right of another. For the sake of public peace and security, it is the duty of the state to restore the legal order in both kinds of disturbances. The judicial power thus has a double function. It exercises the function of *civil justice* when it gives definitive decisions in litigations, and the function of *criminal justice* when it inflicts punishment on the violators of rights.

The *juridical settlement of disputes* regarding the existence or non-existence of civilian rights is a moral necessity in every community. Such disputes are bound to occur, due to the clash of interests which are unavoidably present in the social and economic activities of a multitude of people. These disputes require definitive legal decisions in a court of law to preserve peace and security among the contenders and the citizens at large. Hence, the government has not only the right, but also the duty, to set up an effective judiciary for the settlement of disputes. The citizens have the right to appear before the judge and present their case, and they have the duty to abide by the ultimate decision of the court.

Similarly, the judiciary has the right and duty to *impose penalties* upon the transgressors of the law and the violators of other people's rights. All laws must have sanctions, or the laws will be inefficacious. Too many persons are selfish and inclined to violate other people's rights if they can do so with impunity. Mere threats of punishment are inadequate to make evildoers observe the law. The government must be able to apply appropriate sanctions, or it cannot uphold the legal order and fulfill its

proper end, the public welfare of the community. The threat of punishment has the purpose of deterring criminally minded persons from disturbing the legal order; and if the legal order has been violated through the commission of a crime, the criminal must suffer the penalty and the legal order must be restored.

Practically all governments have laws which demand the infliction of *capital punishment* on persons guilty of very serious crimes, particularly premeditated murder and treason. Such crimes are so heinous in themselves and represent so grievous a violation of the common good, that the state is justified in imposing the death penalty on the criminals. Again it must be borne in mind that it is the duty of the government to uphold the legal order with every means at its disposal and to restore this order whenever violated, and capital punishment effectively restores the balance of justice. A person who commits treason murders his country, so far as lies in his power, and he also forfeits his life thereby. It is no valid objection to say that no one has the right to take another's life except in self-defense against unjust aggression. This moral principle does not apply to the state, because the state participates in the *supreme authority of God*, and God certainly has the right to take a person's life when necessary for the preservation of the moral order. After all, the infliction of capital punishment is only a physical evil, less grave by far than the moral evil committed voluntarily by the culprits in question; and those condemned to death can use the opportunity to accept death in expiation for their crime and thereby attain their

eternal salvation. Only those who deny immortality can see in capital punishment an evil beyond comparison.

Murder and treason, of course, are not the only crimes which may merit death. Much depends on circumstances. Any serious crime which is a grave threat against public welfare may, if necessary, be declared punishable by death. Thus, looting and rape in time of war or in a period of great disaster, when the law-enforcement machinery of the state is practically ineffectual, are usually punished by summary execution. Almost any kind of grave criminal act may be punishable by death if the circumstances are such that it threatens to dissolve the very social fabric of civic life. The principle which must guide the government in these matters is: *Salus populi suprema lex*, "The welfare of the people is the supreme law."

THERE HAS BEEN A CONSIDERABLE CHANGE OF *ATTITUDE TOWARD crime* in the course of history.

Retribution or vengeance was the dominant note in the old Talic law. The principle which governed the treatment of criminals was that of 'an eye for an eye and a tooth for a tooth.' Christianity with its precept of charity modified this extreme attitude.

Repression of crime through most severe punishments was a common attitude in the latter period of the Middle Ages. Judges passed arbitrary sentences, and extreme punishment was often meted out for comparatively minor criminal acts.

The *classical theory* of penology, inaugurated by the Marquis of Beccaria (1735—1794), advocated that the punishment should fit the crime according to the criminal's personal responsibility, that the penalty should be fixed by statute and not be left to the discretion of the judge, and that a speedy trial and sentence would do more to deter criminals than harsh measures.

The *neoclassical theory*, while following Beccaria in his general tenets, advocated fixed punishment as a common policy, but maintained that courts and judges be allowed greater latitude in interpreting the individual's responsibility. It is clear, for example, that sometimes criminal acts are performed by persons who are not morally responsible, as in the case of the insane; no punishment should be meted out to them, but they should be institutionalized in hospitals for the criminally insane. Again, sometimes crimes are committed with limited responsibility because of a partial hindrance of the full exercise of free will, as in the case of a child, of a person under the influence of alcohol or drugs, of a person swayed by strong emotion; in such instances, the punishment should be reduced or the sentence suspended.

The *positivist school of Cesare Lombroso* (1836—1909) is materialistic in concept. The actions of man are determined in every respect by heredity and environment, and the criminal is simply a psychopathic individual who is not responsible for the crime he commits. Lombroso maintained that there exists a definite 'criminal class' and a definite 'criminal type' with distinctive physical features. Crime should be punished as a matter of necessary self-

protection on the part of society; but punishment should fit the criminal, not the crime. Lombroso's theory of the criminal class and the criminal type has been conclusively disproved, particularly by Charles Goring (1870—1919), an English physician. It is now generally conceded by scientists that certain dispositions can be inherited, but not crime or a criminal tendency strictly as such.

The *reform theory*, as advocated by J. Bentham and many modern penologists, defends the view that the sole purpose of the government's power of punishment is the correction, reform, and rehabilitation of the criminal.

Without question, criminal justice must be *human* justice. Criminal justice is necessarily based on the freedom of the will. To punish a person for a deed which he could not avoid performing is the height of folly. On the basis of positivism there should be no judicial or punitive power in the state. Granted the freedom of the will with its consequent responsibility, the judicial power of the state, to be just and human, must take the condition of the criminal and the circumstances of the crime into consideration, so that the punishment will fit both the *criminal* and the *crime*.

In all matters pertaining to the judicial function, its *primary* purpose is identical with the proper end of the state as such, namely, the 'public welfare' through the maintenance of the legal order, so as to insure peace and security for the common good of the community. Its *secondary* purpose is the 'private welfare' of the individuals and families, in as much as they comprise the community and are integral members of the body politic. Hence, the correction, reform, and rehabilitation of criminals is neither

the sole nor the primary purpose of the judicial function of government. However, once the primary purpose of the state, namely, the preservation and restoration of the legal order in the interests of the public welfare, is fulfilled, the state should give due attention to the correction, reform, and rehabilitation of criminals as the secondary purpose of its judicial function. By tempering justice with mercy in this way, criminal justice becomes truly 'human' justice.

The state should have *four objectives* in punishing criminal conduct. First, punishment should always be in the nature of *retribution*. It is the duty of the state to maintain law and order for the sake of public welfare; it must, therefore, demand expiation on the part of the criminal, in order to restore the disturbed legal order and prevent further injury to the citizens. Second, punishment should act as a powerful *deterrent*. The good and the bad citizens should be made to realize that 'crime does not pay.' The offenders should be deterred from violating the laws again, and potential criminals should be deterred from committing a first offense. Third, punishment should assist in the *prevention* of crime. It does this in the case of hardened criminals by isolating them from the law-abiding citizens and preventing them from infecting the minds and morals of the weaker members of society. Fourth, punishment should be an indirect means, together with direct means, of *reform* for the criminal. A criminal always remains a human person. Punishment is never an end in itself. The restoration of the violated legal order having been accomplished, every effort should be made to turn the criminal away from the path of evil and help him become a

law-abiding, useful citizen again, particularly in those instances where the criminal, after serving his time, must be released and return to society. The state would render poor service both to society and to the offender, if it did not do everything in its power to strengthen the legal order by reforming the criminal and thereby preventing further depredations on society and repeated incarcerations of the criminal. What special measures should be applied to accomplish this purpose will depend on the financial, educational, cultural, and religious facilities at the disposal of the government.

The State and Morality

A distinction must be made between 'private' and 'public' morality. *Private* morality pertains to the life of the citizens in so far as they are private individuals. *Public* morality pertains to the community life of the citizens in so far as they are members of civil society. Morality in both forms will be either 'natural' or 'supernatural,' depending on whether it is restricted to the observance of the natural moral law or includes also the precepts of positive divine revelation.

The *principle* which must govern the relations between the state and morality is the principle which gives existence to the state and its supreme authority, namely, the preservation and promotion of public welfare. Whatever affects public welfare favorably or unfavorably falls in some manner under the jurisdiction of the state.

According to this principle, *private morality* lies *outside* the jurisdiction of governmental power. The government

has no control over supernatural morality, because the state belongs exclusively to the temporal and natural order, while supernatural morality is achieved through supernatural means. Moreover the government has no control over private natural morality, so long as it is strictly private and does not affect public welfare. Private morality is an affair of the individual and the family, not of the state. Indirectly, the state is concerned with private morality, in so far, namely, as private morality is the foundation for public morality. The state, therefore, should promote private morality by using every legitimate means to safeguard public morality.

Public welfare is definitely a moral issue and is based to a very large extent upon sound moral life in the community. The foundations of government rest on the natural law, and public welfare as the proper end of government is a dictate of the natural law. Morality, too, both private and public, is the outcome of the precepts embodied in the natural law. Public morality is nothing else, if we leave supernatural religion aside for the time being, but community life lived in conformity with the norms of the natural law. Hence, public morality is an integral part of public welfare. As such it falls *within* the jurisdiction of the state, and the government has the solemn duty to preserve and promote public morality as the cornerstone of temporal felicity. Negatively, the government fulfills its duty if it curbs and suppresses vice wherever it appears in public. Community morality naturally embraces a rather wide field, including the press, the radio, amusement centers, public addresses and gatherings, and every form of life in the open. Positively, the

government should assist every movement that tends to improve virtuous living among the people, implement the demands of morality with appropriate legislation, and appoint only men of solid character to administer the internal and external affairs of the nations. A moral nation is a happy nation.

The State and Religion

The state, as a civil society consisting of human beings, cannot avoid taking a definite stand with respect to religion. Due to the prevalence of secularism, the view is frequently expressed that religion is a 'private matter' of the citizen and no affair of the state. The state, modern liberalists assert, should hold itself aloof in the entire question of religion, both natural and supernatural.

The problem revolves around the *fact* of the existence of a natural or supernatural religion. If God exists, natural religion exists; and if God revealed Himself, supernatural religion exists. God exists; so much at least is proved by theodicy, and in ethics the existence of God is assumed as a postulate. As a consequence, the necessity of at least natural religion, based on the existence of God, must be taken for granted, so far as the individual human beings are concerned. Then what must be the attitude of the state with respect to *natural religion*? Can it remain indifferent?

Beyond reasonable doubt, the state, as a state, has the duty to *practice* and *promote* religion, and that publicly. This duty is incumbent on the state from the standpoint of God, of its own welfare, and of the welfare of its citizens.

First, from the standpoint of *God*. The individuals and the families owe their very existence ultimately to God, and for that reason they owe Him reverence, adoration, and obedience. Natural religion is thus a mandate of the natural law. The state is not an entity over and above the individuals and families who constitute it, as if it were a thing apart and independent of them. The individuals and families are the state. They form the state because of an inescapable aptitude, propensity, and need of their rational nature, and this nature they have received from God. Hence, the state receives its existence as a mandate of the natural law and therefore ultimately from God. In as much as the state obtains its supreme authority and power from God through the people, the state, like the individuals and families from whom it springs, must acknowledge God as its Supreme Author and, as a consequence, also show Him reverence, adoration, and obedience. But therein consists the essence of natural religion. Hence, the state has the duty, as a state, to practice and promote natural religion. And since the state is essentially a public body, it has the duty, as a state, to acknowledge God as its Supreme Author by public acts of reverence, adoration, and obedience.

Second, from the standpoint of *its own welfare*. Religion is the indispensable basis of the state. The state could not exist without justice, truthfulness, fidelity, loyalty, honest administration, and willing obedience to its authority on the part of the citizens. If the state does not base these essentials on the conscience and the religious motives of the people, it must base it on expediency and physical force; but no state can long exist on such a shifting foundation.

Without the sanctity and inviolability of the oath, there can be no honesty in the administration of public officials, in the dispensation of justice in the courts, and in the loyalty of the armed forces in times of crisis. Religion, therefore, is a necessity for those who govern and for those who are governed.

Third, from the standpoint of the *welfare of the citizens*. It is the purpose of the state to protect and promote the welfare of the people by supplying the means necessary for their temporal felicity. Temporal felicity, however, is impossible unless ordered toward the ultimate end of man, and that is his eternal beatitude in the possession of God as the Supreme Good. Religion, of which the observance of the moral order is an integral part, is necessary for the attainment of man's ultimate end. Religion, therefore, is necessary for the true temporal felicity of the people. Consequently, the state has the duty to protect and promote religion among the people. A good life is worth more than a full pocket. If it is the duty of the state to provide for the economic prosperity of the people, so far as it can, it is all the more the duty of the state to provide for the religious life of the people, so far as it can. Not only must it ward off all attacks against religion; it must do all in its power to facilitate the practice of religion as one of the most potent means of attaining the true welfare of its citizens.

Indifferentism is thus seen to be contrary to the proper end of the state and must be condemned.

The State and the Church

What should be the attitude of the state toward *revealed* religion? The only revealed religion which can come into consideration here is the Christian religion, or the *Christian Church*, based on the personality and teachings of Jesus Christ. Just as there is but one Redeemer and one God, there can be but one true Christian Church, no matter how much people may differ in their personal convictions as to which of the many denominations is the true Church founded by Christ. Which of these is the true Church is an historical question, not a question of ethics. In order to simplify matters, we will suppose that the people of a state belong to the true Church, so that they are members of the same state and the true Church at the same time. In that case, what should be the *relation between state and Church*?

The Church is an organization or society which possesses within itself all the means necessary for the spiritual salvation of its members, just as the state possesses all the means necessary for the public welfare of its citizens. Both Church and state are thus 'perfect' and 'self-sufficient' societies, each in its own particular sphere. Due to the differences of their respective proper ends, each is 'independent' of the other, in the sense that the proper end of the one is not per se a means to the end of the other. However, since the same individuals and families are members of the Church and the state, it is evident that there are many points of contact between them. What relationship, then, should exist between these two perfect and self-sufficient societies? Modern *liberalism* contends

that there should be complete separation of Church and state.

We contend that *separation* of Church and state, *in principle*, must be *rejected*.

Under the supposition mentioned above, the same individuals and families belong as members to the same state and the same Church. Both societies, though perfect, self-sufficient, and independent, are concerned with the welfare of the same people, the state with their temporal welfare and the Church with their eternal welfare. Both, therefore are willed and intended by God for the welfare of the people. Since the temporal and eternal welfare are so closely interwoven, and since state and Church are visible societies composed of the same subjects, it is evident that God, who is a God of order and the Author of both, must intend that they live and work together in *union and harmony* for the benefit of their *common subjects*. Hence, separation of Church and state, in principle, cannot be the intention of God.

The *ideal* situation, therefore, would undoubtedly exist when the nation as a whole has the same true faith, so that state and Church work hand in hand in perfect union for the material and spiritual welfare of the nation.

Unfortunately, this ideal situation does not obtain in many nations. Individuals and families profess different faiths and belong to different denominations. Each denomination considers itself to be the true Christian Church. On practical grounds, therefore, separation of Church and state will often be the lesser of two evils. The division of Christianity into denominations is deep and

abiding. A unification, humanly speaking, is a moral impossibility. Under such conditions *civil tolerance* of all denominations, with no preferential status for any, will be the best solution of the problem for a particular nation. All have equal rights before the law, and it is the duty of the state to protect these rights against infringement from any side. *Liberty of conscience* is a basic right of each individual, because conscience is the final subjective norm of action for every human being, and the state must respect the right of each individual to live according to the dictates of his conscience. When unity of faith is impossible, the state may, and under circumstances should, decree separation of Church and state for the sake of peace and harmony among the citizens as members of the commonwealth. Such, for example, was the situation which prevailed at the time of the formation of the United States. Not irreligion or indifference, but respect for the sincere convictions of the many dissenting citizens within the nation induced the framers of the constitution to prohibit the establishment of a 'state religion.'

In *principle*, therefore, the harmonious union of state and Church is the ideal situation for a nation; *in practice*, however, the separation of state and Church may, in particular instances, be advisable and even morally necessary.

The State and Education

In the chapter on the family (Chap. 19) it was established that *parents* have the primary and immediate right and

duty to educate their children, in virtue of the natural-law relation which exists between parents and children. Individuals and families, with their respective rights and duties, existed prior to the state, and they formed the state in order to obtain the necessary assistance from civil society to fulfill their proper end. The basic rights of individuals and families are conferred on them by natural law and, through the natural law, by God; the state did not confer these rights on them at any time. The state has the duty to protect these rights and to assist them in fulfilling the duties implied in these natural-law rights. Upon entering the political organization of the state, the right and duty of parental education of the children is neither forfeited nor absorbed by the state. The family is a society *sui juris* and remains such at all times, even when it becomes an organic unit of the state.

Government, therefore, has *no immediate jurisdiction over education*. Its function is to render assistance to the parents, so they are able to carry out properly their mission as the educators of their children.

Indirectly, however, the government has certain *rights* with respect to education. Since the proper end of the state is the public welfare of all citizens and since the education of the children is a matter of public welfare, the government has the right and duty to see to it that parents fulfill their obligation in this regard. The children have the natural right to a proper education. Hence, if parents seriously neglect the duty of educating their children, so that it is justly feared that the children of such parents will later on become a danger to the public welfare, the state

must intervene and force the parents to carry out their parental obligations; and if the parents still neglect to provide an adequate education, the government has the right, as a last resort, to commit such children to a proper educational institution. The children do not lose their natural right to a proper education because of the serious neglect of their parents.

In countries with a relatively high cultural standard the average family is incompetent to supply an education adequate to meet this standard. A part of the educational duty of the parents is turned over to the *school* as an auxiliary of the family. Since the state should support the family in all projects which affect the common good, it should *assist* in erecting, maintaining, and staffing such schools, whenever the efforts of the families or the community prove inadequate. The state, however, is no more a substitute for the family than the teachers' authority is a substitute for parental authority; education still is, and must remain, the primary concern and duty of the parents. Hence, even when the community or the government erects and maintains schools with public monies, the parents have the primary right of deciding what kind of educational program and what type of teachers their children shall have. In this respect, *parent-teachers associations* are a forward step in the solution of this problem.

The state has certain definite *rights* which stem from its obligation to procure and secure the common good of the citizens. Knowledge of the *elementary* subjects is a practical requirement for intelligent citizenship. For this reason the state may demand that parents see to it that all children

receive instruction in reading, writing, and kindred subjects. Parents may impart this knowledge to their children by means of private tutoring, if they so desire; or they may commit this instruction to the teachers in the schools. If the parents neglect to discharge their duty in this regard, the state may force them *by law*, in the interests of the common good, so send the children to a school where they can obtain the requisite knowledge. Similarly, the state has the natural right to exclude teachers and subjects from the schools if they are *subversive* of good morals or loyal citizenship.

State monopoly of schools is fundamentally *wrong*. It is a violation of the basic rights of parents to deprive them of schools of their choice, so that their children do not receive the type of education which they, in the considered judgment of their conscience, deem to be suitable or necessary for the intellectual and moral well-being of their offspring. Such a monopoly is contrary to *natural law* and therefore to the law of *God*. The state is bound by the natural law just as the parents are, because both domestic and civil society have their origin and authority from the natural law.

The persons occupying positions in governmental agencies are imperfect human beings. State monopoly of education, for this reason, is bound to have a *detrimental effect* on public welfare. The bureaucratic control of the schools stifles educational freedom and private initiative in the progress of education; introduces the corrosive influence of politics into the schools by placing them in the hands of partisan officeholders and job seekers; gives

centralized direction to the educational system of the whole country, enabling the heads of the department to dictate policies and apply pet theories in every phase of school life; fosters state absolutism; and leads to oppression of conscience and tyranny of intellect. *State socialism* is the almost inevitable outcome of a state monopoly of education.

The State and Intervention

In order to realize the common good effectively, the citizens owe *legal* justice to the state, and the state owes *distributive* justice to the citizens.

Every individual, family, and association or group existing in the commonwealth must contribute its share to the common good of all. This is a duty imposed by natural law. On the other hand, every individual, family, and association or group has the right to share in the benefits of the common good. This right is also derived from the natural law. The state has the right to expect and demand a proportionate contribution to the common good by all these physical and moral persons, because they are members of the commonwealth. But it also has the duty to see to it that they *can* make such a proportionate contribution, in order that they may share in the benefits of the common good; for the state, in virtue of the natural law, must provide for the welfare of all its members. Hence, if the social and economic order is so disturbed and disrupted that certain groups and classes of the people cannot make an adequate contribution to the common good and in consequence do not receive an adequate share of the benefits of the

common good, then the state has the right, and also the corresponding duty, to *intervene* and restore the order of social justice by means of appropriate *social legislation*.

The conflicting interests of capital and labor, of agriculture and industry, of vast corporations and small business, often bring on conditions of acute social distress which constitute a grave violation of the common good. Then the state must intervene through legislation, so as to re-establish the proper social order and restore social justice, in favor of the oppressed.

In order to avoid undue interference with the freedom and self-activity of the citizens, certain *conditions* must be present before the state can rightly intervene. *First*, the injury to the common good must affect the essential rights and interests of the whole community or at least of one of its important groups. *Second*, the injury to the common good must be present or be imminent. *Third*, the situation must be such that it cannot be adequately met through self-help or the cooperative effort of other groups. *Fourth*, the intervention of the state may reach only so far as is necessary to meet the emergency, to restore the disrupted social order, and to remove the existing or imminent injury to the common good.

These conditions are required in order that the intervention of the state may not deteriorate into the benevolent tyranny of a busy-bodying bureaucratic *paternalism*. Paternalism, which seeks to give everything to everybody so as to keep everybody satisfied and happy, is a kind of *despotism* with a tendency to reduce all citizens to the status of helpless children. Man wants to retain his

freedom of initiative, not be a ward of the state; if he must be helped by the state, he prefers to be helped only to the extent necessary to enable him to help himself.

State intervention presupposes that it be a remedy for an adverse situation caused by a maladjustment of social factors among the citizenry. If the government itself is to blame for injustices which disrupt the social order permanently, the people frequently turn against the government, and the result is revolution.

The Right to Resist Tyranny

A *tyrant* is a person who usurps governmental power unlawfully and unjustly or who uses lawful governmental power oppressively and unjustly. A person, therefore, who overthrows the legitimate government through internal sedition and unlawfully and unjustly wrests unto himself the supreme ruling authority and power of the state is a 'tyrant.' Similarly, a person who invades and conquers a country unlawfully and unjustly, and then proceeds to assume the supreme rule over the subjugated people, is a 'tyrant.' Finally, a legitimate and legal ruler who exercises his lawful governmental power oppressively and unjustly, contrary to the common good of his people, is also a 'tyrant.'

When *sedition or conquest* is unjust and unlawful, the people have the natural right to oppose the new government as tyranny and, if possible, overthrow it. What is unjust and wrong in its very cause does not become just and right through the success of the undertaking. An unjust

revolution may be nullified by a counter revolution, and an unjust conquest by reconquest. The people need not acquiesce in the unjustly imposed rule; they have the right to use the force of arms to regain their freedom. Unjust sedition or conquest are cases of *unjust aggression* against a nation, and the unjust aggressor may be repulsed by force, so long as the people do not voluntarily, either expressly or tacitly, make the 'pact of subjection' to the new ruler. That the aggression was perpetrated against a 'moral' person rather than a 'physical' person is a minor point and does not change the essence of the situation. There is no real problem here.

A real moral problem is involved in the question whether the people have the *right to resist their own government* when the latter abuses legitimate power by tyrannous oppression, either by disregarding the existing just laws or the provisions of the constitution, or by enacting unjust and oppressive laws which are harmful to the people.

Obviously, a *distinction* must be made. A few isolated unjust and oppressive *acts* do not make the ruler or administration guilty of 'tyranny' in the full sense of the term. The oppression must be prolonged and more or less general before one can speak of 'tyranny' and 'despotism'; hence, the ruler or administration will be guilty of tyranny if their *governmental policy* is oppressive and unjust. When the problem of 'tyranny' is posed, relative to the people's lawful right of resistance to their legitimate government, the distinction between a 'tyrannous act' and a 'tyrannous policy' must be carefully noted and borne in mind.

The problem, then, boils down to this: When are *laws*, as a policy of government, *just or unjust*? St. Thomas⁴ answers the question very lucidly. “Laws framed by man,” he says, “are either just or unjust. If they be just, they have the power of binding in conscience, from the eternal law whence they are derived. . . . Now laws are said to be just, both from their end, when, to wit, they are ordained to the common good, — and from the *author*, that is to say, when the law that is made does not exceed the power of the lawgiver, — and from their *form*, when, to wit, burdens are laid on the subjects, according to an equality of proportion and with a view to the common good. For, since one man is a part of the community, each man, in all that he is and has, belongs to the community; just as a part, in all that it is, belongs to the whole; wherefore nature inflicts a loss on the part, in order to save the whole: so that, on this account, such laws as these, which impose proportionate burdens, are just and binding in conscience, and are legal laws.

“On the other hand, laws may be unjust in two ways: first, by being contrary to *human good*, through being opposed to the things mentioned above: — either in respect of the end, as when an authority imposes on his subjects burdensome laws, conducive, not to the common good, but rather to his own cupidity or vainglory; — or in respect of the author, as when a man makes a law that goes beyond the power committed to him; — or in respect of the form, as when burdens are imposed unequally on the community, although with a view to the common good. *The like are acts of violence rather than laws...* Wherefore such laws do not bind in conscience, except perhaps in order to avoid

scandal or disturbance, for which cause a man should even yield his right.

“Secondly, laws may be unjust through being opposed to the *divine goods*; such are the laws of tyrants inducing to idolatry, or to anything else contrary to the divine law: and laws of this kind must nowise be observed, because, as stated in Acts V. 29, ‘we ought to obey God rather than man.’⁵

In these words St. Thomas sets the *criteria* according to which laws are to be adjudged just or unjust. Furthermore, he lays down the *general principle*: Just laws bind in conscience and must be obeyed; unjust laws, since they are ‘acts of violence’ and tyrannous, do not bind in conscience and need not be obeyed. But if they need not be obeyed, the people have the *moral right to resist*. And that is logical. When laws are unjust, they are not according to reason and the natural law; they are a perversion of the legal and moral order. The sole reason why a government exists at all is the *will of the people* who have established it for the attainment of the common good; and unjust laws are always, in some form or other, contrary to the common good and as such tyrannous. *Resistance* to tyranny and unjust laws is but the civil community’s defense against unjust aggression on the part of the government against the people.

Acts and laws of the governing authority, if directed against the *divine* good, are also against the common good and must never be obeyed, because they constitute a violation of conscience. Every God-fearing citizen must resist such tyrannous acts and laws with at least a passive

resistance, namely, by simple nonconformity to the demands of the government.

Is *active resistance* morally permissible? 'Active resistance' is opposition to the government by *force* or by some other *positive means*, with a view to changing the unjust and oppressive situation. Everything in this problem depends on the common good.' The 'common good' is not only the measure of the government's justice and injustice; it is also the measure of the people's resistance. If the government's injustice and tyranny is deep-seated, general, and persistent, the citizens have the right and the duty, on the basis of self-protection, to offer active resistance in some form. In most modern states, the constitution provides the means for seeking redress. As a rule, it is possible for the citizens to remove the ruling administration through election or impeachment or other legal measures. It is seldom necessary to remove the existing government through revolution. However, if the existing government refuses to let the provisions of the constitution operate, so that it remains in power through force and illegal means, the citizens have the right, as a last resort, to overthrow the government through *revolution*, if necessary. Revolution under such extreme circumstances would not be sedition; the tyrannical government is itself in a state of rebellion against the body politic and deserves to be ousted. Still, the citizens should never resort to rebellion until all legal and constitutional means have been exhausted and the situation is truly intolerable; otherwise the remedy would be worse than the disease.

According to Hobbes, the ruler is the source of all laws and civil rights; he is therefore above the law and not subject to the political order. According to Rousseau, the people retain full authority at all times, and the ruler is merely the magistrate of the people executing their will; he can therefore be deposed at any time by the people through revolution. We contend that both the rulers and the citizens, as integral parts of the state, are subject to legitimate law and must be guided by the natural-law precept of working together for the common good. We also contend that the rulers, once government is established, possess the supreme authority to rule from God through the natural law and cannot be deposed except for very grave cause, namely, that their rule is truly tyrannical and all legal means to remedy the intolerable situation have failed. Therefore, neither the right of the government to rule nor the right of the people to resist legitimate authority is absolute; both rights are *relative* to the supreme purpose of civil society which is the 'common good' of the body politic.

As a consequence of this principle, the citizens' moral right to resist the government is contingent on the *common good*. Prudence will have to dictate the right course of conduct. When tyranny of government is of a minor nature and pertains merely to the economic and civil rights of the people, the citizens may have to *yield* their rights for the sake of internal peace. When tyranny consists in grave but isolated acts of injustice, the citizens may offer *passive* resistance and seek redress in the courts or in public opinion. When tyranny is the result of wide-spread and

general corruption among the government as a whole, they have the right to offer *active* resistance; first, by using the legal measures provided by the constitution to remedy such evils, and then, if the situation is truly intolerable and legal measures unavailable, by using force in revolutionary action to form a new government as a last resort.

The following *conditions* must, therefore, be present before an organized attempt to overthrow a legitimate government by force is justified: (1) the violation of the citizens' rights on the part of the government must be grave and prolonged, not merely sporadic acts of injustice; (2) constitutional procedures of reform and redress must have been tried and failed, so that no other method but revolution is available as a last resort; (3) there must be a reasonable prospect that the revolt will succeed and that the subsequent government will be just and equitable, otherwise the common good would not be served and justice and charity would demand the avoidance of the great evils of civil war for the sake of the welfare of the citizens.

Neither the dictatorship of an irresponsible government nor the dictatorship of an irresponsible people is conducive to the public welfare of the political community. Government and people must be motivated by the sincere endeavor to cooperate for the common good of the body politic. Only in this way will political society be a blessing and not a curse.

Summary of Chapter XXI

The state always appears as a *government* in the affairs of the world.

1. *Types of Government.* There are three main types of government: *monarchy, oligarchy, and democracy.*

2. *The Reception of Authority.* How do the rulers of this or that concrete form of government actually *receive* the supreme authority to rule? Three main theories have been advanced.

One is the theory of the *divine right of kings*. The supreme authority is supposed to be conferred on the rulers by a special act of God, so that they rule by divine law.

The second is the theory of *translation or transference*. According to this view, all political authority, at the time the state is formed, rests in the people as an immediate democracy. This democracy is then transformed into a kingdom or other form of government through the free act of the people who transfer their supreme political power to the person or group of their choice by an express or tacit decision, by means of a pact of submission.

The third theory is the theory of *designation*. No consent is necessary on the part of the people. The ruler receives his position by nature of the *historically given circumstances*, because he is the logical person to rule; the people merely designate the ruler, and he receives his power, after this designation, directly from God. The supreme power is at no time vested in the people as such.

Evaluation. The 'divine right of kings' is a myth. Scholastic philosophers defend either the transference or the designation theory; most are in favor of the former.

3. *Extent and Limitation of Power.* Public welfare, as the proper end of the state, determines the extent and limitation of governmental power. Whatever is conducive to 'public welfare' falls within the jurisdiction of the government; whatever pertains to private welfare' is outside the competence of the government, except indirectly, namely, in so far as private welfare is an integral part of public welfare.

4. *Legislative Power.* There are three main functions of government: the legislative, the executive, and the judicial function.

The *legislative* power is the right to enact laws which are norms of action for the citizens. In general, laws obligate in conscience, because the government has its power from the *natural law*.

5. *Executive Power.* This is the competence of the government to establish and maintain the agencies necessary to carry out the laws.

6. *Judicial Power.* This is the competence of the government to restore the disturbed legal order. It has a double function: to administer *civil and criminal justice*.

There has been a considerable change of *attitude toward crime* in the course of history: retribution, repression, the classical theory, the neoclassical theory, the positivist theory, the reform theory.

The *primary* purpose of the judicial function is the 'public welfare' of the community; its *secondary* purpose is the

‘private welfare’ of the individuals and families.

The state should have four objectives in punishing crime: retribution, deterrence, prevention, and reform.

7. *The State and Morality.* Whatever affects *public welfare*, the proper end of the state, favorably or unfavorably, falls in some way under the jurisdiction of the government.

8. *The State and Religion.* As regards natural religion, the state has the duty to *promote* and *practice* religion. This duty is incumbent on the state from the standpoint of God, of its own welfare, and of the welfare of its citizens.

9. *The State and the Church.* In principle, the separation of Church and state must be rejected. Both are perfect societies, and God, who is a God of order and the Author of both, must intend that they work together in union and harmony for the benefit of their common subjects.

In *practice*, due to the division into many denominations, the separation of Church and state may, in particular instances, be advisable and even morally necessary.

10. *The State and Education.* Since parents have the immediate duty to educate their children, the state has *no immediate jurisdiction* over education. However, since education pertains to public welfare, the state has certain *indirect* rights and duties. It should assist parents in educating the children; it may even force them to the minimum requirements of education. But a state *monopoly* of education is wrong.

11. *The State and Intervention.* Ordinarily, the individuals and families should help themselves. In conditions of acute social distress, threatening the common

good, the state may *intervene*. *Four conditions* must be present, affecting the common good, in order to justify state intervention.

12. *The Right to Resist Tyranny*. The people and the government have the right, as a matter of self-defense and self-protection, to resist *unjust rebellion* (sedition) and *unjust conquest*.

The people also have the right to resist tyranny on the part of their own government. The sole reason why a government exists is the *will of the people* who have established it for the attainment of the *common good*. Resistance to tyranny is but the civil community's defense against unjust aggression on the part of the government against the people. This resistance, depending on circumstances, will be either *passive or active* resistance. If all legal means fail and the situation becomes truly intolerable, even *revolution* is justifiable.

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1 *Summa theol.*, 1a 2ae, q. 105, art. I

2 Hom. 23, 1 and 3 (Homil. de Epist. ad Rom., 13): Migne, PG, LX, 625 (quoted by H. Rommen, *The State in Catholic Thought*, p. 429).

3 *De leg.*, III; Def. fid., III

4 *Summa theol.*, 1a 2ae, q. 96, art. 4.

5 Italics are the author's

Chapter 22

INTERNATIONAL SOCIETY

THE STATE IS SELF-SUFFICIENT, BECAUSE IT CONTAINS WITHIN itself all the means necessary for the attainment of the public well-being of its members. This self-sufficiency of the state, however, is only relative, not absolute. Due to geographical, cultural, and ethnical conditions, there exists a *plurality* of independent states, many of which are contiguous and related. No state contains within its borders all the natural resources commonly required by its citizens, so that they could live in absolute self-sufficiency. And even if a state did, other nations are not so fortunate; sooner or later these states will enter into trade relations with it. Where a community of interests prevails, treaties will be made between one state and another; where a difference of interests becomes acute, rights will be violated, and one state will war against another.

The states, therefore, constitute a *family of nations*, and their association forms international society. Many moral problems arise pertaining to the conduct of nations in their relation to each other. These must now be considered.

Sovereignty

The state is called the 'perfect' or 'self-sufficient' society. Closely related to the concept of 'self-sufficiency' is the concept of 'sovereignty.' It is a relatively new term, so far as the history of the philosophy of the state is concerned; it became popular through the writings of Jean Bodin (1577).

Sovereignty is the *legal supremacy of the state*. Viewed positively, sovereignty means that the ruler has the right of supreme rule over the people of the state with reference to the attainment of the public welfare of the political community. Viewed negatively, it means supreme political independence of the state, so that it is an equal among equals and not subordinated to the jurisdiction of another state in the community of nations. More concretely, a state is said to be 'sovereign,' when it has a properly constituted and organized government capable of performing the administrative functions of a state; when it has the power and ability of maintaining and preserving public tranquility within the confines of its borders; when it possesses the financial and economic resources required for normal needs; when its legislature and judiciary are able to dispense justice and regulate the conduct and dealings of its subjects in competent fashion, so as to promote general peace and harmony; when it is relatively competent to maintain the integrity of its territory against encroachment; and when it can, in treating with other states, determine independently its own foreign policies, in as much as it acts in virtue of its own rights and not in virtue of the authority of some other state to which it is subordinated.

The chief mark of sovereignty, therefore, is that the state possesses supreme power in its own political order and full independence among states in its own authority and right. Sovereign states are free and equal among themselves. Such a sovereign state would retain its identity, even if the rest of the race, for some reason or other, ceased to exist.

International Society

Although the individual states are sovereign, they are interdependent in many ways. Man's nature perfects itself socially in his political existence as a citizen of a particular state, but there exists a *universal brotherhood of all men* in virtue of their common essential nature as human beings. Men are not primarily Frenchmen, Russians, Germans, Chinese, or Americans; primarily they are human beings, and as such they transcend the narrow boundaries of nationality and race.

While there exists a pluralism of states, the essential nature of all men makes them akin and constitutes the international community, the more comprehensive 'society of mankind.' The stoics recognized this fact and stressed the citizenship of all men in the *civitas maxima*. Out of this concept the Roman jurists developed the *jus gentium*, the *Law of Nations*, the first approach to an international legal order. Beside the civil or national law there existed in all nations a law common to all free men, established by natural reason, which applied to men in so far as they were human beings and not merely nationals of a particular state. This Law of Nations is common to all men and states;

it is observed by all men and states; and it is deduced from natural law by natural reason, so that it is recognized by all nations as a true moral and legal norm of social conduct.

The *jus gentium* thus represented that part of the positive law which contained necessary implications and deductions from the natural law. It must not be confused with 'international law' in the modern sense. International law contains the norms which govern the conduct of the various independent states among themselves as political equals; the *jus gentium* was more in the nature of an international private law guaranteeing the sanctity of universal human rights given with the very nature of man independent of, and prior to, the organization of the political state. Man is simply man, no matter where or in what political community he may chance to live, and his right to life, liberty, and property is inviolable in all places and at all times. These were the universal natural rights, together with their detailed applications, which formed the body of the Law of Nations and were eventually incorporated in the civil codes of the various political states.

International Law

Modern international law evolved out of the *jus gentium*. Christianity, through its teaching that all men are children of God and possess an essentially equal nature, abolished the pagan distinction between freemen and slaves, between civilized and barbarian races. It thus deepened and broadened the natural-law basis underlying the provisions of the *jus gentium*. This Christian concept of man gradually

ruled all human, social, and political relations throughout Europe, regardless of the citizenship of the individual persons. When the Holy Roman Empire finally dissolved into independent national states and the great transoceanic discoveries revealed the existence of hitherto unknown states, the concept of self-sufficient 'sovereign' states demanded an expansion of the *jus gentium* into international law. The Law of Nations (*jus gentium*) was an international private law dealing with rights and duties of the individuals belonging to various national groups. It now became necessary to establish *International Law* as the *public* legal order regulating the rights and duties of the sovereign states in their conduct and relation to each other.

And so the evolution of the European nations into separate sovereign states brought on the development and formulation of 'international law' as we know it today. The fathers of international law were the eminent scholastic philosophers F. Vittoria¹ and F. Suarez.² Hugo Grotius, in his monumental work on international law, frankly acknowledged his indebtedness to these two great men.

International law may be defined as the code of laws which determine the rights and duties of sovereign states and their citizens in their mutual relations and conduct. International law, of course, is a fact and is recognized by all civilized countries. But what is the basis of these rights and duties? Have they a 'moral' or only a 'conventional' character?

The *positivistic* interpretation of the sovereign states places the source of all political rights and duties in the *enforcing will* of the states. But then, who is to force the

states to live up to their treaties? There is no world government over and above the single states which has the authority and power to force them to honor and keep a treaty. Or have the states no obligation to honor and keep a treaty? If not, the jungle law of superior might, practiced so nefariously by the totalitarian and Communist states, will be the supreme law of international relations, and under such conditions there is no possibility of amity and peace among nations. If, however, sovereign states have an 'obligation' to live up to their treaties, whence has this obligation its source? Certainly not in the enforcing will of the state itself, because no state will force itself to observe the provisions of a treaty and, if the state violating the treaty is powerful enough, no other state can force it to honor the treaty.

Many modern writers on international politics advance the theory that the binding force of international law has its source solely in the *treaties or agreements* made by the sovereign states. Governments may draw up and sign 'express' treaties through their representatives, or there may be a 'tacit' agreement and understanding between them regarding certain rights and duties. There are, they claim, no rights and duties between sovereign states prior to, and independent of, such an express or tacit covenant. This view is *false*. Suppose a treaty is made between two sovereign states. The *obligation* to keep the treaty is obviously something different from the *provisions* of the treaty itself. Unless the obligation has its basis in a moral law, the obligation to observe the provisions of the treaty must be the subject matter of another treaty. But then, the obligation to keep this second treaty will not be binding

except in virtue of a third treaty; the third treaty will demand a fourth; and the fourth a fifth, and so on in an infinite series of treaties, because all international duties must rest upon a treaty or covenant. Since an infinite number of treaties or covenants is an impossibility, valid and binding treaties between sovereign states are also an impossibility. International law then is nothing but an empty formula.

Unless, therefore, the binding power of international law has its source, not in the enforcing will of the state or in treaties and covenants existing between states, but in a *moral law* independent of the states, all laws, rules, treaties, and agreements regulating the conduct of states among themselves are just so many 'scraps of paper,' to be torn up and cast aside whenever they prove inconvenient. International relations would then be at the mercy of the nation possessing the greatest military power with which to impose its will upon the others. Absolute might then becomes absolute right.

International and Natural Law

International law must have more than a 'conventional' character. Without a 'moral' basis, international law is a useless fiction. But wherein does the *moral basis* of international law consist?

International law is the body of laws which determine the rights and duties of the sovereign states in their relation to each other, the public legal order of the community of nations. Each state is a moral person, equal in

sovereignty to every other state, with all the rights and duties of a moral person. But though the states are sovereign in the sense that they are supreme in their own order, they are not sovereign in the sense that they are beyond 'good' and 'evil,' beyond 'right' and 'duty.' All civilized states recognize the fact that they have the duty to respect and protect the *personal rights* of individuals concerning life, liberty, and property, regardless of their national affiliations.

As soon as it is acknowledged that the sovereign states have the 'obligation' to respect the general human rights of aliens and also have the 'obligation' to live up to their treaties and covenants, it is admitted that the states in their international relations are *bound by the moral law*. But again, whence this moral law with its binding power of obligation? It can be only the universal *natural law* which imposes its obligation on the sovereign states in their mutual relations, just as it does on the individuals and families. All are subject to the same natural law, whether they be physical or moral persons, because all are human in their essence. The ultimate components of the international society are the same individuals and families which constitute the membership of the various sovereign states; and so the natural law, which underlies the societies of the families and states, is also the foundation of the international society of the sovereign states.

There is, however, this difference. The 'common good' which international society seeks to realize through the medium of international law is the public welfare of the *states* and of *humanity* in general, rather than of the

families and individuals as such. Since the single sovereign states are 'moral persons' based on the social nature of man, it is necessary to establish an *international order of law*, so as to direct the activities of the community of nations toward the common good of humanity. This common good is justice, peace, security, and the temporal welfare of all the states and their citizens as members of the universal brotherhood of man under the universal Fatherhood of God.

Natural law alone is able to give an adequate account of the existence of national and international law. Both have their common source in the social nature of man seeking the realization of its latent potentialities in the co-operative union of men in the national order of the sovereign states and in the international order of the community of states. And both pursue the same end, namely, the temporal felicity of man in his social and political life. It is on the basis of natural law that governments recognize the inviolable rights of individual persons and families, and it is on the same basis that international law recognizes the inviolable rights of sovereign states. Now, where there are rights, there are duties. International law, therefore, is a body of laws which determine the rights and duties of the sovereign states 'in their relation to each other. And the moral basis of international law in its rights and duties is the natural law which governs all human relations in every phase of existence.

The provisions of international law refer either to justice or to charity.

International Justice

All individuals, considered from the standpoint of their nature as 'persons,' have the same essential capacities and the same final end; hence, all individuals possess a natural juridical equality among themselves. This equality is the basis of 'personal justice.' As equals, one person may not treat another as a means to himself or for his own convenience or advantage. The same fundamental principle of justice applies to states. They are all sovereign, each having the same essential capacities and the same proper end. As such they are moral persons possessing natural juridical equality among themselves, so that no state may treat the other as a means to itself or for its own convenience or advantage; to treat another state in this fashion would mean to treat it as a subordinate and not as an equal. Consequently, all states in the community of nations have *equal rights and duties*, based on the natural law of justice.

All states have an equal right in justice to their *existence*. This right is essential to every state.

It follows that every state has the natural right of *independence*. Since all states are equal, the mere size of its population and the extent of its resources and power make no difference. No state has the right to invade and subjugate another nation simply because the latter cannot offer effective resistance. Every state has also the natural right of *national integrity*, so that it may not be deprived of its citizens or its lands through fraud or force on the part of another state. This does not curtail the personal right of an

individual to emigrate into another country and assume citizenship there. Furthermore, every state has the natural right to peace and tranquility within the limits of its own jurisdiction. It is contrary to international justice, for example, for one state to develop a 'fifth-column' organization in another nation, with whom it is at peace, and foment dissension and trouble or sedition. Finally, every state has the natural right to *self-development*. Like an individual person, each state, being a moral person, must seek its own well-being by developing the potentialities of its people in agriculture, industry, business, commerce, science, art, and in whatever way its citizens may benefit, so that the state itself may thereby become more perfect and powerful as a political body in its own right.

All states have an equal right in justice to their *property*. A state cannot exist without property.

The citizens of a state live in a definite *territory* marked off by fixed boundaries. Parts of this territory are owned directly by the state itself, such as, for example, highways, roads, bridges, public buildings, military and naval establishments. Most of the territory will, in all probability, be owned by individuals, families, societies, and business corporations. Even in the case of private property, however, the state has the right of 'eminent domain,' namely, the superior dominion of the state over all property within its territory, so that it may appropriate any part of it for necessary public use after proper compensation has been made to the owners. The citizens are members of the state, and their property is an integral part of the general territory acknowledged by international law as belonging to

the state as a political body. No outside nation, therefore, can purchase property within the territorial limits of another state without the latter's permission; nor can it seize any property belonging to another state or its citizens without violating justice.

Parts of the globe which are not the property of another state belong to nobody, and any state may make it its own property through the title of first *occupancy* by annexation and settlement. In order that this title be valid in natural law, however, the occupying state must actually control this land effectively. Mere discovery or mere intention is not sufficient for ownership. The same principle applies to land occupied by an uncivilized people which lacks the political organization proper to a genuine state; in such a case the people living in the area retain all rights to their private property, while the occupying state acquires the right of public jurisdiction over the territory in general.

The *high seas* do not properly belong to any nation or group of nations. The ocean cannot be the living abode of a people, and the state consists essentially of a people living under its jurisdiction in a definite area. The waters immediately touching the coast of a country are usually considered as part of the country itself. Hence, positive international law has defined the three-mile limit of coastal waters as the outer boundary of all countries facing the open sea. Fishing rights in waters adjacent to a country are customarily settled by treaty.

All states have an equal right in justice to *freedom of action* in their internal and external affairs.

Like an individual person in his own home, the state as a moral person has the right to control and regulate the *internal affairs* of its own political household without interference on the part of outside nations. So long as its actions are conducive to the proper end of the state, the public welfare of its citizens, and violate no rights of justice with respect to other states, it acts within its own sacred rights. If sedition (and not a just rebellion against government tyranny) arises within the territory, so that a traitorous group or party seeks to overthrow the legitimate government, the state has the right to suppress the insurrection by force of arms, and no outside power may in justice assist the insurrectionists or hinder the government from carrying out its attempt to quell the sedition. Each state also has the right to regulate the trade of its citizens for the benefit of the whole community, by establishing, for instance, free trade in favor of one country and high tariffs against another.

Because it has the natural right to freedom of action as an independent moral person, each state has the right to communicate with other nations in a free and unrestricted manner. In particular, it has the right to make offensive and defensive *alliances* with other powers for the sake of mutual protection and advantage, so long as such alliances are not intended as an actual or virtual unjust attack upon another nation. Preferential friendships have their legitimate place among states as they have among individuals, and others have no right to complain, much less to hinder, such special acts of preference. The *external* affairs of a state are as much its own concern as are the internal affairs within its

territory, because each state is sovereign in its own sphere and not subordinated to the jurisdiction of any other state in matters pertaining to the welfare of itself and of its citizens.

To maintain and sustain these rights of justice, a state is entitled to prepare itself in time of peace against a possible *unjust attack* from within and from without. Hence, it may establish a military force of sufficient strength to repel and conquer any group or nation or combination of nations which unjustly threatens its existence. And if the threat becomes an actuality, it may go to war in defense of its just rights.

International Charity

There are *rights and duties of charity* among states, as there are rights and duties of justice. They, too, are based on the prescriptions of natural law. Individual persons are bound by the law of charity toward their neighbors, because all are human in their possession of the same essential nature and in their destiny to the same common end. The fact that each individual is an independent, autonomous person does not change the situation. For the same reason, the various states are bound by the nature of their being to charity toward other states, because they are also human in the possession of the same essential *nature* and in their destiny to the same *common* end. States are independent and sovereign, but they always remain 'moral persons' with an essentially human nature and purpose.

The primary duty of a state is always the welfare of its own subjects. A state, however, should not make the welfare of its citizens its sole concern, to the exclusion of the welfare of other states and their subjects. The brotherhood of man is all-embracing, and charity demands a *benevolent good will* toward all human beings, irrespective of their nationality. Charity, to be genuine, must frequently enter the sphere of practical assistance, especially in times of great need and distress. When a country is stricken by disaster, whether in consequence of a natural catastrophe or of a devastating war, it may become a duty of charity for other states and their citizens to come to its aid. But since charity, unlike justice, does not obligate under circumstances of grave inconvenience, a poor state would be exempt from this duty except in a case of extreme necessity.

The duty of charitable assistance in time of need brings up the problem of *neutrality* and *nonintervention* in international affairs. Since states are sovereign political entities, supreme in their own order, must they be allowed absolute freedom in conducting their own affairs, even if their conduct involves tyranny toward their own subjects or unjust aggression toward another state?

If it is conceded that international law is grounded on the *moral law*, it must also be conceded that sovereignty is not absolute, but relative, and that tyranny and unjust aggression may *justify intervention* on the part of other states.

Governments have the strict duty to strive at all times and with all legitimate means for the welfare of their

people; they are bound to promote the proper end of the state, because that is the essential purpose of the state's existence. If they act contrary to the proper end of the state, they violate the sacred trust imposed on them and accepted by them. Hence, when a government *habitually* and *gravely tyrannizes* all or a large portion of its citizens, it is guilty of a serious injustice. Another state, in a spirit of charity, may and should offer its friendly services to remedy the situation; and if the offending government refuses mediation and the intolerable situation persists, the other state may intervene in the name of humanity, with force if necessary. Of course, if such a procedure would precipitate a war with other states who favor the tyrant government, the obligation of charity may cease, because charity does not bind to an act of assistance which entails serious inconvenience. In general, no state is allowed to interfere in the internal affairs of another state; but this principle applies to the legitimate internal affairs of the state. *Tyranny* is never legitimate, because it involves serious and habitual injustice against the citizens as human beings. Hence, intervention for the purpose of abolishing tyranny is grounded on the fundamental rights of human nature guaranteed by the natural law, not on enactments of positive international law.

Unjust aggression against a state is a parallel case. When one nation unjustly attacks or uses another nation, neutrality and nonintervention are no longer an obligation, especially if the nation suffering the unjust attack appeals for assistance. Anyone may come to the aid of a person who is unjustly attacked by an assailant. He need not even wait

until an appeal is made for help. The mere fact that an unjust aggression is attempted is sufficient reason to enter the fray and beat off the attack of the assailant. So, too, when an unjust aggression is attempted internationally. Whether the person attacked is a 'physical' or 'moral' person, is immaterial; justice is violated, and all states have *per se* the duty of charity to intervene and preserve the international order on the basis of natural law. *Per accidens*, namely, if a nation is too weak to overcome itself, it may observe neutrality; charity would not bind under such circumstances.

According to the same principles of natural law, one state is justified in giving effective aid to another state, when the latter appeals for help to quell *anarchy* or an *unjust rebellion* on the part of its citizens. Here the citizens are the unjust aggressors against their legitimate government. Under the circumstances, intervention would be no breach of neutrality, but an act of charity seeking to restore the proper public order.

Natural law thus imposes serious obligations of justice and charity upon the community of states in their relations to each other, regardless of the provisions of positive international law. Consequently, the principle of 'nonintervention' in its extreme form, as advocated by *liberalism*, is contrary to natural and sound morality.

International Treaties

Treaties are compacts made by one state with one or more states. They may be *secret* or *public*, depending upon whether they are known only to the contracting parties or brought to the attention of other states not parties to the treaty.

Since treaties are solemn compacts made between sovereign states, only the supreme authorities have the power to make or ratify them. Treaties are of the nature of *contracts* and have the binding power of contracts. Where governmental officials are chosen by popular elections, the incoming government automatically assumes all obligations of the outgoing government, and that includes treaties; the obligations rest upon the sovereign states as such and not merely upon the officials who happen to be in power.

In general, the *conditions* for a *valid treaty* are the same as those for any contract. There must be no 'substantial error' on the part of the contracting parties regarding the provisions of the treaty. The 'consent' of the contracting parties must be genuine and mutual; unless the signatories (or one of them) are forced to sign the treaty under threat of personal injury, the signing of the instruments must be considered an act of free (though perhaps reluctant) consent. The 'matter' of the treaty must be ethically good or indifferent, and the execution of the provisions of the treaty physically and morally possible.

Ordinarily, the provisions of a treaty *cease to bind*, if observance of them would entail the dissolution of the state or threaten the loss of its independence. Treaties are made, not for the present moment, but for the future; and they are made by sovereign, independent states. Hence, the very

fact that a treaty is made between two or more states presupposes the existence of these, states in the future, together with their sovereignty and independence. Ordinarily, therefore, it cannot have been the intention of the contracting parties to obligate themselves to carry out the provisions of the treaty under circumstances which would entail dissolution or threaten the loss of independence. If the treaty does not cease outright, it is at least *voidable*.

The matter is totally different, however, when the dissolution of a state or the loss of its independence is made the very *substance* of the treaty or is a *contingency* taken into consideration at the time the treaty was concluded.

To fulfill the provisions of a treaty is a matter of *strict justice*. It is also a matter of national and international *honor*. The violation of a treaty is a serious insult to the honor of the state which is the other party to the treaty. And such an insult often leads to war.

The Morality of War

War in any event is a terrible calamity, both for those who win and for those who lose. Modern warfare, in particular, unleashes such a fury of destruction and suffering that many people are of the opinion that war can never be justified. Is that true?

War is a condition of armed conflict between two or more sovereign states. Wars are either 'offensive' or 'defensive.' Popular parlance usually speaks of that nation as waging an 'offensive' war which first declares war on another nation

or which first proceeds to wage war against another nation, irrespective of the justice of the action; the nation against which war is declared or waged is said to wage a 'defensive' war. These expressions are altogether erroneous and morally inept. *Morally* speaking, that nation wages an offensive war which goes to war, not in defense of a violated right, but simply in order to damage or destroy another nation or in order to further its own aggrandizement, so that its act of war has the character of 'unjust aggression'; it is immaterial whether it declares war first or not, or whether it is attacked first or not. Reversely, that nation wages a *defensive* war which goes to war in defense of a right that has been unjustly violated by another state; here, too, it is immaterial whether it declares war first or not, or whether it is attacked first or not. Hence, if war can be justified at all, it must always be a 'defensive' war waged for the vindication of violated rights.

Heinrich von Treitschke (1834—1896) defended the justification of war as something naturally necessary for the perfection of the state and its people, because only in war is the complete solidarity of a people achieved. Such an attitude is utterly immoral or at least amoral, because it views war as an intrinsic good, as an integral part of the common good of the state; it advocates war for war's sake, regardless of the justice or injustice of the cause. War is not beyond the pale of morality. War must conform to the norms of morality, or it is as unjust and immoral as murder.

War, under certain conditions, is *justified by natural law*.

War is neither intrinsically good nor intrinsically evil. It may be morally right, and it may be morally wrong. Like

every other act of man, war must be morally good from the standpoint of the 'end of the action' as such, of the 'circumstances' accompanying the action, and of the 'end of the agent.' If it lacks moral goodness in any of these features, it is morally wrong; contrariwise, if it possesses moral goodness in all these features, it is justified.

There can be no serious question that a nation, in going to war, can meet all these *conditions*. As regards the *end of the action* as such, in order that a war be just, it must be in defense of violated rights. An important right may have been actually violated, as when a nation, for instance, has suffered an unjust attack by a hostile force; or the violation of an important right may be adjudged with moral certainty to be imminent, as when a neighboring nation mobilizes its armed forces at the border. As regards the *end of the agent*, the nation going to war must be actuated by the good intention of defending its sovereign rights against an unjust attack, and not merely act, for example, out of revenge, envy, greed, or spite. As regards the *circumstances* accompanying the initiation of warfare, a number of things must be considered. Since war is such a tremendous physical and social evil, it can only be used as a last resort. First, all peaceful means, such as diplomatic negotiation and mediation by other powers, must be exhausted. Second, the evils of war must in a measure be proportionate to the injury inflicted on the innocent nation and to the harm done to international order, and the latter point is important, because condonement of an international act of violence will inevitably lead to more and greater disorders in the course of time. Last, there must be

reasonable hope that the outcome of the war will result in more equitable conditions for international peace and amity.

It must be remembered that in a just defensive war armed action is undertaken for the sake of a *moral good*. War may be the only effective means of restoring the violated moral order as it exists among sovereign states and of protecting a nation's sacred rights. Moral evil is incomparably worse than physical evil. Physical evils, the result of warfare, may therefore sometimes be allowed for the sake of attaining a moral good which cannot in any other way be attained. The principles governing individual action in defense of one's person or property against an unjust aggressor apply to a state defending itself against unjust aggression. Even more so. An individual, except in the case of an attack actually or imminently present, can appeal to the courts and to the law-enforcement agencies of the government for protection and redress. At present, however, there exists no world government to which a nation can appeal for effective protection and redress. The organization of the United Nations possesses no military power capable of adequate measures to prevent a powerful nation bent on unjust aggression from carrying out its evil design. Hence, it can easily happen that a nation may have to use its own armed forces and go to war in the *just defense of its co-active rights*.

But here, too, the principle of *proper moderation* applies. The nation whose rights have been violated may not go beyond the measure of *proper defense*. If the guilty nation offers complete amends for its unjust act to the offended

nation, either prior to the inception of hostilities or during the course of the war, this reparation must be accepted. If the enemy surrenders, the offended nation must cease actual warfare; to continue the war would exceed 'proper moderation' and become an act of revengeful aggression. If enemy soldiers surrender or are wounded, they may not be mistreated or killed; proper defense means putting the enemy forces out of action and incapacitating them for further resistance, not complete annihilation. Poisoned bullets, explosive bullets, or dumdum bullets and similar weapons are not permitted in combat, because the sole purpose of their use is to kill or torture the enemy, and this purpose exceeds the proper moderation of defensive warfare. For this reason these weapons have been outlawed by international agreement. On the basis of natural law, the use of 'poison gas' would not exceed the principle of proper moderation, provided it would only disable enemy combatants and thus force them out of action. However, due to its harmful effects over a long period of time, even after the war is over, positive international law has proscribed the use of poison gas as a legitimate weapon; unless, therefore, the aggressor nation violates the law and uses it, the innocent nation must refrain from the use of poison gas in warfare.

Granted, then, that all the requisite conditions are fulfilled, a war in defense of violated rights is just and permissible.

The Rights of Civilians in War

The *rights of civilians* in time of war has always been a thorny problem for the moralist and the jurist. Just who are exempt from military attack and violence? The unjust aggressor, of course, has no moral right to attack anyone; he is the criminal in the case, and the criminal is bound in justice to desist from attacking. The question, therefore, applies only to the state defending its rights against unjust attack.

The statement is often made that 'civilians are *innocent* people, and it is morally wrong to fight innocent people.' The term 'innocent,' as used here, contains an ambiguity; it may mean as much as 'morally innocent' in the sense of 'not being guilty of crime,' or it may mean 'militarily innocent' in the sense of 'not taking an active part in the war.' If the word 'innocent' is taken in the first meaning, so that it would be morally wrong to fight them, the meaning is false; because in that case it would be wrong to fight the vast bulk of the armed forces of the enemy, since very few of the armed personnel have anything to do with the crime of the war. The word 'innocent,' therefore, must be taken in the *second* sense of 'militarily innocent.' In that case the military force may justly attack anyone in uniform; but many civilians will also be open to attack, because they 'take an active part in the (unjust) war.'

It is immaterial whether an unjust aggressor is formally innocent of injustice or not; so long as the person suffering the unjust attack is defending his right, he is entitled to ward off the attack, even to the extent, if necessary, of wounding or killing his assailant. And that is also true of a sovereign state. Hence, as Gronin³ observes, whoever is

actively engaged in the unjust aggression of war, whether personally innocent or guilty in a moral sense, is subject to attack, according to the principles of the natural moral law. All who are actively engaged in the unjust aggression of war are, from the standpoint of natural law, true *combatants*, whether they wear the uniform of the armed forces or not. It is not necessary to shoot off a gun, in order to be counted among the 'combatants.' All civilians who take an active part in promoting the unjust war, even if they bear no arms, are unjust aggressors and as such can lay no claim to immunity from attack, because they must be reckoned among the 'combatants' just as truly as soldiers and sailors in uniform. The term 'combatants,' therefore, embraces all persons belonging to the *military forces* of the aggressor nation and all *civilians taking an active part* in the war effort. All these persons are subject to attack. The only persons not subject to attack are those civilians who are not actively engaged in any way in the war; they are the only non-combatants in the true sense of the word.

To be more specific. Among the 'combatants' belong all members of the armed forces, whether or not they belong to combat units; all persons in military training and those called to the colors; all government officials; and all civilians employed in the war effort. Among the latter, it is obvious, belong all war workers in factories making ammunition, planes, guns, tanks, trucks, cars, clothes, or anything else that serves as equipment for the armed forces; all who actively assist in the making and operating of transportation services on land or sea or in the air, in so far as they are used to transport personnel or materials for the

prosecution of the war; all employed in radio, telephone, telegraph, or any means of communication connected with the war; all who grow, process, and supply foodstuffs are active participants in the unjust aggression and as such subject to military attack. Immune from attack, then, are those civilians who are truly non-combatants, that is to say, all men, women, and children not actively connected in any way with the unjust war. In view of the nature of modern warfare, it will readily be seen that a large portion of the civilian population belongs to the category of 'combatants' subject to military attack.

WHAT ABOUT *ENEMY PROPERTY*?

Since justice is on the side of the nation unjustly attacked or used, it is clear that the innocent nation has the right to employ all legitimate means necessary to win the war and bring the guilty nation to terms, for to be entitled to an end is to be entitled to the means necessary for the attainment of the end. Now, the destruction of enemy property is such a means, a 'military necessity' to win the war. Hence, the destruction of enemy property, when dictated by *true military necessity*, is justified according to natural law.

In the event of true military necessity, it is clear that it is permissible to destroy or render useless any property which may benefit the guilty nation in the prosecution of the war, because such destruction or damage *lowers the enemy's war potential* and will eventually bring about his defeat. Hence, all installations of public or military

character, useful to the enemy, are legitimate targets. Such targets are fortifications, arsenals, factories for the production of munitions and war equipment of all kinds, communication establishments, railroads, bridges, public buildings presumably used for war purposes, supply trains, and in general everything which assists in maintaining the enemy in his unjust cause. Ships carrying food or military supplies may be attacked and, if necessary, sunk, all provisions being made, wherever possible, for the lives of the crew and passengers.

Here, too, a distinction must be made between public and military property and private property. *Private property*, if used for military purposes, is equivalent to military property, because it falls within the sphere of 'combatant activity.' But the private property of true non-combatant civilians is *per se* not subject to attack; *per accidens*, however, even such property may be destroyed or damaged if it stands in the way of an attack upon a legitimate military objective. Non-combatant civilians are members of the body politic and will often have to suffer losses together with the losses inflicted upon the body politic in general. Attacking forces, however, have the duty to respect the private property of non-combatants whenever and wherever feasible.

Air raids on cities pose one of the most difficult moral problems involved in lawful warfare. Many cities contain large numbers of government institutions, military personnel, military establishments, war factories, warehouses, docks, railroads, and other facilities necessary or advantageous to the conduct of war. To reduce them to

impotency would evidently lower or destroy the enemy's capacity to continue fighting. Hence, they must be considered legitimate targets for air raids in this respect. Unfortunately, however, the larger cities also contain the greatest number of non-combatants. These cities do not cease to be legitimate targets, so far as military objectives are concerned, notwithstanding the fact that many non-combatants live within their limits. The legitimacy of air raids on particular cities and towns resolves itself into the answer to this question: If no civilian non-combatants were present in the city or town, would the city or town contain installations necessary or advantageous for the conduct of war on the part of the enemy? If so, these installations are a legitimate target for bombs and shells. If not, air raids serve no useful purpose, because they are not a 'military necessity,' and they are not permitted. If a city or town is a legitimate target of sufficient importance, so that its reduction is a military necessity, civilian non-combatants should leave the place or be removed by the authorities entirely, at least in areas adjoining military targets; if they remain, they must accept the chances of war. Pilots and artillerymen must strive to direct their missiles at military objectives, and *indiscriminate* bombing and shelling, especially if aimed at predominantly residential sections, is illicit. Stray shots, inflicting damage or death in such sections, must be discounted as unintentional. If non-combatants are killed or wounded in the bombing or shelling of definitely military objectives, when the attack is reasonably adjudged to be a military necessity, the principle of the *double effect* receives application: the destruction of

the military objective alone is intended, while the death or wounding of non-combatants is not intended but merely permitted as a chance effect unavoidable under the circumstances. It should be fairly evident that the complete mobilization of a nation's industry for military purposes in present-day warfare makes all important cities more or less legitimate military targets, because practically all factories do war work in some form or other, and they are concentrated in the cities. Formerly, wars were fought by relatively small armies, and the ordinary civilians had little or nothing to do with the war; modern wars, however, involve almost the whole population, civilians included.

Robot bombs, as used by the Germans against England toward the end of World War II, cannot be justified. Launched from a great distance, they could be aimed only at a general area and not at definite military targets. If *guided missiles* can be made to select a military target, their use will be morally permissible. The *atomic bomb* has naturally caused a great deal of discussion among moralists. Due to the widespread havoc caused by its tremendous explosive power, many condemn its use as being utterly inhumane and therefore morally unjustifiable. Others are not so sure; they feel that it would be premature to give an authoritative decision on its morality at the present time. Atomic bombs are not like robot bombs. They are under the control of the bombardier, are released at the time desired, and are aimed at the target with all the precision of ordinary bombs in a regular air raid. It is true, of course, that their demolition effect is spread over a wide area. However, it must also be conceded that certain

military targets occupy an extensive territory, relatively far removed from the non-combatants. Such are, for example, concentrations of naval vessels in large harbors and on the open sea; troop convoys; naval and army bases; training camps; oil wells and refineries; hydroelectric power dams; air fields in isolated places; atomic energy plants; important war factories; and many types of installations that are operated solely by military personnel or civilians actively engaged in the war effort. The atomic bomb, when restricted in its use to such limited targets of great military importance, should, it would seem, be considered a legitimate weapon of defensive warfare. However, since the atomic bomb with its enormous power of destruction of life and property can be abused all too readily by an unscrupulous enemy, it would certainly be better if the nations of the world would place it on the list of outlawed weapons. *Per se*, though, viewed strictly from the standpoint of natural law, it would appear that its restricted use, as indicated above, can hardly be termed 'intrinsically evil.' The same principles apply to the hydrogen bomb.

The Rights of the Victor

When we speak of the *rights of the victor*, it must be understood that the rights referred to are those of the *unjustly attacked nation*; the unjust aggressor has no rights, even when victorious. It must also be understood that victory, as such, simply means that the victor has vanquished the aggressor through physical power. Physical power, however, is not a source of right. Hence, the fact of

victory, as such, confers no new right upon the victor. Whatever rights the victor possesses were already his before he went to war. After these preliminary observations, just what rights does the victor possess with respect to the vanquished aggressor? There are *three main rights* which the victor may exercise over the vanquished foe because of victory.

First, since the victor went to war with the aggressor nation because the latter violated certain sovereign rights, the victor has the right to the *restoration of the violated rights*. If the aggressor unjustly annexed a certain amount of territory, the victor has the right to reclaim this territory and incorporate it again into the sovereign state from which it was wrested. If the aggressor insulted the honor of the victor's people or state, the victor is entitled to demand suitable amends.

Second, the victor has the right to *indemnities for all losses* which the war brought upon his people and his state in consequence of fighting for the restoration of violated rights. These losses in personnel, material, and money were unjustly forced upon the nation by the aggressor. That being the case, the unjust aggressor can be compelled to make good these losses by means of an adequate reparation in kind or in equivalent value. The lives of the dead cannot, of course, be restored, nor is it possible to make any sort of adequate compensation for these lives in the form of reparations in money; however, the victor can impose monetary reparations upon the aggressor, the money to be given to the surviving parents, wives, or

children, in view of the fact that they have been unjustly deprived of their legitimate support.

Third, since war is not waged for the sake of war, but for the sake of restoring the violated peaceful order, the victor has the right to *insure the peace for the future* by preventing future unjust attacks on the part of the aggressor nation. If the unjust aggression has occurred a number of times, so that it appears to be a definite policy of the government, a complete subjugation of the guilty state may be justified.

In accordance with the first principle, the victor may occupy whatever enemy territory falls under his dominion while war is being waged. Such occupation is justified, because it is a legitimate means of weakening the enemy's power, until victory is assured. In accordance with the second principle, the victor has the right to occupy the territory of the vanquished aggressor from the time of victory until the time the peace terms are signed and accepted, because the peace terms will stipulate the amount and nature of the compensation to be made for the losses sustained in the war. In accordance with the third principle, after the restoration of peace, the victor has the right to occupy the enemy territory as long as is reasonably necessary to make sure that order will be observed and that the terms of the peace treaty will be carried out. Without this right it might not be possible to insure peace for the future.

The occupying army is the guardian of the public order and is in fact the governing authority during the period of occupation. It has both the right and the duty to preserve

public order. The military government may not be arbitrary in its rule, but should always be just and humane in its treatment of the inhabitants. When disorders arise, it may use only such repressive measures as are justified according to natural and positive international law. The whole population or a community may never be punished for crimes committed against the occupying forces, except when the whole population or the community is collectively responsible. *Reprisals* represent a difficult moral problem for nations at war, particularly for occupation authorities. Positive international law permits retaliatory acts against the enemy for violation of the customary procedures of war. With regard to the *morality of reprisals*, a distinction must be made. If the retaliatory act constitutes a breach of the natural law, it is not allowed, no matter what crime the aggressor nation may have committed; two evils never make a good, and two crimes do not cancel out each other. But if the enemy violates a positive law agreed upon by international treaty, the injured nation may respond by a retaliatory act of the same kind. For example, if the enemy kills hostages, one would not be permitted to kill innocent non-combatants held as hostages, because they have committed no crime and should not suffer death for the crime of others; but if the enemy uses poison gas, the unjustly attacked nation would be permitted to do the same, because the use of poison gas is prohibited by international agreement and not by natural law as such. It may thus happen that a military leader will not be permitted in conscience to use a certain method of reprisals. Oftentimes a nation has no other course open but to wait until the

conclusion of the war and then place the criminals on trial before an impartial court, as it was done in the Nuremberg trials after World War II.

Duties of Citizens in Time of War

What *duties* have the citizens regarding participation in the war?

If a war is *evidently unjust* in the view of the better and best citizens capable of forming an adequate judgment about the morality of the war, it is clear that the citizens may not conscientiously support the injustice perpetrated by the government.

If a war is *evidently just*, so that the facts are plain as to the guilt of the offending nation, the citizens have both the right and the duty to support their government in its attempt to vindicate the violated rights of the state and its people. The state is not free to accept or refuse the defense of important rights; it has the solemn duty to resist unjust aggression, both from the standpoint of the common good of its citizens and from the standpoint of international welfare. And when the state goes to war against an unjust aggressor nation, the citizens, as integral members of the state, have the duty to give every assistance to the state to bring the war to a successful conclusion. While no able-bodied man is obligated to volunteer his services in time of war, he may not refuse his services if he is drafted (conscripted) in a just war.

If a war is *doubtfully just* in the view of competent judges, the citizen must give his government the benefit of

the doubt. The citizen has the right to presuppose that his government would not plunge the nation into a devastating war without being convinced that it had a just cause. Furthermore, the ordinary citizen, and even the citizen of exceptional intelligence, is not sufficiently versed in international matters, both as to laws and facts, to be capable of passing a competent judgment on the absolute justice or injustice of the government's action. Matters are usually so complicated, that the ordinary citizen cannot be expected to dispute the judgment of the highest officials of the state. And so, as a general rule, the citizen may abide by the decision of the government, so long as the government is not manifestly wrong.

All men already in the military service, and all draftees, may assume that their country's cause is just. The volunteer must be sure in his own mind of the justice of the war, because he freely decides his course of action, and no one may act with a doubtful conscience in matters of life and death. A *conscientious objector*, truly convinced that all wars are forbidden by his religion, must abide by the decision of his conscience.

International Peace

Peace among nations is a great blessing. But only to those of good will. When justice and charity are moral pillars supporting the structure of international policies, nations will be able to live in peace and harmony with one another.

Nations truly desirous of maintaining international peace will not seek to take undue advantage of their fellow

nations, but will do everything within reason to settle their differences amicably, without having recourse to the doubtful decision of arms. Might is not right. And victory is not necessarily on the side of justice.

International charity will therefore strive to find a more equitable manner of defending just claims. More and more the nations of the world recognize the futility of war and realize that peace must rest upon the good will and solidarity of all peoples as members of a family of nations. Hence, the continued efforts to reduce armaments to the minimum compatible with national security, and to settle all controversies between states through *conciliation, mediation, and arbitration*.

After World War I the League of Nations was formed to carry this ideal into execution. It failed. Now, after World War II, the war-weary governments have established the organization of the United Nations, hoping to have better success in averting future wars and insuring a just and lasting peace. The United Nations may also fail. But sooner or later the governments of the earth, if they are not to disappear in a holocaust of fire and in a sea of blood, must outlaw war and seek the solution of all international problems in a *world democracy of nations* which will act in unison to remove the cause of war and nip in the bud every attempt of recalcitrant states to disturb the peace. Only then will justice and charity, not expedience and greed, rule the world and bring about that tranquility of order which is the essence of harmonious living among the races of mankind.

This is the supreme problem facing the sovereign nations: Destroy war, or be destroyed by war.

Summary of Chapter XXII

The sovereign states constitute a family of nations, and their association forms *international society*.

1. *Sovereignty*. Sovereignty is the *legal supremacy* of the state, both with regard to the rule over its own subjects and with regard to political independence among the states.

2. *International Society*. There exists a universal brotherhood of all men in virtue of their common essential nature as human beings, so that they form an international community. This fact found expression in the *jus gentium* or Law of Nations, which was in the nature of an international private law guaranteeing universal human rights to all men.

3. *International Law*. This is the code of laws which determine the *rights and duties of sovereign states* and their citizens in their mutual relation and conduct. It is neither the enforcing will of the states nor treaties and covenants between states which constitutes the basis of their rights and duties. Rights and duties imply 'obligation,' and obligation presupposes a moral law.

4. *International and Natural Law*. The moral basis of the international order of law is the *natural law*. The natural law, which underlies the societies of families and states, is also the foundation of the international society of sovereign states. The common good to be realized is the public welfare of the states and of humanity in general. National and international laws have their common source in the *social nature of man*. The provisions of international law refer either to justice or to charity.

5. *International Justice*. All sovereign states possess equal rights and duties, based on justice.

All states have an equal right to their *existence*; to their *property*; to the control and regulation of their *internal* and *external* affairs, due regard being given to the rights of the other sovereign states.

6. *International Charity*. As moral persons with an essentially human character and the same common end, states have the duties of international charity. Charity demands a *benevolent good will* and also *practical assistance* when needed. Hence, situations of tyranny and unjust aggression may justify *intervention*.

7. *International Treaties*. They are *compacts* made by one state with one or more states. They are of the nature of 'contracts,' and the conditions of validity apply to both.

8. *The Morality of War*. War, to be just, can only be undertaken in *defense of violated important rights*. It must meet three essential conditions, in order to be justified according to natural law. The *end of the action* must be good, that is, in defense of violated important rights. The *end of the agent* must be good, that is, the intention of the state must really be to defend its sovereign rights against an unjust attack. The circumstances must be good; it is especially important that all peaceful means of an amicable settlement be exhausted. 'Proper moderation' must be used in the conduct of the war.

9. *The Rights of Civilians in War*. All who are actively engaged in the unjust aggression of war must, according to natural law, be reckoned as true combatants and as such are subject to attack; these are all members of the *military*

forces and all *civilians taking an active part* in the war effort. All others are non-combatants, and these alone are immune from military attack.

As regards the destruction of enemy property, the innocent nation has the natural right to destroy or damage all installations of a public or military character useful to the enemy. *Per se*, the private property of true non-combatants is not subject to attack. *Air raids* are permissible, when directed against military objectives; indiscriminate bombing is not allowed.

10. *The Rights of the Victor*. The unjustly attacked state, when victorious, is entitled to the *restoration of its violated rights*, to *indemnities* for all losses sustained, and to the *prevention of future aggression*.

11. *Duties of Citizens in Time of War*. If a war is manifestly unjust, the citizens may not co-operate. If it is evidently just, the citizens have the right and duty of full co-operation. If a war is doubtfully just, the citizens must give their government the benefit of the doubt. As a general rule, the citizens may abide by the decision of the government.

12. *International Peace*. International charity requires that the nations do their utmost to outlaw war and settle all controversies through *conciliation, mediation, and arbitration*.

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1 *De Indis et de jure belli relectiones*

2 *De legibus*

3 *The Science of Ethics*, Vol. II, Ch. XIX, p. 669 f

Chapter 23

INTERNATIONAL COMMUNISM

WHEN REVOLUTION BROKE OUT IN RUSSIA IN THE LAST DAYS OF February, 1917, after the Russian military debacle in World War I, it was the signal for various revolutionary groups to vie for control of the government. Many professional revolutionaries had been waiting for this moment, among them Vladimir I. (Ulianov) Lenin (1870—1924) and Leon (Bronstein) Trotsky (1877—1940). Both men had been living in exile; now they hurried back to Russia. After months of agitation the bolshevik party, headed by Lenin and Trotsky, was victorious. They established the 'dictatorship of the proletariat,' and Lenin became the acknowledged leader of the bolshevik party and of Russia. Upon his death on January 21, 1924, Joseph (Dzugashvili) Stalin (1879—1953) seized power through ruthless brutality and wholesale murder. By means of iron party discipline and the use of a vicious secret police, he crushed all opposition and assumed complete dictatorship. Trotsky had to flee and was subsequently assassinated in Mexico.

During World War II, Russia and Stalin happened to fight on the right side, and as a consequence the Union of Soviet Socialist Republics gained tremendously in power. Since

then the U.S.S.R. has been endeavoring to master the international situation.

What is this *international communism* which threatens to engulf the world?

One cannot understand communism unless one understands the philosophy of *Karl Marx* (1818—1883) and his collaborator *Friedrich Engels* (1820—1895). Marxism is a comprehensive and integral philosophy and should be evaluated as such. A book on ethics, however, must be limited to a brief treatment of the cardinal points of the theory.

The Foundations of Marxism

Karl Marx was born of Jewish parents in Treves (Trier), Germany, on May 5, 1818. When he was six years old, his parents renounced Judaism and embraced Protestantism, most probably for prudential reasons. Neither Judaism nor Christianity exerted strong influence on the development of Marx's education.

While attending the University of Berlin, Karl Marx studied Hegel's philosophy. He disliked Hegel's idealism, because Marx inclined more toward materialism; but he was deeply interested in *Hegel's dialectic method*, and this method became a basic element in Marx's philosophy of history.

According to Hegel, dialectics is the self-development of the Absolute Idea. The dialectic method has three phases: *thesis, antithesis, and synthesis*. In developing an idea, the first stage is always the enunciation of the positive truth of

the original idea (thesis, position). This original idea always contains its contradictory, and this leads to its negation (antithesis, opposition). Both the original idea and its opposite, however, contain only partial truths. Their conflict leads to the final stage of reconciliation, to the more fully developed idea (synthesis, composition). The idea obtained in the synthesis will start a new dialectic process, and this threefold process can be carried out indefinitely. Applied to the Absolute Idea, Hegel maintained that it is in a continuous dialectic process of self-development by means of thesis, antithesis, and synthesis. According to Hegel, the rational alone is real; all being is thought realized, and all becoming is a development of thought. Here we see his idealism. The Absolute thus becomes nature and spirit in succession. Nature or the universe is merely an externalization of the Absolute Idea in the process of self-development; in nature the Absolute Idea is unconscious of itself and manifests itself in the necessity of nature's laws. Passing through this stage of nature, the Absolute Idea finally emerges into man and gains self-consciousness. In Hegel's idealistic theory, therefore, the entire universe and all reality is the result of the self-development of the Absolute Idea by means of an intrinsic principle of progress through the dialectics of thesis, antithesis, and synthesis. He thus explained the entire natural, historical, and spiritual world as a *dynamic process* of continuous perfection, always emerging into higher levels of being.

Marx was intrigued by this theory of the dialectic process of constant higher perfection through the medium

of an intrinsic principle of progress through conflict. But he did not like the idealistic setting of Hegel.

Marx became a *materialist* and an ardent disciple of Ludwig Feuerbach (1804—1872). But Feuerbach's materialism was too mechanical for Marx; it was based too much, like former materialistic theories, on mere mechanical motion and lacked an intrinsic energizing principle. Without such an energizing principle, intrinsic to matter, it would be impossible to explain the upward trend in the evolution of nature without eventually having recourse to a Creator. Marx, the materialist, had no use for God. It was necessary to account for the origin and development of everything on an atheistic basis. Hegel's dialectic came to his rescue. What the dialectic method was for Hegel's idealism, Marx would make it to be for his materialism: the energizing principle of all change, progress, transformation, and intrinsic self-development in nature and history. Marx thus reversed the Hegelian process. "My own dialectic method," he said,¹ "is not only fundamentally different from the Hegelian dialectical method, but is its direct opposite. For Hegel, the thought process is the creator of the real; and for him the real is only the outward manifestation of the idea. In my view, on the other hand, the idea is nothing other than the material when it has been transposed and translated inside the human head."

Expressed in simple language, Marx's theory amounts to this: Matter exists from all eternity; matter is not inert, but active; matter contains opposing properties and tendencies in constant conflict, so that matter possesses an intrinsic

principle of development and progress within itself; this internal conflict in matter gives rise to more perfect beings, finally culminating in man.

In 1842, Marx became the editor of the *Rheinische Zeitung*, published in Cologne by the left-wing Hegelians. In his capacity as editor, Marx, for the first time, became acutely conscious of the miserable living conditions of the German working class and his own lack of a social philosophy. He thereupon resigned his editorship in 1843 and spent three years in Paris, mostly in the company of socialists and revolutionaries, for the purpose of deepening his knowledge of history, economics, and politics. Here he made the acquaintance of Pierre Joseph Proudhon (1809—1865) and Friedrich Engels (1820—1895); these two men gave final and decisive direction to Marx's philosophy of the world.

Proudhon pointed out to Marx that the Hegelian dialectics would be sterile unless applied to social conditions. Real dialectics could be found and observed in the bitter and cruel struggle for supremacy between the higher and lower classes of society, in the class conflict existing in economic society. Marx now recognized the purpose of his life: he would revolutionize society in favor of the exploited working class, the proletariat, on the basis of an *atheistic, dialectic materialism*.

Friedrich Engels, in 1844, became Marx's closest friend, and both together henceforth collaborated on the development of the Marxian theory of social revolution.

Communism and History

Marx developed his philosophy of nature merely as a prelude to his *philosophy of history*. History to Marx, as the activities of man in pursuit of his ends, was only a special, but the most important, phase of human activity within the general frame-work of material processes. Like nature itself, the history of man is governed by definite and inexorable laws which are totally independent of God and any sort of divine providence. This Marxian philosophy of history, therefore, is often referred to as *historical materialism or economic determinism*.

Freedom of the will, as freedom of choice, is denied by Marx; this denial is in keeping with his general doctrine of materialistic determinism. The only sense in which he admits 'free will' is in the sense that man can know the natural necessity which determines his actions. While, therefore, there exists a diversified interaction of human wills seeking definite and different ends, and while many individual historical events happen through the activity of such wills, history manifests such a constant orderly sequence of development that this progress must be ascribed to some *unified basic factor*.

Marxism does not deny that certain 'ideological' factors, such as religion, patriotism, morality, and social conventions, move people to action and influence history. Such ideal forces, however, are only superficial and secondary in their influence on social phenomena. There must be a more fundamental motive which is the driving force underlying all such secondary motives. It is a dogma

of Marx, that the consciousness of men does not determine their existence; their social existence determines their consciousness. According to his view, consciousness is social before it is individual; and man himself is primarily a social being, determined by the society in which he is born and lives, rather than an individual. Hence, Marx set out to discover the great fundamental and dynamic motive responsible for the social structure of mankind. He is convinced that man became differentiated from the animal as soon as he began to produce his own means of livelihood. Hence, the fundamental, ultimate shaping force of history is the *production of life's necessities and the exchange of products*. When Marx speaks of 'mode of production' or 'productive forces,' he always means the productive activity of man, the material to which man's labor is applied, and also the tools and techniques of production. Religion, morality, philosophy, law, governments, politics, art, and similar ideological factors exist, of course; but they represent the 'superstructure' built upon the foundation or 'basic structure' of economic production. So long as the economic factor remains unchanged, they remain unchanged; but when the economic factor changes, they change accordingly. Hence, *history is determined by the productive forces*.

Resting on this determinism of history, Marx developed his theory of *class struggle*. The prevailing mode of production is the main source of economic classes. The small group which owns the means of production in a nation dominates society, because it controls the production and distribution of all wealth for their own private interest; this

group is the *exploiting class*. The large group, in the employ of the exploiting class, produces the surplus value of wealth for this class, while it receives only the bare necessities of life in return. This large group of workers is the exploited class.

Here Marx uses the Hegelian dialectic method again, applying the principles of thesis, antithesis, and synthesis to social history, just as he applied them to the development of the universe in his philosophy of nature. The exploiters and the exploited constitute the contradictory elements in the social organism, forever in conflict, which determine history by producing new types of society in the course of the centuries. These class conflicts are the *revolutions* which periodically occur in the history of human society, whenever the productive forces can no longer function properly within the framework of the existing social order. When the prevailing mode of production reaches a point where the toiling masses are oppressed beyond endurance, they necessarily seek economic emancipation and better existence conditions; the result is revolution, because the exploiting class naturally resists any attempt on the part of the exploited class to alter the social system presently in operation. Such class struggles existed between freeman and slave, patrician and plebeian, lord and serf, guild master and journeyman, and in our day it exists between capitalist and laborer.

The exploiting class is firmly entrenched behind the bulwark of the social system and its many institutions. When a social revolution occurs, the entire social system is changed, and with it is also changed the superstructure

(religion, politics, government, etc.) built upon it. Obviously, a change in the economic foundation of society necessarily involves a corresponding change in the social structure based upon the foundation.

It is thus seen, declare Marx and his communistic disciples, that history is not shaped by the free choice of man's acts. *History is determined* by the productive forces of every age.

Evaluation. Economic determinism, or the materialistic interpretation of history, is a cardinal point in Marx's entire theory of communism. As a philosophy of history, it is extremely weak and actually *false*.

Marx denies the freedom of choice in man, but his entire treatment of the class struggle is a surreptitious admission that man possesses such a freedom. 'Motives,' whether ideological or economic, have no meaning except in the supposition that man has freedom of choice in his actions. To identify, as Marx and Engels do, 'freedom of will' with 'knowledge of natural necessity' means that man is free to *know* that he is *determined* (not free) in his actions, so that he must act according to inexorable laws over which he has no control. These are weasel words which deceive no one. If man's actions are determined in all matters by economic factors, what sense is there in the endeavor of Marx and the communists to arouse the workers of the world to change the social system? Why divide humanity into the two classes of the 'exploiters' and the 'exploited' and why rant and rave against 'capitalist oppression,' if both classes are merely the result of the deterministic laws governing the entire social system? No one would dream of appealing to a stone to

throw off the fetters of gravitation; then why appeal to the toilers to throw off the fetters of economic servitude,' if they have no more freedom of choice than a stone? Appeals, exhortations, admonitions, and threats of punishment have no meaning, if man is devoid of freedom of action and responsibility. Soviet Russia's infamous trials and propaganda methods are in direct contradiction to the materialistic doctrine of the denial of the freedom of choice in human actions.

According to Marx, religion, morality, government, law, and similar *ideological elements* are the result of the economic condition of the age; they are the superstructure erected upon the foundation of the productive forces. As the foundation, so the superstructure. If the foundation remains unchanged, the superstructure remains unchanged; if the foundation changes, the superstructure necessarily changes with it.

This is an interesting theory, but it is contradicted by the facts of history. *Government* is such an ideological element of society. Hence, if the state were essentially dependent upon economic production as its necessary cause, different modes of production should produce, by their very nature, different forms of government; and the same modes of production should produce, by their very nature, the same forms of government. However, we find the same form of government under entirely different systems of production. In the United States, for example, we find at first an agricultural type of production, which gradually turned into a highly industrialized type of production, and we also find a type of production based on slavery develop into

production based on capitalism and free labor; yet these radical changes in the mode of production caused no appreciable alteration in government. The reverse is also true. History reveals various forms of government arising in a nation without any change in the mode of production. This happened to the Greeks, the Romans, the Egyptians, and many other nations. The Magna Charta of England produced a radical change in the form of government, but it was neither the effect nor the cause of any radical change in the forces of production. The same argument applies to *religion* which, according to Marx, is also nothing more than a direct resultant of the economic forces of a particular era, so that the mode of production determines the character of religion. History refutes this theory. The mode of production was the same for the Jewish people and the pagan nations surrounding Palestine, but their religions were altogether different. Christianity had its origin in the Jewish nation, but no economic upheaval preceded the advent of Christianity. Nor did the acceptance of Christianity by the pagan civilized world follow from any kind of radical change in the mode of production. Furthermore, the Catholic religion remained the same, notwithstanding the enormous economic changes from slavery to capitalism which have occurred in the two thousand years of its existence. The spread of Islamism and of the hundreds of divergent Protestant denominations do not coincide with anything like a corresponding fundamental change in economic production. Nor does Marx's principle account for the rise and fall of the many types of *philosophic systems*. These systems range all the

way from skepticism and materialism to realism, idealism, and pantheism; they were present among the ancients as well as the moderns, no matter what the economic conditions of the times happened to be. Marx's theory does not fit the facts; instead, he made the facts fit his theory.

Marx's theory of the *class struggle* and of the *two classes* fares no better in the light of an intelligent criticism. The division of human society into the 'exploiters' and the 'exploited' is an *over-simplification* which is fatal to the whole theory of economic determinism. It leaves out of consideration the vast middle class of independent farmers, small-business operators, craftsmen, and shopkeepers. When applied to humanity in general and to the entire history of mankind, such a division is a glaring myth. At most, the division found justification in the highly industrialized sections of the urban populations of Western Europe following the introduction of capitalism in industry. It is one of Marx's great errors to generalize this condition and extend it to all history. To designate all owners of the means of production as 'exploiters' and 'oppressors,' is another contention of Marx which is obviously false. Most farmers and operators of small crafts own their business and as such own means of production, but it is not true that they belong to the 'exploiting class' like big industrialists. Since the division of society into these two exclusive classes is unjustified and false, the claim that all great social changes in history and all wars were the result of an economic *class struggle* between the exploiters and the exploited is equally unjustified and false. It was certainly not this type of a class struggle which caused World War I

and the downfall of the czarist regime in Russia, thereby giving the communists the fortunate opportunity to gain control of governmental power. Not economic determinism, but the vision of Marx and the energy of Lenin, produced sovietism in Russia.

Perhaps the most serious defect in Marx's materialistic interpretation of history lies in his contention that all radical changes in the social system are the result of changes in the mode of economic production and his failure to give an adequate explanation of the *causes which produce these changes in the mode of production* on the basis of economic determinism. Marx maintained that intellectual achievements follow economic achievement. He overlooked the undeniable fact that all changes in the methods of production are the result of the invention of new tools and machinery, invention, however, is an intellectual achievement, conceived and executed by the mind of man in his mastery over the material conditions of nature. Far from matter and material conditions being responsible for economic trends, and through these economic trends over the 'ideology' of man's mind, man's mind with its 'ideology' is responsible for all changes in economic trends and in the mode of production. But if inventions determine methods of production, the intellect and will of man, not economic determinism, are the causes of all basic changes in the social system. Even Marx's philosophy of history and communism itself are 'ideological,' not material, forces. The very theory of 'economic determinism' is an ideological product, not a material fact.

Communism and the State

The communistic philosophy of the origin, nature, and purpose of the state as a social institution stems from the communistic theory of the *origin of private property*.

Engels, who always expounds the ideas of Marx himself, maintains that in the beginning all property was held in common, so that the early period of humanity was communistic. Gradually it became customary to produce things for the purpose of barter rather than for use alone. The proceeds of such an exchange became *private property*. This new mode of production created wealth for the owners of the means of production. Soon the people were divided into owners and non-owners of the means of production; the former were the wealthy, powerful leisure class, while the latter were the poor, helpless, working class. Hence, ownership of private property led to the formation of the two classes of the exploiters and the exploited, and this situation naturally led to class antagonisms and class struggles.

In order to preserve their power in the face of revolt on the part of the exploited class, the wealthy and ruling class found it advantageous and necessary to institute an organization of power to protect their private interests. This organization of power is the *state*.

It is, therefore, the *nature* of the state to be an *organ of class domination*, a unified power of coercion. Its purpose is to protect the possessing class against the non-possessing class, so as to maintain the system of private ownership; and its *function* is the oppression of the proletariat, so as to

keep the toilers in economic servitude. The more the masses are oppressed in the capitalistic state, the more intense becomes the class struggle and the more repressive does the attitude of the state toward the working class grow.

As capitalism advances, state control of the means of production increases, until the state becomes the *national capitalist*. That is the final stage of the capitalistic concentration of wealth.

In order better to understand why the ownership of private property and its protection by the state constitute an exploitation of the working masses, we must consult Marx's book *Das Kapital*. In it Marx explains the modern methods of production. Whatever value a manufactured article possesses for use or exchange accrues to it through the labor of the worker manufacturing it. The industrialist, after deducting the cost of production, sells it at more than its inherent value and thus makes a profit for himself. This *profit* is a *surplus value* derived from the labor of the worker, appropriated by the employer out of the legitimate earnings of the laborer, and the unearned profit becomes the private property of the employer. The industrialist thus robs the worker and enriches himself at the expense of the worker. The only way to overcome this unfair distribution of wealth, together with the iniquitous division of society into exploiting and exploited classes, is to return to the original communistic condition of society by *abolishing the state and private ownership of the means of production*.

EVALUATION. THE COMMUNISTIC CONCEPT OF THE STATE AND OF private ownership is diametrically opposed to our view. Both the state and private ownership of property, the latter including also the means of production, are a *natural necessity* based on the very nature of man and are not the result of an exploiting minority's desire to enrich itself by taking unfair advantage of the helpless majority. We admit, of course, that labor constitutes a proper title to the ownership of the value created through labor; but there are other legitimate titles besides labor. The organization of the state, with its supreme authority, laws, and distinction between governing and governed classes, has its origin in the need of social cooperation between families and other groups, and as such it rests upon a dictate of the social nature of man. Not all nations, especially in the past, were industrial nations, yet they formed the state. All this was established in previous chapters, and there is no necessity to reiterate the arguments here.

In advancing their arguments against the private ownership of the means of production and against the state as protecting the interests of capitalists, communists invariably base them on the fact of the *exploitation of the masses*. First, this supposed fact of exploitation is greatly over-generalized. Not every owner of the means of production exploits the working classes. Millions of independent farmers and small shopkeepers run their business as a family affair, without employing outside help. Even among those who hire help, especially in small business and manufacturing concerns, the owners barely make more than a decent living, so that one cannot speak of

‘exploitation.’ Second, we are fully in accord with the communists that many industrialists are guilty of exploitation and that state authorities have connived with them in their nefarious get-rich methods. This exploitation of the working class was particularly flagrant since the advent of the machine age, in consequence of the application of the doctrine of liberalistic individualism to the methods of industry. These methods frequently amounted to downright oppression and exploitation. These evils, however, were brought on by the abuse of private ownership and state authority. The error of communists consists in confusing ‘abuse’ and ‘proper use. *Abuse* is no valid argument against proper use. One should correct abuse, but not abolish *proper use*. Everything is abused by some people, even food and drink and the functions of life; but it would be wrong to attempt to abolish them simply because they are abused. No physician would think of cutting out the heart of his patient because it does not function properly.

Besides, Marx’s doctrine on wages and surplus value indicates plainly that he considers the workingman entitled to the full value, of the manufactured article, not merely to the part represented by his wages. In other words, Marx thereby admits *in principle* the right of the laborer to *ownership of property*; it is only a question of the amount to which he is entitled in virtue of his productive labor. What communism fails to take into account is the fact that the laborer who is engaged immediately in the production of commodities is not the only one who contributes to its value as an article of exchange; other persons also have a part,

either directly or indirectly, materially or intellectually, in the creation of value in the finished product, and they also have a right to compensation.

Revolution and Dictatorship

The *Communist Manifesto*, drawn up by Marx and Engels in January, 1848, is an illuminating document. It shows how the history of human society is the history of class struggles; how the ‘bourgeoisie,’ the class of modern capitalists who own the social means of production and employ wage labor, gradually evolved, giving rise at the same time to the ‘proletariat,’ the class of modern wage laborers who possess no means of production and must sell their labor power in order to live; how capitalism deepens the gulf between the bourgeoisie and the proletariat, until the concentration of wealth and power in the hands of the few is counterbalanced by the unified association of the laborers, both classes fighting for supremacy; how the bourgeoisie, through the development of modern industry, increases the associated power of the proletariat and thereby produces “its own grave diggers.” The inevitable end of the struggle is the fall of the bourgeoisie and the victory of the proletariat.

Modern capitalistic society must give way to communistic society. The increasing socialization of the means of production has outgrown the bourgeois form of using them; that represents a contradiction, and this contradiction between social production and capitalistic appropriation can lead to — but one result — the *revolution*

of the masses of toilers against existing society. Though revolution is thus inevitable, every worker is a conscious member of the laboring class and must assist in *hastening* the revolution and bringing it to a successful conclusion. Since the bourgeoisie will not concede victory and agree to hand over its power to the proletariat peacefully, the proletarians are forced to overthrow its power by violence and destroy the *political state* upon which the ruling class relies.

Once the capitalistic state is abolished, the proletariat will establish a state of its own, and this state is the *dictatorship of the proletariat* with a power founded solely on the armed force of the masses. Without such a dictatorship of the masses the resistance of the bourgeoisie could not be permanently crushed, nor could the exploited toilers of the world be effectively directed toward the realization of the final communistic society. The dictatorship of the proletariat is, therefore, a political state; but it differs from the capitalistic state in this that it is the dictatorship of an exploited majority over an exploiting (capitalist) minority, while all previously existing class states were the dictatorship of an exploiting minority over an exploited (proletarian) majority. This dictatorship is essentially a *transition organization*, leading from capitalism to communism proper, and communists refer to it as *state socialism*. Such an era of socialism, for example, exists in Russia, which is officially designated the Union of Soviet Socialist Republics. Lenin, Stalin, and others are emphatic in their statements that the transition from capitalism to communism, represented by the dictatorship of the

proletariat as a political state, may occupy an entire epoch of history, because it may take a long time to build the masses into a force capable of governing themselves and to educate the minds of the vanquished capitalistic class to the ideals of true communism.

In the meantime, communists must instigate revolutions everywhere. As Marx says at the close of the *Communist Manifesto*: "The communists disdain to conceal their views and aims. They openly declare that their ends can be attained only by the forcible overthrow of all existing social conditions. Let the ruling classes tremble at a communistic revolution. The proletarians have nothing to lose but their chains. They have the world to win.

"Workingmen of all countries, Unite!"

In the light of these principles it is clear that real communists disagree with the policy of the milder *socialists*. The latter would take over the apparatus of existing governments by parliamentary action of some kind and then proceed to socialize or nationalize the means of production by placing their ownership in the hands of the state. Communism would destroy all existing governments and erect in their stead revolutionary dictatorships of the proletariat.

Marx and Engels were convinced that the German workers would be the first to overthrow their government and establish a proletarian 'democracy.' They had little faith in Russia, because they considered that country too backward. Historically, as we know, Russia became the first modern nation to fall completely under the sway of the communist party. Moscow is now the center of all

communist activity seeking to dominate the world by its *international policy of revolution*.

EVALUATION. COMMUNISTS ARE, OF COURSE, PERFECTLY CORRECT in decrying the injustices perpetrated by liberalistic capitalism in the past on the masses of workers in the field, of industry. Christianity agrees with them in condemning these injustices. Christianity, however, disagrees with communism in the *remedy* proposed to cure the ills of modern society.

Communism considers the private ownership of the means of production to be the cause of all exploitation of the masses. Hence, by abolishing it they believe they will remove all inequalities and injustices among men. Such an attitude is naive. The source of the trouble in the world is *not things*, but *men*. Things are good; men are often bad. Through envy, greed, and lust of power men abuse the means of production to amass wealth for themselves without regard for the welfare of the working class and the common good of society. Blaming the means of production for the ills of mankind is like blaming the trigger for the shot that murders someone instead of blaming the man who pulled the trigger. Men, not the insensible forces of production, are responsible for the unjust distribution of the wealth of the earth. To supplant capitalists with commissars is not the solution to the problem. Men being what they are, the problem will remain so long as greed and avarice control men's hearts and actions; and the mere transfer of the titles of property from the capitalists to the

Soviet will not change men's morals. Men must be reformed, not governments overthrown. What is needed is the violence of virtue to discipline the passions of individuals and nations. And only Christianity can bring about this *revolution of the soul*.

International Communism

The international communist revolution, say Marx and his followers, will eventually triumph. Then capitalistic governments and bourgeois society will be swept away. For a time an international dictatorship of the proletariat will govern the world. This transitional era of dictatorship will last until the iron discipline of the communist party has succeeded in molding the minds of all men in conformity with the communistic teachings and habituating their actions in conformity with the communistic ideals. The length of this era no one can foretell.

Once all capitalistic tendencies are eradicated from the hearts and minds of people, there will be no need for the existence of a state, for there will no longer be anyone to be suppressed. *The state will disappear*; it will simply "wither away." The cessation of the state is made possible by the fact that everybody realizes that work is the first necessity of life and that no distinction exists between physical and mental labor. In consequence of this universal attitude toward the nature of work, all inequality between persons, so conspicuous in bourgeois society, will vanish. There will be a complete absence of all private ownership of the means of production and therefore also of all exploitation.

Wealth will exist in great abundance, for each will give according to his capacity and receive according to his needs. Communist society will be a *classless society*, a united and harmonious commonwealth of labor.

With the advent of pure communism as a stateless, classless society of free and equal men, there will be no class antagonisms, no wars, no exploitation, no poverty, no dissension. The evolution of human society will have attained perfection in its dialectical process. In the Marxian sense, therefore, communism is that final stage of social perfection, characterized by a state-less and classless society in which there will be perfect freedom and equality of all men, in which there will be an abundance of material goods in common, and in which everything will be regulated by the principle "from each according to ability and to each according to need."

In communism man will have produced an earthly paradise.

Evaluation. All this sounds fine in speeches and in books. But it is, notwithstanding communistic statements to the contrary, *utopian* and *unrealistic*.

The chiliastic picture of the communist paradise manifests a woeful *ignorance of human nature*. The only way in which the ultimate condition of communistic society can achieve what the propagandists ascribe to it would be through a complete renovation of man's nature. Man is not angelic by nature; rather, he is very prone to greed and selfishness. How would communism expect to eradicate such passions? By the simple method of abolishing private ownership of the means of production. But the members of

religious orders in the Catholic Church have already done that for centuries; yet these members know only too well that these passions are still very much alive in their own hearts. There is no reason to believe that the hopes of an earthly paradise will succeed better in eradicating these passions than the hope of an eternal reward. And if these passions are not completely destroyed in the human hearts, communism is but a tragic dream.

The famous communistic *standard of living* in the classless age reads: each will work according to his capacity; each will receive according to his needs. What is meant by *capacity*? The full limit of one's working powers? This norm would be labor slavery beyond anything found in capitalistic society. Communists do not intend this meaning, because they maintain that the means of production will be more than ample and labor time will be greatly reduced. Because of the different types of work necessary, the time and amount of labor will vary according to the types of work; some workers will have longer hours, some shorter. Who will determine the type of work and the time of each worker, since there exists no authority and no enforcement power? Who is to assign the different types of work to the millions of workers? Who will be a professional man and who a common laborer? It is easy to make visionary prophecies regarding social conditions in the unforeseen future, when their truth or untruth cannot be assayed until the time is actually present. The only safe grounds for social predictions for the future are the social experiences of the past and present. These social experiences, however, demonstrate that men do not love work, especially hard and

dirty work, but love ease and comfort and 'soft jobs.' Why should it be any different in the communist laborer's paradise? What is to prevent dissatisfaction and refusal to work? What is to prevent strikes over working conditions? Communists, of course, assure us that such things are unthinkable in the classless society of the communistic millennium; but what guarantee have they for this sublime faith? Will human nature have reached the status of angelic perfection? Why should human nature change? And by what unknown alchemy will communism bring about this essential change? Their theory is quixotic.

Each, they say, will receive according to his needs. What needs? Physical, mental, intellectual, cultural? All, or only some? Who is to determine which and in how far? We must not forget that all men are supposed to be social equals, and there is no presiding authority of any kind to enforce demands and commands. Happiness consists to a great extent in contentment, and man can be content with little. But many persons are not even content with very much. The needs of men depend largely upon their personalities, and personalities differ greatly. Chameleon-like, these needs may change from day to day, shifting constantly according to age, climate, and geographical location. And what of the desire for luxuries, for example, special food and drink, clothes, and jewelry? Or will such articles cease to exist or not be made? Or will the desire for them have vanished with the coming of the communistic millennium? Will everyone be satisfied with the same food, the same clothes, the same housing, the same recreation? If so, communism will have to perform a miracle in reducing all

persons to the same level of desires and needs. If not, how can all these desires and needs be satisfied? Men are not perfect altruists. Yet they must be made perfectly such, or communism will fail because of the weakness, selfishness, and depravity found in human nature. To say the least, communism is unrealistic.

Many critics have pointed out that Marx's dream of a chiliastic future of human happiness in the stateless, classless society of communism is but a reflex of his Jewish and Christian heritage. He dreamed of a *Messianic redemption and restoration of the human race*. He lost his faith and became an atheist and a materialist; but he could not deny the Jewish and Christian influence of his education. Like a prophet of old he thundered against the injustice of man toward man and looked upon himself as a Hegelian Messiah who was destined to lead erring mankind into the Promised Land of a materialist paradise without God or a Saviour. Salvation from sin became for him salvation from economic oppression, and the eternal happiness of man as a spirit degenerated into the painless paradise of man as an animal.

If man is nothing but a sublimated animal, morality is senseless. Man may as well live and die as an animal and be done with it. But if man is a *rational* animal, with a spiritual soul fashioned in the image of God, morality is not only a logical necessity for human living but the crowning glory of man as a child of God. Not communism with its pseudo-reformation of economic man, but Christianity with its supernatural redemption of sinful man, is the salvation of

the world. Man does not live by bread alone. Grace, too, is necessary for man and morals.

Summary of Chapter XXIII

To understand *international communism*, one must understand its philosophy as expounded by Karl Marx and Friedrich Engels.

1. *The Foundations of Marxism*. From Hegel's idealism Marx accepted the dialectic method with its thesis, antithesis, and synthesis, because it represented a dynamic process with an intrinsic principle of progress. From Feuerbach he took materialism as his basic philosophy and applied to it the dialectic method. At Proudhon's suggestion he applied his dialectic materialism to the class conflict existing in *economic society*.

2. *Communism and History*. Marx's philosophy of history is called 'historical materialism' or 'economic determinism.' Man possesses no freedom of choice. While 'ideological' factors have influenced history, the constant orderly sequence of progress shows that history has a basic unified factor of development, and this is economic production; hence, history is *determined by the forces of production*. Economic conditions determine history, because they result in the *class struggle* between the owners of the means of production (the 'exploiting' class) and the workers (the 'exploited' class).

Evaluation. Man possesses *free will*; otherwise there is no sense in denouncing the 'exploiters' and appealing to the 'exploited' to throw off the yoke of servitude. According to Marx, the ideological elements of society, such as government and religion, are totally the effect of economic

conditions. If this were true, a change in these conditions should bring about a change in these elements, but history refutes this claim. Marx's theory of the class struggle and the two classes is an *over-simplification*. He fails to explain the *causes producing the changes* in mode of production. Such changes are the result of new inventions, and inventions are 'ideological' because intellectual.

3. *Communism and the State*. The origin, nature, and function of the state, Marx contends, is based on private ownership; it is an organ of class domination, controlled by the capitalists and directed toward the oppression of the laboring class. The state and private ownership of the means of production must be abolished, and mankind must return to the original system of communism.

Evaluation. Marx's theory of the exploitation of the masses is an *over-generalization*; the middle classes are not exploiters. He confuses 'abuse' and 'proper use.' In principle, he admits the right of private ownership, so far as the workers are concerned.

4. *Revolution and Dictatorship*. Communism advocates the overthrow of the present economic system and the capitalistic state through *international revolution*. Once this overthrow is accomplished, communism will establish the *dictatorship of the proletariat* as a transitional state organization preparing the way for communism proper. The means of production will be socialized.

Evaluation. Communists blame private ownership for all exploitation and injustice perpetrated by capitalism against the masses. They fail to see that *things* are good, while *men*

are bad. The need is not abolition of private property, but reformation of man.

5. *International Communism*. After capitalistic society is completely replaced by the communistic dictatorship of the proletariat, and after the latter has completely re-educated mankind to the communistic ideal, the state and all classes will wither away and the *stateless, classless society* of true communism will prevail. This will be the worker's paradise.

Evaluation. The theory of this stateless, classless society is *utopian* and *unrealistic*, being based upon ignorance of human nature. The communistic *standard of living* in the classless age will be: each will work according to his capacity; each will receive according to his needs. The standard is too vague and impractical, because there will be no one to determine the 'capacity' and the 'needs' of all.

Communism is a materialistic version of the Messianic redemption and restoration of the human race, with Marx as the Hegelian Messiah.

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¹ *Capital* (London: Dent and Sons, 1930). Vol. 2, p. 873

GLOSSARY

ABORTION. The expulsion of a living fetus from the mother's womb before the fetus is viable. If abortion is induced intentionally, when the mother is in serious danger because of the existing pregnancy, it is called 'therapeutic abortion.'

ABORTION, INDIRECT. An abortion which is the secondary effect of an otherwise licit action which is the primary object of the intention.

ABORTION, THERAPEUTIC. See Abortion.

ABSOLUTE. As an adjective, without condition or restriction. As a noun, the unconditioned, the ultimate ground of reality.

ABSTINENCE. As a species of the cardinal virtue of temperance, moderation in the use and enjoyment of food and non-intoxicating drink.

ACCESSION. The acquisition of ownership by means of some addition to one's property.

ACT, ACTUALLY VOLUNTARY. An act in which the intention is present here and now, effectively influences the act, and is consciously before the mind during the performance of the act.

ACT, COMMANDED. See Act, Imperate.

ACT, DIRECTLY VOLUNTARY. An act which is the immediate object of the will's striving and as such is immediately caused by the will. An act voluntary in itself.

ACT, ELICITED. An act begun and completed in the will as its sole agent.

ACT, EXPRESSLY VOLUNTARY. An act in which the consent is manifested externally by some word or sign.

ACT, FORMALLY GOOD OR EVIL. An act is said to be formally good or evil in so far as it is viewed to be such by the individual's conscience, even if his conscience is erroneous in its judgment. Thus, if a good act is erroneously judged by an individual's conscience to be evil, the act is materially good but formally evil; if an evil act is erroneously judged by an individual's conscience to be good, it is materially evil but formally good. See Act, Materially Good or Evil.

ACT, HABITUALLY VOLUNTARY. An act in which the intention was made at some former time and never retracted, but its power of causality does not exist here and now, so that the present act can no longer be considered as being influenced by it.

ACT, HUMAN. An act proceeding from the deliberate free will of man.

ACT, IMPERATE. An act begun in the will but completed through the medium of other powers or faculties under the command and control of the will.

ACT, IMPERFECTLY VOLUNTARY. An act in which voluntariness is imperfect, either because the advertence of

the mind to the act is incomplete and only partially present or because the will does not give full consent.

ACT, INDIRECTLY VOLUNTARY. An act which has as its object the effect of an object immediately willed, provided it is foreseen that this effect will follow out of this cause. An act voluntary in cause.

ACT, INTERPRETATIVELY VOLUNTARY. An act in which the intention to perform the act was never present and cannot have an influence upon the act; but the character of the person is such that one prudently judges an actual intention would be present, if the person had a proper understanding of the situation.

ACT, MATERIALLY GOOD OR EVIL. An act is said to be materially good or evil in so far as it agrees or disagrees with the norm of morality objectively in itself, independent of the judgment of the individual's conscience. If a good act is erroneously judged by an individual's conscience to be evil, it is materially good but formally evil; if an evil act is erroneously judged by an individual's conscience to be good, it is materially evil but formally good. See Act, Formally Good or Evil.

ACT, MIXED VOLUNTARY. An act in which an object is willed which pleases in some qualities but displeases in other qualities, so that there is a mixture of desire and repugnance, of voluntariness and involuntariness.

ACT, MORALLY INDIFFERENT. An act which, from the standpoint of its object, is neither morally good nor morally bad.

ACT, NEGATIVELY VOLUNTARY. An act of the will in virtue of which a person deliberately decides not to perform

a particular act but to omit it.

ACT OF MAN. An act not proceeding from the deliberate free will of man.

ACT, PERFECTLY VOLUNTARY. An act in which the preceding knowledge of the object and its circumstances is complete, so that the act is performed with full knowledge and full consent.

ACT, POSITIVELY VOLUNTARY. An act actually willed and performed.

ACT, PURE VOLUNTARY. An act in which the object willed is pleasing in all its qualities and is therefore willed with full consent and without any repugnance.

ACT, TACITLY VOLUNTARY. An act in which the consent is not manifested externally, but is indicated by some fact or the omission of some fact which entitles one to conclude that the consent is present.

ACT, VIRTUALLY VOLUNTARY. An act in which the intention was elicited at some former time, is present here and now, and influences the act to be performed, although the intention is not adverted to consciously during the performance itself.

ACT, VOLUNTARY IN CAUSE. See Act, Indirectly Voluntary.

ACT, VOLUNTARY IN ITSELF. See Act, Directly Voluntary.

ACTION. The exercise or operation of an operative power; the production of an effect. See Act.

ADORATION. An act whereby man expresses his acknowledgment of God's infinite greatness and majesty and of his utter dependence on God as his Creator and Master.

AFFABILITY. As a potential part of the cardinal virtue of justice, the virtue which regulates man's external conduct with others, so that he behaves toward them in a becoming manner.

AGNOSTICISM. The doctrine which denies the constitutional ability of the mind to know reality and concludes with the recognition of an Intrinsically Unknowable.

ANGER. As a capital vice, the excessive desire of revenge or an unreasonable opposition to a person or thing.

ANNIHILATION. The reduction of an existing being to nonexistence.

APPETENCY. The tendency of one thing toward another.

APPETENCY, CONCUPISCIBLE. The propensity to enjoy a good.

APPETENCY, IRASCIBLE. The propensity to fight an evil.

APPETENCY, RATIONAL. The will.

APPETENCY, SENSUOUS. The power in virtue of which a sentient being tends toward a consciously apprehended sensuous good and away from a consciously apprehended sensuous evil.

ASSOCIATIONISM. The doctrine that simple ideas are derived from the senses and that mental development proceeds entirely and exclusively through the combination of sensory elements according to the Laws of Association.

AUTHORITY. Viewed abstractly, the right to lead the members of a society toward the attainment of the common end to be realized by their association. Viewed concretely, the bearer of the right or power to lead the members of a society toward the attainment of the common end to be

realized by their association. In reference to the state, authority is the moral competence to issue commands and impose obligations in matters pertaining to the public welfare. Right of jurisdiction.

BEATITUDE. Supreme happiness. See Happiness.

BETTING. A bet is a contract by which two or more persons, disputing about the truth of a thing or about an event, agree among themselves that the winner of the dispute shall receive a reward.

BIRTH CONTROL. See Contraception.

BLASPHEMY. Contempt for God expressed in insulting thoughts or words.

BOURGEOISIE, In the theory of communism, the class of modern capitalists who own the social means of production and employ wage labor.

BOYCOTT. The concerted action of a group of persons, withholding patronage and purchase of goods from an individual or business concern, for the purpose of forcing the correction of unjust conditions; it is usually combined with deterring others from purchasing the goods of the boycotted individual or business concern.

BOYCOTT, SECONDARY. A boycott by which economic pressure is brought to bear on other businesses or industries to boycott an unjust employer under threat of boycotting these businesses or industries themselves if they refuse.

BUYING AND SELLING. A contract by which the two contracting parties mutually agree to deliver merchandise for a price.

CAPITALISM. The economic system in which the ownership of natural wealth, the production and distribution of commodities, the employment and remuneration of labor, and the organization and operation of the economic system itself, are affected and controlled by private enterprise under competitive conditions.

CAUSE. That which in any way whatever exerts a positive influence on the production of a thing.

CAUSE, EFFICIENT. That by which something is produced.

CAUSE, FINAL. That for the sake of which an efficient cause acts.

CAUSE, FORMAL. That through which a thing is made to be what it is.

CAUSE, MATERIAL. That out of which something becomes or is made. 329

CAUTION. As an integral part of prudence, the auxiliary virtue which avoids difficulties and obstacles in the performance of a moral action.

CELIBACY. Abstention from marriage; the status of being unmarried.

CERTITUDE. That mental state in which the mind gives a firm assent to a judgment without fear of the possibility of error, due to recognized valid reasons.

CHASTITY. As a species of the cardinal virtue of temperance, moderation in the use and enjoyment of the legitimate functions of sex.

CHOICE. The selection of definite means to achieve a specific end.

CIRCUMSPECTION. As an integral part of prudence, the auxiliary virtue which considers the circumstances attending an action.

CIRCUMSTANCE. As a determinant of morality, a circumstance is a condition superadded to the essence or nature of the moral act and affects its morality. Such circumstances are: who? what? where? by what means? why? how? when?

“CIVITAS MAXIMA.” World community, the family of nations.

CLEMENCY. As a potential part of the cardinal virtue of temperance, the virtue which inclines the will to forgive the faults committed against one’s self by others and to exact a lesser punishment (within the demands of reason) than the strict letter of the law requires.

CLOSED UNION. See Union, Closed.

COACTION. That property or quality of a right in virtue of which a person may use physical force, if necessary, to exact his just dues from anyone who seeks to prevent him from exercising his right.

COLLISION OF RIGHTS. An apparent conflict of rights which cannot be satisfied simultaneously.

COMMISSION. A contract by which one person accepts the agency to do business in the name of another.

COMMODATE. A contract by which a thing is turned over to someone with the right to use it for a certain time and with the obligation to restore it to the owner after use.

COMMUNISM. In general, the theory or system of social organization which advocates the common ownership of the means of production and the equal distribution of the

products of industry, In the Marxian (and Soviet) sense, it is the final stage of social perfection, following capitalism and state socialism, characterized by a stateless and classless society of free and equal men in which there will be no class antagonisms, no wars, no exploitation, no poverty, and no dissension, in which there will be an abundance of material goods owned in common, and in which everything will be regulated by the principle "from each according to ability and to each according to need."

COMMUNISM, ABSOLUTE. The doctrine which bans ownership of property in every form and which advocates the simple use of all goods.

COMPANY. A relatively simple form of partnership, in which the members assume the responsibility for the conduct of the business and share in the profits and losses.

CONCUPISCENCE. The natural tendency or inclination of sensuous appetency toward a consciously perceived sensuous good and away from a consciously perceived sensuous evil. It is a transitory impediment to voluntariness. See Passion.

CONCUPISCENCE, ANTECEDENT. The concupiscence which occurs prior to any act of the free will in its regard.

CONCUPISCENCE, CONSEQUENT. The concupiscence which occurs after an act of the free will in its regard.

CONFIDENCE. As a potential part of the cardinal virtue of fortitude, the virtue which inclines a person to be calm and collected in approaching dangers and difficulties.

CONSCIENCE. The immediate judgment of practical reason with respect to the character of individual acts as being permitted, commanded, or forbidden. Conscience is

the immediate subjective or manifestative norm of moral conduct.

CONSCIENCE, DOUBTFUL. Conscience in so far as the practical reason cannot reach a definite decision whether the contemplated action is good or evil.

CONSCIENCE, ERRONEOUS. Conscience in so far as its judgment disagrees with the objective norm of morality.

CONSCIENCE, RIGHT. Conscience in so far as its judgment agrees with the objective norm of morality.

CONSENT. The decision of the will to use the means necessary for bringing the intention into execution.

CONTINENCE. Abstention from the sexual act.

CONTINENCE, PERIODIC. See Rhythm.

CONTRACEPTION. The voluntary prevention of conception by the positive use of artificial means which hinder the generative cells from uniting during the sexual act.

CONTRACT. An agreement between two or more persons to transfer a right to do or not to do something.

CONTRACT, BILATERAL. A contract which imposes an obligation on both contracting parties.

CONTRACT, CONSENSUAL. One which is made essentially by the mere consent of the contracting parties.

CONTRACT, GRATUITOUS. A contract in which one party intends generosity, while the other party receives a favor.

CONTRACT, ONEROUS. A contract in which both contracting parties intend to obtain something to their advantage.

CONTRACT, REAL. One in which the contract is not essentially completed until some object has passed from the

hands of the one contracting party to the hands of the other.

CONTRACT, SOCIAL. The theory of J. J. Rousseau in which he maintains that the state came into existence through the free consent and 'social contract' of all concerned, whereby everyone grants all his individual rights and ruling power to the 'general will' embodied in the authority of the community.

CONTRACT, UNILATERAL. A contract which imposes an obligation upon only one of the contracting parties.

CONTROL, VOLUNTARY. The control which the will exercises over the powers and actions of the human organism.

CORPORATION. A group of persons treated by the law as a single juridical person, having rights or liabilities, or both, distinct from those of the persons composing the partnership and endowed by the law with the capacity of succession.

COVETOUSNESS. The excessive desire of worldly goods.

CRITERION. A rule or standard by which principles, facts, statements, and conduct are tested, so as to form a correct judgment concerning them.

CRITERION, MORAL. A rule or test by means of which we are able to discriminate between what is morally good and morally evil and to judge correctly that a particular act is morally good or morally evil.

CUSTOM. Usages, practices, standards, and codes which are common to certain groups or classes of people and which regulate their actions in social and religious affairs.

DELIGHT, ENJOYMENT (FRUITION). As an elicited act, the satisfaction of the will in the achievement of an end.

DEMOCRACY. A form of government in which the ruling power resides in the people themselves.

DEMOCRACY, DIRECT. A form of democracy in which every issue facing the political body is decided by all the members of the democracy.

DEMOCRACY, INDIRECT. A form of democracy in which the people exercise only an indirect control over government by means of the constitutional election of representatives to whom they delegate the direct rule.

DEPOSIT. A contract by which something is taken over by a person to be guarded and to be returned later to its proprietor in its natural condition.

DESIGNATION. The doctrine that the bearer of public authority in the politically organized community is determined neither by the natural law nor by the consent of the people forming the state, but by the nature of the historically given circumstances.

DETERMINANTS, ETHICAL (MORAL). The factors which determine the morality of a concrete individual human act. They are: the object, the circumstances, and the end of the agent.

DICTATORSHIP OF THE PROLETARIAT. In the theory of communism, a political state with a power founded solely on the armed force of the masses. It is a transition organization, leading from capitalism to communism proper, and communists refer to it as 'state socialism.'

DISEASES, MENTAL. Disorders and abnormalities of the brain and nervous system, resulting in disturbances in the

sensory powers of knowledge and appetency and involving indirectly a consequent disturbance in the proper functions of the intellect and will. A mental disease is a permanent impediment to voluntariness.

DIVINATION. The attempt to foretell or to acquire knowledge of future events by evidently insufficient means.

DIVINE RIGHT OF KINGS. The theory that the supreme political power is conferred on the ruler by a special act of God, so that he rules by divine law.

DIVORCE, IMPERFECT. Separation from bed and board, so that husband and wife are freed from their marital community life, although the matrimonial bond remains intact.

DIVORCE, PERFECT. The dissolution of the matrimonial bond, so that husband and wife are free to marry again during the lifetime of the other.

DOCILITY. As an integral part of prudence, the auxiliary virtue of responsiveness to outside instruction concerning right means in a moral action.

DOMAIN, EMINENT. The superior dominion of the state over all property whereby it has the authority to appropriate and dispose of the property of its subjects, adequate compensation being made to the private owners whenever possible, for the necessary purposes of public welfare.

DOMAIN, PRIVATE. The proprietary dominion or the right of private ownership. See Ownership.

DONATION. An act by which one person gratuitously transfers the perfect dominion of all or part of his property to another.

DOUBLE EFFECT. See Effect, Double.

DOUBT. That state of mind in which a suspended judgment ensues, due to the mind's inability to decide whether the judgment is true or false.

DUEL. A conflict between two individuals, undertaken by mutual agreement and fought with weapons capable of inflicting serious wounds or death.

DUTIFULNESS. As a potential part of the cardinal virtue of justice, the virtue which urges man to render proper respect and obedience unto his parents (including relatives) and his country, because he owes them his existence and sustenance. Also called 'piety.'

DUTY. In the passive sense, duty is an action or omission of an action to which one is obligated by justice. In the active sense, duty is the moral obligation to do something or to omit something in favor of another according to the demands of strict justice. See Right.

EDUCATION. The development of the total personality in accordance with right reason.

EFFECT, DOUBLE. Mixed effects, one good and the other bad, issuing from the same act.

EMOTION. An affective mental state of the animal organism, following the cognition of an object or situation, characterized by strong feeling, by an impulse to action, and by physiological changes in bodily function.

EMPIRICISM. The doctrine that all human knowledge is derived from the data of particular states of consciousness, so that experience is the exclusive source and criterion of all knowledge.

END. In ethics, an end is that for the sake of which an advertent intellect and a free will act; purpose; that which an advertent intellect and a free will intend in their action; that which man intends when he acts intelligently and freely.

END, ABSOLUTELY ULTIMATE. The last end of all proximate and intermediate ends in every series, so that no further ulterior end or purpose can be conceived for which to tend.

END, ACCESSORY. See End, Secondary.

END FOR WHICH (WHOM). The thing or person that is to benefit by the acquisition or realization of the 'end which' is acquired or realized.

END, INTERMEDIATE. A remote end to which some other end is referred, while it is itself referred to some ulterior end.

END, NATURAL. An end which is such that it lies within the tendencies and powers of the nature of the agent to strive for this end and to realize it.

END, OBJECTIVE. The object or thing itself which is striven for and realized as the result of purposive action.

END OF THE ACT. That particular end which is present in the act itself and which the act as such tends to realize because it is this particular kind of act. *Finis operis*.

END OF THE AGENT. The end or purpose which induces the agent as a motive to perform this particular kind of act. *Finis operantis*.

END, PRIMARY (PRINCIPAL). The main one among two or more ends which actuate an agent (efficient cause) and is sufficient of itself to make the agent act.

END, PRINCIPAL. See End, Primary.

END, PROXIMATE. An end that is referred to some ulterior end, but has no other end referred to it.

END, RELATIVELY ULTIMATE. An end that is the last end in a particular series of ends.

END, REMOTE. An end to which one or more ends are referred.

END, SECONDARY (ACCESSORY). An end intended together with a primary end, without however exerting the same potent influence on the action of the agent.

END, SUBJECTIVE. The possession of the objective end and the personal satisfaction or happiness which accompanies this possession.

END, SUPERNATURAL. An end which is such that it lies beyond the tendencies and powers of the nature of an agent to strive for this end and to realize it.

END, ULTIMATE. A remote end to which one or more ends are referred, while it is not itself referred to any other end.

END WHICH. The good itself which is striven for as the end to be realized by the efficient cause (the 'agent') through the action.

ENDURANCE. As a potential part of the cardinal virtue of fortitude, the virtue which inclines the will to steel itself in the struggle for the moral good by faithfully overcoming all the difficulties which arise from the very nature of the struggle.

ENERGISM. One of the forms of 'the New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously

directed toward the perfection of the individual and the attainment of maximum happiness for mankind.

ENJOYMENT. See Delight, Fruition.

ENVY. Displeasure over another's good qualities or good fortune because it lessens one's own glory and importance.

ERROR. Discomformity (disagreement) between intellect and thing.

ETERNITY. Endless duration.

ETHICS. The philosophical science of human conduct in so far as conduct is viewed as good or bad, right or wrong. Moral philosophy, philosophical morals.

ETHICS, GENERAL. That part of ethics which treats of the moral concepts, judgments, and principles which are basic to the entire moral order.

ETHICS, SPECIAL. That part of ethics which applies the general moral concepts and principles to the various situations of life in which man finds himself, so as to define and determine his rights and duties more in detail.

EUBULIA. As a potential part of prudence, the proficiency in discovering the proper means to the end in a moral action.

EUDARMONISM. The ethical system which considers earthly happiness to be the ultimate end of man and the standard according to which man must judge what is morally good or evil.

EUDAEMONISM, SOCIAL. See Utilitarianism.

EUDAEMONOLOGY. That part of ethics which treats of the supreme happiness, or beatitude, of man.

EUTHANASIA. The art or practice of painlessly putting to death a person suffering from a marked deformity or

from an incurable and distressing disease.

EVIL. Whatever is unsuitable for a natural tendency or appetency; the privation of a required good.

EVIL, APPARENT. The privation of an apparent good.

EVIL, INTRINSIC. That which is evil by nature; it is always and under all conditions evil.

EVIL, MORAL. Something unsuitable for a rational being according to the demands of the moral law; the privation of the proper relation between an action or its omission and the moral law.

EVIL, PHYSICAL. The privation of a physical good.

EVIL, REAL. The privation of a real good.

EVOLUTION, EMERGENT. The theory that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality.

EVOLUTION, ORGANIC. The theory according to which the various species and types of animals and plants derive their origin, not through distinct and separate creative acts of God, but through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws.

EVOLUTION, PURPOSIVE. The doctrine that the Supreme Intelligence (God) endowed nature with a purpose and with the necessary principles of action to realize this purpose through evolution.

EXCHANGE. A contract by which money of one kind is changed into money of another kind with a moderate fee for the service rendered.

FAIRNESS. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to overlook the mere letter of the law in man's dealings with others, whenever higher considerations of justice so demand.

FAMILY. The natural society of father, mother, and child.

FEAR. An affective state of the mind in virtue of which a person shrinks from an impending evil considered to be difficult or impossible to avoid. It is a transitory impediment to voluntariness.

FEAR, ANTECEDENT. A fear which is the real cause of an action, so that the person is said to act 'out of fear.'

FEAR, CONCOMITANT. A fear which accompanies an action, but the action itself is produced by a different cause, so that the person is said to act 'with fear.'

FEAR FROM WITHIN. The fear which exists in a person who, because of the imminence of the evil, decides on a certain action himself; otherwise he would not so decide.

FEAR FROM WITHOUT. The fear which is caused by another person threatening an evil unless the action is performed.

FEELING. An elementary mental state characterized by pleasantness or unpleasantness.

"FINIS OPERANTIS." See End of the Agent.

"FINIS OPERIS." See End of the Act.

FORESIGHT. As an integral part of prudence, the auxiliary virtue which arranges everything necessary for the attainment of the end in a moral action.

FORMAL. Applied to goodness, as understood by many ethicists, formal goodness is the goodness inherent in the act itself, irrespective of its consequences.

FORMALISM, ETHICAL. A system of ethics which maintains that goodness inheres in the act as such, irrespective of the consequences of the act. Since intuitionism looks toward the formal goodness of acts, it is often referred to as 'ethical formalism'; in a similar manner, Kant's ethical theory is styled 'formalism.'

FORMALISM OF KANT. As a system of ethics, Kant's formalism is based on the intrinsic objective norm of human nature. The will is autonomous, a law unto itself. Actions are morally good only if performed because of duty; duty is the obligation to act from pure reverence for law. The norm of morality is the categorical imperative: "Act in conformity with that maxim, and that maxim only, which you can at the same time will to be a universal law." The consequences of an act are outside the scope of the moral law.

FORMAL OBJECT. See Object, Formal.

FORTITUDE. The moral virtue which inclines the will to overcome grave danger and sustain severe hardship in the pursuit and maintenance of the moral good.

FREE WILL. The ability of the will, all conditions for action being present, to decide whether to act or not act and whether to act in this manner or in that manner.

FREEDOM. In the widest sense, the absence of external coercion or restraint; in the strict sense, the absence of intrinsic necessity or determination in the performance of an act on the part of the will.

FRUITION. As an elicited act, the satisfaction of the will in the achievement of an end.

GAMBLING. A contract by which two or more persons, engaged in a game of chance, agree among themselves that the winner of the game shall receive a certain reward.

GLUTTONY. Excessive love of the pleasures of the palate.

GNOME. As a potential part of prudence, proficiency in finding the proper solution in extraordinary and difficult cases according to principles of a higher order which demand exceptional insight or perspicacity of judgment.

GOOD. Whatever is suitable for a being. That which a being desires.

GOOD, ABSOLUTE. Good without qualification or condition. Usually taken in the sense of 'ontological good,' 'objective good,' 'good in itself.

GOOD, ABSOLUTELY ULTIMATE OBJECTIVE. That supreme good through the acquisition and possession of which man obtains his supreme happiness.

GOOD, ABSOLUTELY ULTIMATE SUBJECTIVE. The supreme happiness which man obtains through the acquisition and possession of the supreme objective good.

GOOD, APPARENT. Something that is judged to be good for a being, but is actually not good for it.

GOOD, INTRINSIC. That which is good by nature; it is always and under all conditions good.

GOOD, MORAL. A good which has everything demanded of it by the moral law.

GOOD, ONTOLOGICAL. A thing as good in its very entity or reality.

GOOD, PHYSICAL. That which is good for physical well-being; a good which satisfies the demand of the nature of a being.

GOOD, REAL. Something that is judged to be good for a being and actually is good for it.

GOOD, RELATIVE. Good with reference to another being, in the sense that something is suitable for another being.

GOODNESS, FORMAL. As understood by many ethicicians, the goodness of the act as such; goodness, considered as inherent in the act, irrespective of its consequences.

GOODNESS, MATERIAL. As understood by many ethicicians, material goodness is the goodness of the act in its results; if the consequences of the act are good, then the act itself is considered good. Among the ethical theories based on the extrinsic norm of the consequences of action are hedonism, utilitarianism, and evolutionary naturalism.

GOVERNMENT. In an active sense, it is the ruling and administration of the political body. In a passive sense, it is the actual organization through which the activities of the state are carried out.

GRATITUDE. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to be mindful of favors received and to seek to render favors in return.

HABIT. A facility and readiness of acting in a definite manner, acquired by the frequent repetition of a certain kind of act. It is a permanent impediment to voluntariness.

HAPPINESS. As defined by Boethius, a state made perfect by the aggregation of all good things. The possession of all good consonant with man's nature.

HEDONISM, EGOISTIC. The ethical system which is based on the extrinsic norm of the usefulness of an act in

promoting individual human happiness. Happiness consists in pleasure.

HEDONISM, UNIVERSALISTIC. See Utilitarianism.

HIRING. See Renting and Hiring.

HOLDING COMPANY. A company which owns and controls the stocks or securities of a number of companies or corporations.

HOPE IN GOD. As a potential part of the cardinal virtue of justice, the virtue which enables man to expect confidently that he will always obtain the means necessary to achieve ultimate happiness.

HUMANISM. An attitude of thought or action, whether arranged into a system or not, centering upon distinctively human ideals, usually in contrast to religious or naturalistic interests. In ethics, one of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind.

HUMILITY. As a potential part of the cardinal virtue of temperance, the virtue which inclines the will away from seeking greater honor and estimation than one deserves.

IDEALISM. In general, the doctrine which holds that the being of things is conditioned by their being known; consciousness is constitutive of its objects; the being of sensible things is simply their being sensed, and their true characters are their sensed characters; the world we know is the world of our perceptual content; the mind of man cannot transcend its own internal, conscious states.

IDEALISM, DIALECTICAL. The doctrine which holds that reality is constituted of logical ideas (logical entities), so that we have direct knowledge of reality in the ideas of logical thought.

IDIOCY. Extreme deficiency of intelligence, commonly due to an undeveloped or abnormally developed brain. It is a permanent impediment to voluntariness.

IDOLATRY. The giving of divine honor to a creature.

IGNORANCE. The lack of required knowledge. It is a transitory impediment to voluntariness.

IGNORANCE, AFFECTED. An ignorance which is willed directly in itself by a person who does not desire to have his ignorance removed.

IGNORANCE, ANTECEDENT, OF THE ACTION. An ignorance which precedes the will's decision and is the (negative) cause of the action, so that the action is performed through ignorance and on account of ignorance.

IGNORANCE, ANTECEDENT, OF THE WILL. An ignorance which precedes the decision of the will and is independent of the decision of the will.

IGNORANCE, CONCOMITANT, OF THE ACTION. An ignorance in which the action is performed in and with ignorance, but not through ignorance and on account of ignorance.

IGNORANCE, CONSEQUENT, OF THE WILL. An ignorance which follows from the decision of the will and is dependent on the decision of the will.

IGNORANCE, CRASS (SUPINE). The ignorance of a person who uses hardly any reasonable diligence to remove the ignorance.

IGNORANCE, INVINCIBLE. An ignorance that cannot be removed.

IGNORANCE, MORALLY INVINCIBLE. An ignorance which cannot be removed by any reasonable effort normally made under the circumstances by prudent and conscientious persons.

IGNORANCE, PHYSICALLY INVINCIBLE. An ignorance which cannot be removed at all, because the person is totally unaware of the presence of ignorance in his mind.

IGNORANCE OF FACT. Lack of the knowledge of the necessary conditions required for the application of the law to a particular situation.

IGNORANCE OF LAW. Lack of the knowledge of the existence of the law or the content of the law.

IGNORANCE, SIMPLY VINCIBLE. The ignorance of a person who uses some diligence, but not a sufficient amount to remove the existing ignorance.

IGNORANCE, SUPINE. See Ignorance, Crass.

IGNORANCE, VINCIBLE. An ignorance which can be dispelled with the diligence and effort customarily applied by prudent and conscientious persons under the given circumstances.

IMMORTALITY. Endless duration of life.

IMPEDIMENTS. With reference to human acts, those factors which impair perfect knowledge and perfect consent in moral matters. Such impediments may be either transitory or permanent.

IMPEDIMENTS, ACTUAL. See Impediments, Transitory.

IMPEDIMENTS, PERMANENT. Impediments to the human act which lessen or prevent the advertence of the

intellect and the exercise of the freedom of the will in such a manner that a more or less stable condition of involuntariness results in a person. Such permanent impediments are: infancy, idiocy, moronism; propensities and habits; mental diseases.

IMPEDIMENTS, TRANSITORY. Impediments which affect individual human acts, lessening or preventing the exercise of freedom in their regard. Actual impediments. They are ignorance, concupiscence or passion, fear, and violence.

IMPUTABILITY. That property of moral acts in virtue of which these acts are attributed to a person as his own, because he is their author and cause.

INDIFFERENTISM. Practical indifferentism is the actual neglect of one's religious duties. Theoretical indifferentism is the mental attitude and conviction that a person can fulfill his religious obligation in any type of religion.

INDISSOLUBILITY OF MARRIAGE. See Marriage, Indissolubility of.

INDIVIDUALISM. In general, the doctrine or system which stresses the reality and importance of the individual. The laissez-faire system of competition in political economy.

INDIVIDUALISM, ECONOMIC. The doctrine or system which maintains the political and economic independence of the individual and emphasizes the necessity of the complete liberty of individual initiative, action, and interests, especially in industry and business.

INFANCY. That period in the life of the individual human person which extends from conception to the time when the

age of reason and discretion is reached. It is a permanent impediment to voluntariness.

INSURANCE. A contract by which one of the contracting parties obligates himself, upon the payment of a premium, to compensate another for any damage or loss in his person or property resulting from some untoward event.

INTELLECT. The spiritual power to form concepts, judgments, and inferences.

INTELLIGENCE. As an integral part of prudence, the auxiliary virtue that pertains to present items which contribute to the judgments of a moral action.

INTENTION. The active striving of the will for the attainment of a particular good.

INTUITION. A mental process of direct and immediate apprehension. Applied to ethics, it means the direct and immediate perception of human conduct as good or evil, so that the knowledge of the distinction between good and evil conduct is not the result of an intellectual process or reasoned judgment, but of a special perceptual faculty or sense. The system of ethics based on intuition as the norm of morality is called 'intuitionism.'

INTUITIONALISM. See Intuitionism.

INTUITIONISM. The system of ethics based on intuition as the norm of morality. See Intuition. It claims that man possesses a distinct faculty or power or sense which, through its own immediate perception, is the criterion of what is right and wrong, good and bad, in human conduct. Intuition is thus the intrinsic subjective norm of morality.

IRRELIGION. An attitude or act whereby a person refuses to render unto God the reverence which is His due

or whereby a person dishonors Him.

“JUS GENTIUM.” See Law of Nations.

JUSTICE. The moral virtue which inclines man’s will to render unto each his due. As a cardinal virtue, it inclines man’s will to render unto other rational beings that which they have the right to demand as their due.

JUSTICE, COMMUTATIVE. The cardinal virtue of particular justice which orders the dealings of one individual with the other individual and sees to it that each one receives strictly what is his own.

JUSTICE, DISTRIBUTIVE. The cardinal virtue of particular justice which orders the dealings of society toward its members and inclines those in government to distribute equitably the common goods and burdens among the members of the commonwealth and inclines the latter to be contented with their share of the social goods and burdens assigned to them.

JUSTICE, GENERAL. See Justice, Legal.

JUSTICE, LEGAL. The virtue which regulates the actions of the individual in his relations to the commonwealth or community to which he belongs as a member.

JUSTICE, PARTICULAR. The cardinal virtue of justice which regulates the actions of an individual in his relations to private persons and inclines his will to render unto everyone his due in the equivalent of value.

LABOR. Human industry which produces goods of some sort.

LAST WILL. See Testament.

LAW. A rule or norm according to which something is drawn toward an action or restrained from an action.

LAW, AFFIRMATIVE. A law of command obligating a person to perform a definite positive act.

LAW, DIVINE. A law which emanates from God as the legislator.

LAW, ETERNAL. The plan of God's wisdom directing all created things toward the realization of their natural end. The rational will of God commanding the preservation of the natural order and prohibiting its violation.

LAW, HUMAN. A law enacted by legitimate human authority.

LAW, INTERNATIONAL. The code of laws which determine the rights and duties of sovereign states and their citizens in their mutual relations and conduct.

LAW, MORAL. A rule or norm governing the free actions of man relative to moral obligation. An ordinance of reason directed toward the common good and promulgated by the one who has the care of the community.

LAW, NATURAL. A law manifested by the natural light of human reason reflecting on the fundamental principles of morality. The moral law, manifested by the natural light of reason, demanding the preservation of the natural order and forbidding its violation; the binding norms of moral actions, in so far as these norms are manifested by mere reason.

LAW, NEGATIVE. A law of prohibition obligating a person to refrain from performing a definite act.

LAW OF NATIONS. International private law dealing with the rights and duties of the individuals belonging to

various national groups. Jus gentium.

LAW, PENAL. A law which imposes a penalty upon violation.

LAW, PERMISSIVE. A law which allows a person to perform a certain act without hindrance from others.

LAW, POSITIVE. A law enacted by legitimate authority, such as the state, supplementing the provisions of natural law and made in view of the special needs of the community.

LAW, PUNITIVE. See Law, Penal.

LAW, TEMPORAL. A law enacted in time by human authority through legislative channels.

LIBERALISM, ECONOMIC. The doctrine or system which maintains that the sole regulative principle of economic life is the law of supply and demand and free competition in the market place. In applying the principle of laissez faire, it demands freedom of trade, freedom of contract, freedom of competition in the open market, freedom for operation of the economic laws of supply and demand, freedom from interference and restraint on the part of organized social groups and the government.

LIBERALITY. As a potential part of the cardinal Virtue of justice, the virtue which inclines one's will to give gladly of one's earthly goods to others.

LIE. The telling of an untruth, so that there is a contradiction between what a person thinks and says. Contradiction between a person's thought and speech.

LIE, FORMAL. Contradiction between a person's conviction and speech, when he is conscious of the contradiction; a conscious and deliberate statement

contrary to one's subjective judgment, whether this subjective judgment be objectively true or false.

LIE, JOCOSE. One made in jest, in order to amuse someone.

LIE, MATERIAL. Contradiction between a fact and a person's statement of the fact, but the person is unconscious of the contradiction.

LIE, OFFICIOUS. One in which a person seeks to gain some advantage or avoid some difficulty, be it for one's own self or for another, without thereby inflicting any harm upon another.

LIE, PERNICIOUS. One in which a person not only deliberately attempts to deceive another, but also seeks to inflict harm upon him by means of the lie.

LIKING. See Wish.

LIMITATION OF RIGHTS. That property whereby the exercise of one right is curtailed by some other right.

LOAN. A contract by which the ownership of an object consumable in first use is transferred to another with the obligation that an object of a similar nature and quality be returned at some specified time.

LOCKOUT. An act whereby the employer shuts down his business or plant as a protest against what he considers to be the unjust demands of those of his workers who are striking.

LOTTERY. A contract by which a person, upon payment of a certain sum of money, acquires the right of obtaining an article or money, if the chance he holds wins.

LOVE OF GOD. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to love God for

His own sake and to prefer Him as the supreme good to all temporal goods.

LOVE OF MORAL TRUTH. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to act toward others in word and deed with truthfulness and faithfulness.

LUST. The excessive desire of sexual enjoyment.

LYNCH LAW. The practice or act of meting out punishment by private persons to guilty or suspected persons without due process of law.

MAGIC. The endeavor to produce effects transcending human powers by inadequate means or by some means other than the power of God.

MAGNANIMITY. As a potential part of the cardinal virtue of fortitude, the virtue which inclines a person to be generous-hearted in undertaking difficult assignments.

MAGNIFICENCE. As a potential part of the cardinal virtue of fortitude, the virtue which inclines the person of wealth to carry out large projects for the alleviation of distress and the promotion of human welfare.

MARRIAGE. The permanent union, lawfully formed, of man and woman for the procreation of children and their proper education. Conjugal society.

MARRIAGE, INDISSOLUBILITY op. That essential property of marriage in virtue of which the conjugal bond between husband and wife cannot be dissolved or broken by any human power during the lifetime of either of the two.

MARRIAGE, UNITY OF. That property which demands that only one man be married to only one woman simultaneously.

MATERIAL OBJECT. See Object, Material.

MATERIALISM. A naturalistic form of philosophy which finds the ultimate explanation of all phenomena, physical and psychical, in the nature and activity of universal matter or force.

MEEKNESS. As a potential part of the cardinal virtue of temperance, the virtue which moderates anger and the desire for revenge, so that we may avoid vindictiveness.

MELIORISM. The belief or teaching that the world tends to become better in the course of time and that man can assist in its betterment. As an ethical doctrine, it is one of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind.

MERCY KILLING. See Euthanasia.

METAPHYSICS. The science of the ultimate principles and properties of real beings.

MODESTY. As a potential part of the cardinal virtue of temperance, the virtue which regulates external deportment and makes us strive for becoming behavior in movement, speech, posture, dress, and amusements.

MONARCHY. A form of government in which one person possesses the supreme rule over the political community.

MONARCHY, ABSOLUTE. A monarchy in which the monarch's rule is complete in every respect, so that his

word is the sole law of the realm.

MONARCHY, CONSTITUTIONAL. A monarchy in which the monarch's power is curtailed by a constitution.

MONARCHY, LIMITED. A monarchy in which the monarch's power is curtailed in some respects.

MONARCHY, PARLIAMENTARY. A monarchy in which the monarch's power is curtailed by a parliament, in as much as the parliament possesses partial governmental power.

MONISM. The doctrine which seeks to deduce all the varied phenomena of both the physical and psychical worlds from a single principle which is in a continuous state of evolution; specifically, the metaphysical doctrine which holds that there is but one substance, either mind (idealism) or matter (materialism) or a neutral substance that is neither mind nor matter but is the substantial ground of both.

MONOPOLY. The exclusive control of the supply of a particular commodity in a given market.

MORALITY. That property of human acts in virtue of which they are said to be 'good' or 'evil,' 'right' or 'wrong.' The 'rightness' and 'wrongness' of human acts.

MORALITY, INDEPENDENT. The doctrine that man can lead a truly moral life without natural or supernatural religion.

MORALITY, OBJECTIVE. The conformity or disconformity of a particular human act and its object with the objective proximate and ultimate norm, irrespective of our judgment.

MORALITY, PERSONAL. See Morality, Subjective.

MORALITY, SUBJECTIVE. The conformity or disconformity of a particular act and its object with the

objective norm of morality, according to our judgment.

MORALITY , THE NEW. A trend in recent ethics which is decidedly teleological in character, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind. Typical of this new morality are the names 'self-realization,' 'energism,' 'total self-development,' 'idealistic perfectionism,' 'cultural progress,' 'humanism,' 'meliorism,' and 'value ethics.'

MORAL PHILOSOPHY. See Ethics.

MORONISM. A state of moderate feeble-mindedness. It is a permanent impediment to voluntariness.

MURDER. The intentional and unlawful killing of a person.

NATIONAL SOCIALISM. See Socialism, National.

NATURALISM. The doctrine that scientific knowledge of physical objects is the final and only legitimate form of knowledge.

NATURALISM, EVOLUTIONARY. A system of ethics which combines the principles of utilitarianism and evolution, seeking to explain the rise and development of morality through organic evolution. Basically, it is a form of utilitarianism. The welfare of human society is the norm and criterion for determining what is morally good or bad. See Utilitarianism.

NEIGHBORLY LOVE. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to be benevolent toward one's fellow men because they have the same human nature and ultimate end.

NORM. An authoritative standard which serves as a pattern or model to which things of a similar nature must conform.

NORM, MORAL. An objective standard or rule or principle which determines the morality of an act in itself.

NORM OF MORALITY. See Norm, Moral.

NORM OF MORALITY, PROXIMATE. The immediate norm, available to all persons, used as a standard with which to compare human acts for the purpose of judging their morality. In the case of human acts it is the nature of the whole man.

NORM OF MORALITY, ULTIMATE. The final, most basic norm which is the ground and reason why human acts are morally good or evil. The ultimate norm or standard for judging the morality of any human act is God's nature and perfections.

OATH. The calling upon God as a witness to the truth of a statement or of the intention to fulfill a promise.

OBJECT, FORMAL. That specific aspect of the general subject matter (material object) which is the proper object of a particular science and which distinguishes this science from all others. In ethics, it is the 'rightness' and 'wrongness,' the 'goodness' and 'badness,' of human conduct.

OBJECT, INCIDENTALLY EVIL. An object which is evil because of a precept.

OBJECT, INCIDENTALLY GOOD. An object which is good by reason of a precept.

OBJECT, INTRINSICALLY EVIL. An object by nature evil; it is always and under all conditions evil.

OBJECT, INTRINSICALLY GOOD. An object by nature good; it is always and under all conditions good.

OBJECT, MATERIAL. The general subject matter which a science treats in its investigation. In ethics, it is the conduct of man, the acts controlled by the will, 'human acts' as distinguished from 'acts of man.'

OBJECT OF THE MORAL ACT. That which the will intends directly and primarily.

OBLIGATION. The necessity, based on intelligent motivation, of obeying the prescription of a law. The moral necessity to do the good and avoid the evil, based on the knowledge that God, our Supreme Good, demands the observance of the law and forbids its deliberate violation.

OBSERVANCE. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to render honor and submission unto those who occupy positions of authority in the commonwealth.

OCCUPANCY. See Occupation.

OCCUPATION. The effective seizure and possession of an ownerless object with the intention of making it one's property.

OLIGARCHY. A form of government in which the ruling authority is vested in a few persons or in a privileged group.

OWNERSHIP. The exclusive right to control and dispose of some thing as one's own according to one's will.

PACT OF SUBMISSION. The pact or consent in virtue of which a politically organized people transfers the political power from the people to a particular person or group as their chosen ruler.

PARTNERSHIP. A contract by which two or more competent persons place their money, effects, labor, and skill, or at least some of these items, in lawful commerce or business, with the agreement that the profits and losses shall be shared between them in definite proportions.

PASSION. The emotional excitement which normally accompanies the sensuous appetency in its activity of striving for a sensuous good and of avoiding a sensuous evil. It is a transitory impediment to voluntariness. See Concupiscence.

PASSION, ANTECEDENT. The passion which occurs prior to any act of the free will in its regard.

PASSION, CONSEQUENT. The passion which occurs after an act of the free will in its regard.

PATIENCE. As a potential part of the cardinal virtue of fortitude, the virtue which inclines the will to accept with resignation the existing trials and sufferings.

PERFECTIONISM (SELF-REALIZATION). As a system of ethics, perfectionism, or self-realization, maintains that the total perfection of man is the end of all ethical striving.

PERFECTIONISM, IDEALISTIC. One of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the maximum happiness of mankind.

PERSEVERANCE. As a potential part of the cardinal virtue of fortitude, the virtue which inclines the will to go steadily forward in an undertaking, notwithstanding all the difficulties which endanger it from without.

PERSON. An intellectual hypostasis, that is, an individual, complete, subsistent, intellectual substance.

PERSON, MORAL. A society or organized group of persons capable of rights and duties.

PERSON, PHYSICAL. Any living person, considered as an individual.

PHILOSOPHY. The science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason alone.

PHILOSOPHY, MORAL. See Ethics.

PIETY. As a potential part of the cardinal virtue of justice, the virtue which urges us to render proper respect and obedience unto one's parents (including relatives) and one's country, because we owe them our existence and sustenance. Dutifulness.

POLYANDRY. A form of polygamy in which one woman has more than one husband.

POLYGAMY. A marriage in which one person simultaneously possesses more than one mate.

POLYCYN. A form of polygamy in which one husband has more than one wife.

POSITIVISM. A form of naturalism which denies the legitimacy of philosophical problems and methods and claims that science is the only knowledge which is exact and ultimate. In the philosophy of law, the system which maintains that the only valid law is positive law, excluding any higher law such as natural law.

POSITIVISM, LEGAL. The system, as a philosophy of law, which repudiates the concept of natural law as being 'metaphysical' and maintains that the philosophy of law

must restrict itself to an analysis of positive law as it actually exists in the statutes.

POSITIVISM, MORAL. The system which denies the natural (intrinsic) distinction between the morally good and the morally evil and claims that this distinction is derived solely from the free and positive enactment of authority. When the distinction is based on the enactments of human authority, moral positivism is anthroponomic; when based on divine authority, theonomic.

POSTULATE. A proposition which is either self-evident or which is taken over without proof by one science from another science because it has been proved by this other science.

POSTULATE, EPISTEMOLOGICAL. For ethics, the proposition that human reason is a reliable and trustworthy source and instrument of true and certain knowledge.

POSTULATE, PSYCHOLOGICAL. For ethics, the proposition that man is a rational organism composed of matter and a spiritual soul united into a unitary nature, endowed with intellect and free will.

POSTULATE, THEODICIAN. For ethics, the proposition that God exists and is infinitely intelligent, good, and just.

POWER. The right of coercion. In reference to the state, power is the legal competence to enforce obedience to commands and fulfillment of obligations.

POWER, EXECUTIVE. The competence of the government to establish and maintain the agencies necessary to carry out the laws.

POWER, JUDICIAL. The competence of the government to restore the legal order when disturbed.

POWER, LEGISLATIVE. The right of the government to enact laws which are norms of action for the citizens.

PRAYER. Conversation with God for the purpose of honoring Him.

PRESCRIPTION. The acquisition of ownership or the discharge of a debt by the continuous possession of a thing for the time and in the manner prescribed by positive law.

PRIDE. Excessive esteem of one's own self and the failure to attribute all excellencies to God rather than to one's own person.

PRINCIPLE. That from which something else follows.

PROGRESS, CULTURAL, One of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind.

PROLETARIAT. In the theory of communism, the class of modern wage laborers who possess no means of production and must sell their labor power in order to live.

PROMISE. An act by which one person obligates himself gratuitously to another to do or omit something and the promise is accepted by the one to whom the promise is made.

PROPENSITIES. Natural dispositions, inclinations, drives, which are rooted in the particular kind of nervous system which the individual has inherited. They are permanent impediments to voluntariness.

PROPRIETY. As an integral part of the cardinal virtue of temperance, the love of the beauty which is found in the temperate use of pleasurable things.

PRUDENCE. The cardinal virtue of the intellect which enables man to judge correctly in each individual case what the moral order demands of him.

RATIONALISM. In general, the theory or method of philosophy which maintains that the criterion of truth is not sensory but intellectual and deductive. In ethics, the system which seeks to deduce the moral law in a detailed form from the supposed 'pure state of nature' in which man existed prior to the establishment of communal or political life with its positive laws.

REASON. The power of the mind which perceives the truth and validity of derived ideas, judgments, and principles on the basis of indirect and mediate evidence.

REASON. As an integral part of prudence, the auxiliary virtue which assists a person in the comparison and valuation of different things in a moral action.

REASON, RIGHT. Taken as the proximate subjective norm of morality, whatever is in accord with reason is in accord with the nature of man, as man.

RELATIVISM. The doctrine that every known object is relative (in relation) to the knowing subject and as such is dependent in its being upon the knowing subject and incapable of existing apart from consciousness; the doctrine of the immanence of relations as constitutive of their being; the doctrine which holds that truth has no objective standard but is relative and may vary from individual to individual and from time to time.

RELATIVISM, MORAL. The doctrine that ethical truths are not based on objective grounds but are relative, so that

the rightness and wrongness of actions or objects depend solely on the attitude taken toward them by some individual or group.

RELIGION. In its primary meaning religion is the worship extended by men to an extramundane and supramundane personal being, on whom they believe to be dependent in their lives and fortune and whom they seek to make propitious by special observances. In its secondary meaning it is the virtue which inclines men to render honor and homage to God as the Supreme Being, the first cause and last end of man. Also used to signify all the truths which express the relation of man to God and all the duties which pertain to man in consequence of these truths.

RELIGION. As a potential part of the cardinal virtue of justice, the virtue which inclines the will to render honor unto God and to submit ourselves to the yoke of His commandments.

RELIGION, NATURAL. Religion based on the truths and duties which man knows through the aid of human reason alone.

RELIGION, OBJECTIVE. The objective truths which underlie the relation of man to God and the objective duties which pertain to man because of this relation; these truths and duties are independent of man's knowledge or ignorance and of his likes or dislikes.

RELIGION, SUBJECTIVE. The personal sentiment, inclination, and practice of worship, by means of which an individual renders honor and homage to God.

RELIGION, SUPERNATURAL. Religion based on the voluntary revelation of God.

REMEMBRANCE. As an integral part of prudence, the auxiliary virtue that recalls past items which contribute to the judgment of a moral action.

RENTING AND HIRING. A contract by which one party obtains the right to the use and usufruct of a thing (except money) or of services or of labor for a definite price.

RESERVATION, BROAD MENTAL. A statement which limits the full meaning of the spoken words, so that, although there exists some external indication of the limitation either in the spoken words or in the circumstances of the speaker, the listener will most likely deceive himself as to the actual meaning of the statement.

RESERVATION, MENTAL. A statement which 'reserves' the communication of knowledge from one mind to another by not efficaciously revealing the judgment present in the mind of the speaker.

RESERVATION, PURELY MENTAL. A mental reservation in which the statement does not reveal the judgment of the speaker's mind in any manner, neither by speech nor by the circumstances.

REVOLUTION. The overthrow or renunciation of one government or ruler, and the substitution of another government or ruler, by the governed.

RHYTHM. The practice of periodic continence during the time of the wife's period of fertility and the performance of the conjugal act during the time of the wife's period of sterility.

RIGHT. In the passive sense, a right is something which is due to someone according to strict equality because of a strict obligation. In the active sense, a right is the moral

and inviolable power vested in a person to do, hold, or exact something as his own.

RIGHT, ALIENABLE. One which can be renounced or transferred for sufficiently grave reasons, because it is not an essential requirement of human nature.

RIGHT, CONGENITAL. See Right, Connatural.

RIGHT, CONNATURAL. One which belongs to man because of his very nature as a person, without any action on his part or on the part of any other person in his behalf. Also called 'congenital right.'

RIGHT, DIVINE, OF KINGS. The theory that the supreme political power is conferred on the ruler by a special act of God, so that he rules by divine law.

RIGHT, IMPERFECT. One based on some virtue other than commutative justice and is not so determined as to object (matter) and subject that one may resort to physical force to exact it.

RIGHT, INALIENABLE. One which cannot be renounced or transferred because it is necessary for the fulfillment of man's purpose of being and essential duties.

RIGHT, LEGAL. One determined and enforced by an enactment of the civil authorities.

RIGHT, MORAL. One based on the moral law and which appeals through knowledge to another's will.

RIGHT, NATURAL. One founded on the natural law.

RIGHT, PERFECT. One based on strictly commutative justice and is so determined as to object (matter) and subject that one may resort to physical force to exact it.

RIGHT, PERSONAL. One which gives to a person power to exact something from another person, so that this

something may become his own (*jus ad rem*).

RIGHT, POSITIVE. One founded on the positive law.

RIGHT, PRIVATE. One which inheres in private persons as against private persons.

RIGHT, PUBLIC. One which inheres in the state or in private persons against the state.

RIGHT, REAL. One which gives to a person power in or over his own objects (*jus in re*).

RIGHT REASON. See Reason, Right.

ROMANTICISM. The movement based on the doctrine that the Spirit, or the Absolute, is fundamentally creative and self-expressing, so that the universe must be interpreted in terms of process, life, consciousness, and self-realization.

SACRIFICE. The offering of a sensible, relatively valuable object to God and its actual or symbolic destruction, in order to acknowledge that God is the Creator and Lord of all things.

SACRILEGE. The unworthy and offensive treatment of persons, places, and things dedicated to God and His service.

SAGACITY. As an integral part of prudence, the auxiliary virtue which helps a person in making a quick decision of the proper means in a moral action.

SANCTION. The rewards or punishments ordained by a legislator for the observance or transgression of the law.

SCHOLASTICISM. The system of philosophy which advocates a natural dualism of God and creature, mind and matter, thought and thing, as against monism and

pantheism; it defends a moderate realism, as against ultra-realism, nominalism, and conceptualism; it is spiritualistic and not materialistic, experimental and not aprioristic, objectivistic and not subjectivistic; in sense-perception it is presentational and not agnostic or representational or idealistic; concerning intellectual knowledge it defends a moderate rationalism, as against sensism, positivism, and innatism; it is common sense knowledge critically examined and philosophically vindicated.

SCIENCE. Certain knowledge derived from reasoned demonstrations of causes and reduced to a system of definite truths.

SCIENCE, NORMATIVE. Practical science. Ethics is a normative science, treating of the rules and norms which should govern human conduct.

SCIENCE, PRACTICAL. A science whose fundamental purpose is the knowledge of the principles of regulation which govern the correctness of certain acts in accordance with definite rules and norms.

SCIENCE, SPECULATIVE. A science whose fundamental purpose is the acquisition of knowledge as such.

SECRET. Subjectively, the obligation not to reveal some hidden thing or knowledge. Objectively, the hidden thing or knowledge which may not be revealed.

SELF-DEVELOPMENT, TOTAL. One of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind.

SELF-REALIZATION. One of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the attainment of maximum happiness for mankind. See Perfectionism.

SELF-RESTRAINT. As a potential part of the cardinal virtue of temperance, the virtue which enables the will to resist the most powerful emotions of sensible desires for pleasure which run counter to the norm of morality.

SELLING. See Buying and Selling.

SENSATIONALISM. The doctrine which holds that sensation is the sole origin of knowledge. Sensism.

SENSE OF HONOR AND SHAME. As an integral part of the cardinal virtue of temperance, the anxiety to avoid the personal shame and disgrace which follow the unbecoming and excessive enjoyment of pleasures.

SHOP, CLOSED. A 'union shop,' so that the employer makes an agreement with the union that all workers in his shop shall be union members in good standing.

SIMONY. The voluntary attempt to buy or sell spiritual things for money or the equivalent of money.

SLOTH. Laziness of body and mind, causing one to neglect the obligations involved in the pursuit of moral goodness.

SOBRIETY. One of the species of the cardinal virtue of temperance, moderation in the use and enjoyment of intoxicating drink.

SOCIALISM. The political doctrine that the workers should take over the apparatus of existing governments by

parliamentary action of some kind and then proceed to socialize or nationalize the means of production by placing their ownership in the hands of the state. Socialism advocates production for use, not for profit; hence, all means of production for profit must be owned by the state, not by individuals or private groups.

SOCIALISM, NATIONAL. A form of totalitarian government based on the theory, propounded by Adolf Hitler, that the state originated through the blind struggle of the races as biological groups and that the superior (Aryan) race wins out because it possesses superior blood.

SOCIETY. The stable union or association of a number of persons for the mutual realization of a common end.

SOCIETY, CIVIL. The permanent union of a multitude of families and individuals, under a common authority, for the purpose of promoting their public welfare.

SOCIETY, COMPOSITE. One consisting of a number of societies (moral persons) as its proximate component parts or members.

SOCIETY, CONJUGAL. The permanent union, lawfully formed, of man and woman for the procreation of children and their proper education. Marriage.

SOCIETY, CONVENTIONAL. One which has its origin, formation, and continued existence in the mutual free consent of its members for the attainment of an end specifically agreed upon.

SOCIETY, EQUAL. One in which all members share the authority in an equal degree, because the society itself is the bearer of social authority, even though the members

may delegate a certain person or assemblage of persons to exercise this authority in their name.

SOCIETY, IMPERFECT. One which does not possess within itself all the means required for the complete attainment of its end, but needs the assistance of some society of a higher order.

SOCIETY, INTERNATIONAL. The association of states or governments for the public welfare of mankind.

SOCIETY, NATURAL. One which is formed as a result of man's very nature, as something which is necessary for the proper attainment of the perfection suitable to his rational nature.

SOCIETY, FACTITIOUS. See Society, Conventional.

SOCIETY, PERFECT. One which possesses within itself all the means necessary for the realization of its end, so that it is not directly dependent on any society of a higher order for the attainment of its end.

SOCIETY, SIMPLE. One composed directly of individual (physical) persons.

SOCIETY, UNEQUAL. One in which the social authority is vested by special right in one or more persons to whom the members are subject.

SOVEREIGNTY. The legal supremacy of the state. Viewed positively, it means that the ruler has the right of supreme rule over the people of the state with reference to the attainment of the public welfare of the political community. Viewed negatively, it means supreme independence of the state, so that it is an equal among equals and not subordinated to the jurisdiction of another state in the community of nations.

SPIRITUALITY. The property in virtue of which a being is neither composed of matter nor intrinsically dependent on matter. Immateriality.

STATE. A natural and perfect society, consisting of many families and individuals, established for their common good under the direction of the supreme authority of a common ruler.

STERILIZATION. The mutilation of the sexual power in man or woman so as to render conception impossible. If performed for the purpose of hindering the conception of undesirable or mentally unfit children, it is called 'eugenic sterilization.'

STERILIZATION, EUGENIC. See Sterilization.

STOICISM. As a system of ethics, stoicism is based on the intrinsic objective norm of human nature as the standard of morality. Virtue is the only good, and happiness consists in virtue; virtue and happiness consist in living a life consonant with reason. Complete apathy is a characteristic mark of stoic virtue and duty.

STRIKE. An act of quitting work on the part of organized laborers, for the purpose of forcing the employers to comply with their demands for higher wages or better working conditions or both.

STRIKE, GENERAL. A strike in which practically all union members of a nation quit work simultaneously.

STRIKE, JURISDICTIONAL. A strike called because of a dispute between rival unions as to which union shall have exclusive jurisdiction over the workers of a certain factory or industry and exercise their bargaining rights.

STRIKE, SIT-DOWN. A strike in which the workingmen quit work but continue to occupy the premises.

STRIKE, SYMPATHETIC. A strike in which the workers quit their own work out of sympathy with other workers who are out on strike.

SUBJECTIVISM. The doctrine which holds that man can immediately know only what is present in consciousness.

SUICIDE. The direct, intentional destruction of one's own life.

SUPERSTITION. The attribution to a creature of some power which belongs to God alone.

SYNDERESIS. The habitual knowledge of primary moral axioms or practical principles of moral action which are present in the human intellect.

SYNESIS. As a potential part of prudence, the proficiency in clear, decisive judgments, following the inventive reflection of eubulia, in those common cases where ordinary principles are sufficient for prudence to arrive at a practical decision.

SYNTERESIS. See Synderesis.

TELEOLOGY. The tendency of efficient causes to realize definite results through their action. The doctrine that final causes are operative in nature.

TEMPERANCE. The moral virtue which orders the desire for sensible pleasure within the limits of right reason.

TESTAMENT. An act of a person by which he ordains what disposition shall be made of his goods after his death.

TOTALITARIANISM. The doctrine that the will of the state is the exclusive and sufficient source and foundation of all laws and rights of man. Politically, a highly centralized government controlled by an individual or group excluding voice and existence to opposing minority groups. State omnipotence.

TRANSFERENCE. The doctrine that all political authority, at the time the State is formed by the self-organizing members, rests in the people as a political body or community and is then transferred by the politically organized community to a certain person or group. Also called 'translation.'

TRANSLATION. See Transference.

TREATY. A compact made by one state with one or more states.

TRUST. A permanent organization which controls the commercial policy of a number of independently operated companies.

TRUTH. Conformity between mind and thing.

TYRANT. A person who usurps governmental power unlawfully and unjustly or who uses lawful governmental power oppressively and unjustly.

UNION, CLOSED. A union which limits the number of persons allowed to join the union; when the stipulated number of members has been reached, no new members are admitted to the union until there is a vacancy.

UNION, LABOR. A league or association of workingmen, organized for the purpose of promoting and defending their common interests and rights.

UNION SHOP. See Shop, Union.

UNITY OF MARRIAGE. See Marriage, Unity of.

USE. As a form of indirect private ownership, it is the right to employ someone else's property for one's own purposes, but without the right to dispose of its substance.

USE. As an elicited act, the practical execution of the choice of the means selected to achieve an end.

USUFRUCT. The right to employ someone else's property and also take its fruit, but without the right to dispose of its substance.

UTILITARIANISM. The ethical system which is based on the extrinsic norm of the usefulness of an act in promoting the happiness of the individual and of the human race. Happiness consists in pleasure. The norm is expressed in the formula of "the greatest happiness for the greatest number." Also called 'universalistic hedonism' and 'social eudaemonism.'

UTILITARIANISM, EVOLUTIONARY. See Naturalism, Evolutionary.

UTILITARIANISM, RATIONAL. See Naturalism, Evolutionary.

VALUE. That which is perfect or perfective.

VALUE ETHICS. As the outcome of the modern theory of value, 'value ethics' is frequently viewed as one of the forms of the 'New Morality,' a teleological system of ethics developed in recent times, based primarily on the 'results of conduct,' consciously directed toward the perfection of the individual and the maximum happiness of mankind.

VICE. An operative habit inclining the will to acts at variance with right reason.

VICES, CAPITAL. The principal vices from which practically all evil deeds derive their origin. They are: pride, covetousness, lust, anger, gluttony, envy, and sloth.

VIOLENCE. Physical force applied to a resisting person by an external agent. It is a transitory impediment to voluntariness.

VIRTUE. The permanent inclination and facility to perform morally good acts; the operative habit to perform morally good acts.

VIRTUES, CARDINAL. Among moral virtues, the principal ones among several groups of virtues. They are prudence, justice, temperance, and fortitude.

VIVISECTION. The operation on living animals, especially for biological and physiological study.

VOLITION. Rational appetite.

VOLITION, DELIBERATE. Volition which results in consequence of a deliberation over the respective merits of particular values.

VOLITION, NATURAL. Volition which must follow the perception of a perfect good.

VOLUNTARINESS. The state of an act in so far as it proceeds from the will as its cause.

VOLUNTARY. See Act under various headings.

VOW. A voluntary promise made to God whereby a person binds himself to do the better good.

WAGE, FAMILY. A wage enabling the workingman to support his wife and family in reasonable, frugal comfort.

WAGE, LIVING. A wage that will give the workingman a decent livelihood.

WAR. A condition of armed conflict between two or more sovereign states.

WILL. The rational appetency, or the power to strive for an intellectually perceived good and to shun an intellectually perceived evil.

WILL, FREEDOM OF. The absence of intrinsic necessity or determination in the will with regard to the performance of an act.

WISH, LIKING. Simple inclination toward a recognized good.

WORSHIP, DIVINE. The honor and homage rendered to God in proportion to His excellence, dignity, and power.

GOD AND HIS CREATURES

THEODICY

NIHIL OBSTAT: Thomas Aquinas Heidenreich, O.F.M.
Cap., March 18, 1952

NIHIL OBSTAT: Berchmans Bittle, O.F.M. Cap., March
19, 1952

IMPRIMI POTES: Cyprian Abler, O.F.M. Cap.,
Minister Provincial, June 21, 1952

NIHIL OBSTAT: John A. Schulien, S.T.D., Censor
librorum

IMPRIMATUR: + Moyses E. Kiley, Archiepiscopus
Milwauchiensis, November 3, 1952

PREFACE

OF THE VARIOUS DEPARTMENTS constituting the general science of philosophy, *theodicy* (natural theology) is the most noble and *most important*.

It is the most noble. Its nobility stems from the pre-eminence of its subject-matter which is God Himself, the Supreme Being. God is the *summum bonum*, the supreme good, both in Himself and in His relation to creatures. He is the supreme truth and as such alone satisfies the undying craving of the human mind for a complete explanation of the world and of every being.

It is the most important. Nothing can be more important to man in time and eternity than to know God and to love Him. Life here on earth would have no meaning if God were removed from the key position of influencing man in his thought and action. Man must, therefore, be sure of God's existence and seek to inform himself thoroughly with regard to His nature and operations.

A survey of the American people has brought out the information that ninety-nine per cent believe in God; of these over ninety per cent are absolutely convinced of God's existence. Inasmuch as it has been currently assumed

that Americans are rather 'materialistic' in their general attitude, this fact is both startling and heartening. Such a survey, however, could not be expected to bring out what the individuals thought about the real nature of the Supreme Being. If such a survey were made, it would probably show much confused thinking. That is practically unavoidable in convictions which are the result more of spontaneous thinking than of reflective reasoning. The matter of God's existence and nature is too important to be left to spontaneous thinking, especially so far as the educated classes are concerned.

The present book seeks to supply the information desired by the reasoning mind of man. Its general standpoint is that of theism in its traditional form. Nothing new should be expected as regards the subject-matter under discussion. If there is anything new in the book, it is the manner of presentation.

Like the other books of the author, the present treatise is directed toward the undergraduate students in their endeavor to understand the many difficult problems connected with philosophical inquiry. Having been a teacher of undergraduates, the author realizes the necessity of simplification and clarification in so difficult a subject; this he has attempted to provide for the budding mentality of the students in writing a theodicy for their use.

The author has now completed the series of the various departments of philosophy. It is his fond hope that this book on theodicy will also enable the reader to understand the existence, nature, and operations of God, so that he will know Him and love Him more and more.

C. N. BITTLE, O.F.M.CAP.

PART I

THE EXISTENCE OF GOD

Chapter 1

NOTION AND SCOPE

HISTORY AND ANTHROPOLOGY SHOW THAT ALL PEOPLES WITHOUT exception worship some sort of divinity. Many peoples worship more than one divinity — they are ‘polytheistic.’ Some worship idols; some, natural objects; some, gods who possess human traits in a superior degree. In every form of polytheism, many deities occupy a subordinate position, while others are superior to them in power and intelligence.

In this hierarchy of deities, frequently one is supreme.

Other peoples worship but one God — they are ‘monotheistic.’ Jews, Christians, and Mohammedans profess monotheism. God, in their concept, is eternal, infinite; the beginning and end of all things; supreme intelligence; the creator and governor of the world.

No people has ever been discovered which, in the strict sense of the term, is ‘atheistic.’ Individuals may be atheists; but a people, never. This universal belief is a tremendous fact. Most persons, even when they abandon their Christian heritage, still retain the fundamental conviction of the existence of God. Apparently, then, belief in God or some sort of deity is a spontaneous and natural dictate of human reason.

The philosopher takes this universal fact as the starting-point of his investigation. He then seeks to determine, with reason as his guide, the truth-value of the idea of God — whether He actually exists, what His nature is, what His relation is to the world. This investigation gives rise to the philosophical science of *theodicy*.

Theodicy — Natural Theology

The department of philosophy treating of God usually is designated either ‘theodicy’ or ‘natural theology.’ The name *theodicy* was introduced by Leibnitz (*Essais de Théodicée sur la bonté de Dieu, etc.*, 1710), and the literal meaning of ‘theodicy,’ as used by him, is ‘the justification of God’ (Gr., θεός, God, and δίκη, right, trial, justification). Leibnitz maintained that the existing order of the universe is the best which God in His omnipotence and providence could possibly devise. Many writers attacked this extreme optimism, pointing out that the many physical and moral evils present in the world disproved such an exaggerated position. He thereupon wrote his *Essais de Théododicée* as a ‘justification of God,’ attempting to show that the physical and moral evils of the world are no valid argument against the optimism he advocated. While Leibnitz’ optimism has passed into the limbo of discarded philosophical opinions, his term ‘theodicy’ has survived in a different meaning.

In the course of time, the name ‘theodicy’ was given to any treatise or book which vindicated man’s belief in God and sought to refute the manifold objections raised against this belief, whether these objections were urged against His

existence, His providence, or any of His perfections. Gradually, then, the name was used to signify 'the science of God' as a distinct department of philosophy treating of God in His existence, His nature, His attributes, and the relation of creatures to Him. It is in this broadened meaning, as the *philosophical science of God*, that the term 'theodicy' is used in our day, and so it is used in this book.

Another name used to designate the philosophical science of God is *natural theology*. Strictly speaking, the term 'theology' should be sufficient for the purpose, because 'theology' means the science of God (Gr., θεός, 'God, and λόγος, treatise, science). However, the term 'theology' more frequently designates the application of reason and of the reasoning process to truths furnished by supernatural revelation. As a consequence, it has become customary to distinguish between 'dogmatic (supernatural) theology' and 'natural (philosophical) theology.' Many philosophers dislike the term 'theodicy,' claiming that it is too narrow in meaning. They prefer the term 'natural theology' as more expressive of the true meaning of this specific department of philosophy. On the other hand, many philosophers dislike the term 'natural theology' because of the possibility of confusion with dogmatic theology. Both terms, 'theodicy' and 'natural theology,' are current, and their meaning is identical. Names are of minor importance, so long as their signification is clear and unambiguous.

Theodicy as a Science

Briefly, theodicy or natural theology can be defined as the *science of God*. Since a science is an organized body of distinct truths regarding some special object of thought, theodicy is rightly called a 'science.'

The special object treated in theodicy is *God*. Such an object involves many problems and the proper solution of them. The truths discovered, when arranged into a system, form a true science. Nowadays, it is customary to speak of 'the sciences' as referring almost exclusively to the physical sciences, but such a use of the term 'science' is too restrictive and therefore unwarranted. A science is distinguished from mere experience. Experience pertains to isolated facts and the truths immediately evident in these facts. A science is based on fundamental principles, and these principles are applied to the facts in question, so that the final result of the investigation is a body of proved truths concerning a general subject-matter, resting on fundamental principles and arranged into a system. Such is the nature of the physical sciences, and such is also the nature of theodicy.

As a rule, the popular knowledge of God is altogether too human in conception: it is steeped in 'anthropomorphism,' because God is endowed too much by man with purely human characteristics. Man's knowledge begins in the senses, and material things are the connatural object of his intellect. He is at home in the material world, and it is only with difficulty that he attains to the immaterial. It is the purpose of theodicy to penetrate, so far as reason will permit, into the immaterial world of God's being (if He is found to exist) and strip this knowledge of all extraneous

and false notions. Not opinions and passing experiences, but certainties and scientifically established truths are the aim of theodicy as a science.

Some authors object to calling theodicy a 'science,' contending that it is an integral part of the general science of metaphysics. It is true that theodicy presupposes the principles of metaphysics and applies them to the special subject-matter of 'God.' Nevertheless, the philosophical inquiry into the existence and nature of God covers a very wide, field of facts and proofs which lead to a large body of demonstrated truths capable of being arranged into a general systematic body; and that is the characteristic of a science. While, then, it may be conceded that theodicy is not an independent Science in its own right, it is really a 'science.' Botany, for instance, is a subdivision of the general science of biology; but it is also a true science.

The characteristic *distinction* between the science of theodicy (natural theology) and the science of dogmatic (supernatural) theology consists in the source of their respective truths. The theologian approaches the question of God and His nature from the standpoint of the authority of divine revelation and therefore presupposes God's existence as given. The philosopher begins with the principles of reason; with the aid of natural reason as his sole guide he seeks to determine whether God exists. Once the existence of God is proved, he seeks to find out what God's nature is, what His attributes are, and in what relationship creatures stand with reference to God. The philosopher prescind from revelation as a source of information in his investigation, relying on human reason

and its principles as his sole instrument in acquiring knowledge.

A Philosophical Science

When theodicy is called a 'philosophical science,' it is equivalent to saying that theodicy is a *department of philosophy*, together with logic, epistemology, ontology, cosmology, psychology, and ethics.

Philosophy is defined as the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason. The special natural sciences are concerned with the 'proximate' causes of things; philosophy, with the 'ultimate' reasons, causes, and principles. Philosophy begins where the special sciences end; it is the foundation of the natural sciences, because it tests the validity of the principles upon which these sciences rest. As such, it is the queen of the natural sciences. If the principles of philosophy are invalid, then philosophy itself and the natural sciences are all invalid.

No department of philosophy can be mastered with ease. It is always difficult to reduce things to their 'ultimate' reasons, causes, and principles. In the case of theodicy, however, the *difficulties* are greater than usual, because man finds it an arduous task to leave the sensible world and concentrate on spiritual and divine realities. This fact becomes evident when it is realized that even the best among the pagan philosophers failed to reach a conception of God which was true and clear. A Christian child, in many respects, has a sounder idea of the nature of God than the

greatest philosophers of antiquity, for instance, Plato or Aristotle. These philosophers lacked the information supplied by revealed religion and were forced to depend solely on their reasoning powers. The present-day philosopher, either directly or indirectly, has absorbed from Christianity so much of the true concept of God that he need not first discard a host of mythological teachings before arriving at a reasonably sure idea of what God really is. The philosopher, of course, may not use revelation directly in his analyses and demonstrations; but he can, at least, begin with the idea of God furnished by faith and see whether this idea is rational and justifiable. In this manner he will save himself much unnecessary trouble.

Theodicy is therefore defined as the *philosophical science of God, or the science of God acquired by means of natural reason.*

Scope of Theodicy

The *scope* of theodicy has already been outlined in the preceding sections. The starting-point of the investigation will be the theistic idea of God, namely, the concept of a Supreme Being who is spiritual in essence and endowed with intelligence and free-will. Theodicy does not take this theistic position for granted. It merely intends to begin with a concept of God which is generally accepted in Western civilization, instead of with some polytheistic deity found in the religion of a primitive race or of a nation long dead.

Theodicy does not assume that God exists. It must *prove God's existence beyond reasonable doubt.* The arguments

for God's existence must be based on indubitable facts and self-evident principles. Mere opinions and conjectures do not suffice; solid proofs are necessary. In no other way can theodicy formulate doctrines capable of withstanding logical criticism.

The existence of God having been definitely established, the next step will be to show what *God's nature* is. Since God cannot be seen or perceived, man's knowledge of His nature can only be indirect and mediate. Still, the very nature of creatures will reveal many things about Him. If it can be proved that the universe owes its being and existence to God, creatures will of necessity mirror God's *perfections* in some degree, and man can reason from the perfection of creatures to the perfections of God. Reason can thus arrive at a true knowledge of God and His nature, even though this knowledge be very incomplete and fragmentary.

After the examination of God's nature, theodicy naturally proceeds to a discussion of His operations. The nature of a being is the source of its operations: as a being is, so it does. In this respect, reason can argue either from the effect to the cause or from the cause to the effect. Thus, from the destruction caused in a city by a bomb, one can legitimately draw a conclusion as to how the bomb operated; similarly, from a thorough knowledge of the construction and charge of a bomb, experts can foretell what the bomb will do when it hits a city. So, too, man can draw valid conclusions about the operations of God by studying the universe as the effect of God's creative power (if the world is the result of creation), and he can also draw

valid conclusions about the operations of God from a scrutiny of God's nature.

Object of Theodicy

Every science has a 'material' and 'formal' object. The *material object* of a science is the general subject-matter which it treats. As a rule, a number of sciences occupy themselves with the same general subject-matter. For example, geology, geography, and geogony have the earth as their material object, because each of these distinct sciences treats of the earth in one way or another: geology is the science of the rock formations of the earth; geography, of the structural features of the earth; *geogony*, of the origin and development of the earth. Hence, the earth is the material object common to all these sciences. The *formal object* of a science is that special aspect of the common (material) object which is distinctive for a particular science, so that this science thereby differs from every other science and becomes specifically this definite science. In the example just given, the formal object of geology is the rock formations; of geography, the structural features; of geogony, the origin and development (of the earth).

As a science, theodicy also has a material and a formal object. The 'material' object of theodicy is 'God,' and this object it has in common with supernatural theology. The 'formal' object of theodicy is 'God *as known by natural human reason*,' because this characteristic distinguishes

theodicy from the kindred science of supernatural theology and makes it a specifically distinct science.

The Method of Theodicy

The two methods which can be employed in scientific research are 'induction' and 'deduction.'

Induction, or analysis, is defined as a process of reasoning in which one concludes from individual cases to the existence of general laws or principles. Induction passes from the concrete to the abstract, from the complex to the simple, from the particular to the universal, from the contingent to the necessary, from the applications of a principle to the principle itself, from the phenomena to the underlying general law, from the effect to the cause. This method gives rise to the analytic, experimental, inductive sciences, and it is the primary method used by the physical sciences throughout a great part of their research into the problems of nature. Chemistry, for example, is an inductive science in its experimental work.

Deduction, or synthesis, is the process of reasoning in which one concludes from the general law or principle to a particular instance falling under the general law or principle. It proceeds from the abstract to the concrete, from the simple to the complex, from the more general to the less general, from the necessary to the contingent, from the 'logical whole' to the 'logical part,' from the principle to the applications of the principle, from the general law to the individual cases, from the cause to the effect. Sciences which employ primarily the synthetic method are called the

rational or deductive sciences. Mathematics, for instance, is a deductive science because it begins with a few fundamental ideas and axioms and, without the aid of observation and experiment, gradually builds up a most profound and complicated system of truths.

If the physical sciences are called 'inductive,' it is due to the fact that their predominant method is induction. No science, however, is exclusively inductive or deductive; every science uses both induction and deduction, though in different proportions.

The science of *theodicy* uses both *induction* and *deduction*. In proving God's existence, theodicy begins with the physical universe and the manifold effects observed in it and reasons to the cause which alone can give an adequate explanation for their presence, namely, the First Cause or God. Similarly, from the beings of the universe, theodicy argues to the nature of God. So far the method employed is 'induction,' because the process of reasoning passes from the effect to the cause. From that point on, however, the philosopher uses 'deduction' to a great extent, arguing from the nature of God to His attributes and operations. The philosopher, like the scientist, employs whichever method is best under the circumstances for the establishment of truth. Both methods are legitimate procedures.

Postulates of Theodicy

All sciences rest upon certain postulates. A *postulate* is a proposition which is either self-evident or which is taken

over without proof by one science from another science because it has been proved by this other science. The physicist, for instance, presupposes the validity and truth of mathematics in his own science; the principles of mathematics thus are 'postulates' of the science of physics.

Some philosophers object to the use of the term 'postulate,' as having a definite Kantian meaning. Immanuel Kant (1724—1804) understood by a 'postulate' a proposition or hypothesis which, even though unproved and unprovable, must be accepted as true. Thus, according to Kant, the existence of God, the freedom of the will, and the immortality of the human soul are indemonstrable, but belief in their truth is necessary for man so that he can intelligently perform his moral duties. Obviously, our use of the term 'postulate' is not taken in this Kantian sense, as will be seen from its definition as given above. Kant illegitimately restricted its meaning, just as he used the term 'category' in a sense radically different from 'category' as traditionally used in logic.

When a term is properly defined and is used according to this definition, no one can seriously object to it, so long as this use is historically justifiable. Scientists commonly use the term 'postulate' in our sense.

The postulates of theodicy are the *existence of the physical world* and the *trustworthiness of human reason* in its search for facts and truth. These postulates can rightly be presupposed by theodicy, because they have been definitely established in epistemology, another department of philosophy.¹

The entire argumentation of theodicy is based on the reality of the physical world. And the instrument of argumentation is human reason. If the physical world is not objectively real, it would be futile to conclude from the existence and nature of the physical world to the existence and nature of God as its cause. If human reason were untrustworthy in its deliverances, no amount of argumentation would be valid. The philosopher, however, need not go to the trouble of proving the existence of the physical world and of the trustworthiness of reason, when a separate department has already proved their validity. This was done in epistemology. There it was shown that the existence of the physical world and the trustworthiness of man's reasoning powers are not unwarranted assumptions and presuppositions, but are eminently rational and philosophically well grounded. They are, therefore, valid and logical *postulates of theodicy*.

The student may, at times, find theodicy taxing and difficult. However, this cursory explanation of the notion and scope of theodicy should be enough of an indication that such a study is worth every effort one may put into it.

Summary of Chapter I

In order to understand the purpose of theodicy, one must be clear as to its *notion* and *scope*.

1. *Theodicy — Natural Theology.* — Strictly speaking, the term ‘theodicy’ means the ‘justification of God.’ Gradually, however, this meaning has been broadened, so that at present it signifies the ‘philosophical science of God.’ That is also the signification of ‘natural theology.’

2. *Theodicy as a Science.* — Since theodicy is an organized body of distinct truths regarding a special object of thought, namely regarding God, it is rightly termed a ‘science.’ Theodicy (natural theology) uses human reason and its principles as the sole instrument in acquiring knowledge; dogmatic (supernatural) theology approaches the question of God and His nature from the standpoint of divine revelation.

3. *A Philosophical Science.* — Theodicy is a department of philosophy, and philosophy is the science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason. It is in this manner that theodicy treats of God, and it is defined as the *philosophical science of God or as the science of God acquired by means of natural reason*.

4. *Scope.* — Theodicy seeks to determine the truth-value of the concept of God; whether God *exists*; what His nature and perfections are (if He exists); the extent of His operations.

5. *Object of Theodicy*. — The material object of theodicy is 'God'; the *formal* object is 'God as known by natural human reason.

6. *Method of Theodicy*. — In investigating God's existence and nature, the philosophic method is *induction*. Arguing from God's nature to His attributes and operations, the method used is mainly that of *deduction*.

7. *Postulates of Theodicy*. — A *postulate* is a proposition which is either self-evident or which is taken over without proof by one science from another science because it has been proved by this other science. The postulates of theodicy are the existence of the physical world and the trustworthiness of human reason.

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Smith, Gerard, *Natural Theology*, Introduction. — Renard, Henri, *The Philosophy of God*, Foreword and Introduction. — Brosnan, Wilham, J., *God and Reason*, Introduction. — Joyce, George Hayward, *Principles of Natural Theology*, Part I, Chap. I.

¹ See the author's *Reality and the Mind* (Milwaukee: The Bruce Publishing Co., 1936).

Chapter 2

FIRST PRINCIPLES

EVER SINCE DESCARTES ASSUMED THAT MAN CONSISTS OF MIND and matter as two distinct substances, it has been taken for granted in many philosophical and scientific circles that man can know only his own internal conscious states.

Theoretically, such an assumption may seem plausible. Practically, however, it is unlivable. In his daily life every philosopher and scientist is a confirmed realist; he treats the external world as existing and knows a great deal about it. The excessive cleavage between mind and body, as assumed by Descartes, does not exist. Nevertheless, the influence of Descartes's teaching still continues.

Because science has made such marvelous progress during the past century, many scientists consider 'scientific' knowledge to be the only source of truth worth bothering about. 'Metaphysics' is anathema. Some scientists, and even philosophers following the scientific trend of the times, deny or doubt the validity of anything like the First Principles of being and thought: such principles are 'metaphysical' and as such are condemned without a proper hearing. Yet the First Principles are necessary for all thinking, whether scientific or philosophical.

Before beginning with the proofs of God's existence, it will therefore be necessary to establish the *validity of the First Principles*.

First Principles

Man makes many types of judgments. The 'binding force' of these judgments is by no means the same in all cases.

Some judgments are *contingent* in character; they are true, but their truth is not necessary. Consider these judgments: 'The sky is overcast today'; 'My food is warm and tasty'; 'This man wears an overcoat'; 'The boy is running.' In making such judgments we realize that the connection between the subject and predicate in each case is not necessary. The judgments express actual facts, and as such they are true; but the facts could be different, because they are 'contingent,' and then the judgments would also be different. Facts of this kind can be discovered only by *experience*; not by means of an analysis of subject and predicate.

Other judgments are *necessary* in character; they are true, and they are necessarily true. Such are, for example, the judgments: 'The whole is greater than any single one of its parts'; ' $2 + 2 = 4$ '; 'A circle is round'; 'A cube has three dimensions.' We judge such statements to be true independently of all existential conditions and all experience. They are true not only here and there, now and then, for this and that mind; they are immutably and necessarily true, everywhere, always, for every mind, without possibility of change or error.

Among the necessary judgments philosophers also place the *First Principles*. They are termed 'first' because they are the foundation of all reality and thought. The First Principles are:

The Principle of Identity: 'Whatever a thing is, it is'; 'Everything is identical with itself.'

The Principle of Contradiction: 'A thing cannot be and not be the same thing at the same time under the same respect.'

The Principle of Excluded Middle: 'A thing either is or is not (something).'

The Principle of Sufficient Reason: 'A thing must have a sufficient reason for its being and existence.'

The Principle of Causality: 'Whatever happens or becomes must have a cause for its happening or becoming.'

Like all necessary judgments, the truth of these First Principles does not depend upon our 'experience' for their discovery. If we understand the meaning of the subject and predicate of each statement, the truth should be evident through an *analysis* of the subject and predicate. The first three are comparatively simple; the last two are an amplification and application of the first three.

The First Principles are of extreme importance for all knowledge, for without them knowledge of whatever kind would be utterly impossible. For this reason the *self-evidence* of the First Principles will now be discussed.

The Principle of Identity

The *Principle of Identity* states: 'Whatever a thing is, it is.' It expresses the self-evident truth that a 'being, whatever it is, is identical with itself.'

The Principle of Identity is grounded on the concept of *being*. 'Being' is the noun taken from the verb 'to be,' and 'to be' means 'to exist' or to be 'capable of existence.' Obviously, whatever actually exists is 'capable of existence.' A thing, however, may not actually exist although it is 'capable of existing' and for that reason it also is a 'being'; such, for instance, would be the case of a flower which will or may bloom next spring.

The *opposite* of 'being' is *non-being*. 'Non-being' may be so either in a relative or absolute sense. A relative non-being is something which does not now actually exist, either because it has ceased to exist (for example, the past generation of men) or has not as yet received existence although it can exist (for example, the future generation of men); such a being, because it is 'capable of existence,' is also by that very fact a 'relative being.' *Absolute non-being* (or, *absolute nothing*) neither actually exists nor is 'capable of existence'; its very idea involves the impossibility of existing (for example, a 'one-dimensional cube,' since a 'cube' necessarily implies three dimensions).

Hence, expressed negatively, 'being' is that which is opposed to 'absolute nothing'; expressed positively, 'being' is anything which has actual or possible existence. It is thus seen that the idea of 'being' always contains a positive (actual or possible) relation to existence, while the idea of

‘absolute non-being’ contains no relation whatsoever to existence.

From the foregoing analysis it is evident that ‘being is identical with itself,’ and this fact gives rise to the *Principle of Identity* which is valid both in the realm of reality and, as a consequence, in the realm of thinking. Concretely, the principle is expressed by people in phrases like the following: ‘Iron is iron’; ‘East is East, and West is West’; ‘Justice is justice, and injustice is injustice, no matter what people say or do.’

Many philosophers consider the Principle of Identity to be merely a tautological statement. Others deny this. Because the arguments of both sides are rather abstruse,¹ we will pass on to the Principle of Contradiction.

The Principle of Contradiction

The *Principle of Contradiction* (or *Non-contradiction*, as others prefer to call it) is based on the comparison between ‘being’ and ‘non-being’ and reads: ‘A thing cannot be (something) and yet not be (it) at the same time under the same respect.’

When we compare ‘being’ with ‘non-being,’ we intuitively behold that the one is not, and cannot be, the other. We see the evident truth that ‘being is not non-being’ and that these concepts mutually exclude each other with *absolute necessity*: something ‘that is’ can never be something ‘that is not.’ Since ‘being’ and ‘non-being’ can never be identical, but must be universally and necessarily in opposition to each other, we express this self-evident

truth in the Principle of Contradiction: 'A thing cannot both be and not be (something) at the same time under the same respect.' This principle flows immediately from the concept of 'being,' and the concept of 'being' itself is drawn from objective reality; consequently, the principle itself governs the entire realm of objective reality.

The Principle of Contradiction also governs the entire realm of *thought*. Its validity is a *pre-condition for all knowledge*. Knowledge consists essentially in judgments and inferences, and these will never be valid if the Principle of Contradiction is not valid.

The Principle of Contradiction cannot be 'demonstrated.' A *demonstration* is a mediate inference in which a conclusion is drawn consistently from true premises; and the conclusion is presumed to be less known than the truth contained in the premises. The premises, however, would neither be true nor consistent, if the Principle of Contradiction were not already validly in force in the premises. 'Truth' implies that there is a difference between 'truth' and 'error,' and 'consistency' implies that there is a difference between 'consistency' and inconsistency.'

On the other hand, *no demonstration is needed* to establish the truth of the Principle of Contradiction; its truth is *self-evident*. A mere analysis of 'being' and 'non-being' suffices to establish its truth, since the intellect perceives intuitively that 'being' and 'non-being' are never the same thing. When something is perfectly clear in itself (as the Principle of Contradiction is), no 'demonstration' is needed to prove its truth: 'self-evidence' is the proof, and that is better than any demonstration.

Moreover, no one can sincerely deny or doubt the validity of the Principle of Contradiction without presupposing and affirming its validity in the very *denial or doubt*. Whoever 'denies' the truth of this principle thereby claims that his denial is the truth' and that the principle as advocated is an 'error.' Such an assertion, however, implies that 'truth' is not 'error' and error is not 'truth'; but that assertion is obviously based on the very principle which is denied, namely, that 'A principle cannot both be true and not true at the same time under the same respect.' The same thing happens to anyone who 'doubts' the truth of this principle. In doubting its truth, he implies that his reasons contain 'truth' and not 'error,' and that means that he implies that the Principle of Contradiction is valid in his doubt.

The fact is simply that the Principle of Contradiction is so necessary as a pre-condition of all thinking and all knowledge that without it we can 'know' nothing. The failure to accept this principle makes common knowledge, science, and philosophy impossible and involves the mind in *universal skepticism*. Once we admit universal skepticism, however, we may as well quit thinking entirely, for any theory or attitude which leads logically to the absurdity of universal skepticism is doomed.

The Principle of Excluded Middle

The *Principle of Excluded Middle* is expressed in different ways by different writers: 'A thing either is or is not'; 'Everything must either be or not be'; 'Any attribute must

be either affirmed or denied of any given subject'; 'Two contradictories cannot be false together'; 'One of two contradictories must be true'; 'Between affirmation and denial there is no middle course'; 'Between two contradictories a middle is excluded.' The only difference between these various statements is that some pertain more to the logical order and others more to the real order. Inasmuch as the 'logical' order of knowledge (ideas, judgments, inferences) is representative of the 'real' order (actual or possible things), both types of statements express fundamentally the same truth.

The Principle of Excluded Middle is an *immediate inference* from the Principle of Identity and the Principle of Contradiction. If it is self-evident that 'being is being' and 'non-being is non-being,' and if it is self-evident that 'A being cannot both be and not be (something),' it is also self-evident that 'A being either is or is not (something).' There is no middle thing possible between 'being' and 'non-being'; it is either the one or the other. There is no stage or state possible between 'is' and 'is not'; it either 'is' or it is not.

The reason is simple. 'Being' and 'non-being' constitute a *complete division of all things*. 'Being' includes everything actual and possible, everything conceivable. 'Non-being' is the negation, or denial, of everything actual and possible, everything conceivable; it signifies absolute nothingness. The division being so complete, it is obvious that there can be no medium or third category between 'being' and 'non-being.' If something is anything at all conceivable, it is a 'being'; if it is not a 'being,' it is nothing or 'non-being.'

Anything conceivable must be either the one or the other; it cannot be both, and it cannot be neither.

Even the merely *possible* is a 'being,' not absolute nothingness, because it has a positive relation to existence. In so far as the 'possible' has no actual existence, it is a 'relative non-being'; but in so far as it can receive existence, it is a 'relative being': in no case, however, is it 'absolute non-being.' When speaking of the 'possible' as a 'relative being' and a 'relative non-being,' we are not speaking of the same thing *under the same respect*, and so the Principle of Contradiction is not violated. In an 'absolute' sense, the 'possible' is always a *being* and is not a middle thing between 'being' and 'non-being,' because it is always a 'possible *being*.' It is thus seen that even the merely 'possible' does not violate the Principle of Excluded Middle.

In the realm of *knowledge* every attribute used as a predicate must be either affirmed or denied of any given subject; it cannot be both affirmed and denied under the same respect. Take, for example, the attribute 'chemical element.' Everything conceivable as a subject must either be a 'chemical element' or 'not a chemical element.' Thus, silver, oxygen, helium, gold — all are chemical elements. Water, salt, zinc, coal are compounds, not elements; protons, electrons, mesons are sub-elemental particles, not elements. Possible beings must be one or the other; plutonium, even before it was made by man from uranium, belonged to the class of chemical elements. No matter what attribute is applied to a subject (for instance, 'red,' 'triangle,' 'round,' 'spiritual,' 'book,' etc.), all things conceivable must either possess the attribute or not possess

it. No being exists or can exist which would both possess and not possess the attribute; and no being exists or can exist which would neither possess nor not possess it: such a 'middle' would obviously violate the Principle of Contradiction, because it would both 'be' and 'not be' something simultaneously under the same respect.

To deny or doubt the validity of the Principle of Excluded Middle, whether in the realm of reality or in the realm of thought, leads to absurdity. The principle is *self-evident* and as such *true*.

The Principle of Sufficient Reason

The *Principle of Sufficient Reason* reads: 'A thing must have a sufficient reason for its being and existence.' Gottfried W. Leibnitz² (1646—1716), who did much to make this principle better known, called it *determining reason* (*la raison déterminante*) rather than 'sufficient reason,' and his terminology seems to be a better phrase for expressing the meaning of the principle. German philosophers speak of the *sufficient ground* (*zureichender Grund*) in the sense of a 'sufficient basis or foundation.' 'Sufficient reason' refers more to the inquiring intellect and accounts for the *intelligibility* of a being, while 'sufficient ground' refers more to the reality of a being and accounts for its *existence*. Since, however, thought (intelligibility) follows being (nature, essence) and since only a being can have existence, the different expressions used in the formulation of the principle amount to the same thing.

The Principle of Sufficient (Determining) Reason is a necessary corollary from the Principles of Identity and Contradiction. To deny or doubt the validity of the Principle of Sufficient Reason would inevitably lead to the *absurdity* of denying or doubting the validity of the Principles of Identity and Contradiction, because it is *immediately derived* from these two self-evident principles.

‘Being is being’ and ‘non-being is non-being’ (Principle of Identity). It is impossible for a thing ‘to be’ and ‘not to be’ something at the same time under the same respect (Principle of Contradiction). Now, if a thing has not a sufficient (determining) reason for its being and existence, it both ‘is’ and ‘is not’ at the same time under the same respect. That is impossible and therefore absurd. Consider the following.

Everything, in so far as it is a ‘being,’ has reality. Whatever reality a ‘being’ has, it must have either of and by *itself* or from and by *another* being; in the first case it has the *sufficient reason* for its reality in itself, and in the second case it has it in the other. And if it has no reality, it is no ‘being’ at all, and this is due to the fact that it has not received reality either of itself or from another being; in both cases it is a ‘non-being’ because it has *no sufficient reason* for its reality. If it could have reality nonetheless, it would have to receive it from ‘nothing.’ But ‘nothing’ has no reality itself and can, therefore, never give reality to anything. Consequently, were such a reality without a sufficient reason for its being and existence, it would both ‘be’ and ‘not be’ at the same time under the same respect: it would ‘be,’ because that is the supposition; and it would

also 'not be,' because, having no sufficient reason to account for its reality except 'nothing,' it could receive only that which 'nothing' could give, which is precisely nothing. But 'to be' and 'not to be' at the same time under the same respect is a violation of the Principle of Contradiction; and that is an absurdity. Hence, if a being has reality, it must have it either of itself or from another, i.e., it must have a *sufficient reason for its being and existence*.

Since everything must have a sufficient reason for its 'being,' there must be a determining reason why a thing is what it is. This principle applies to everything present in the being —nature, properties, and qualifications. Hence, there must be a sufficient reason which explains why a man is a 'man,' why he is rational' (soul) and 'material' (body), why he is 'white' or 'married' or 'healthy' or 'sad.' Similarly, there must be a sufficient reason which explains why an electron is an electron and a proton a proton, why a circle is a circle and a triangle a triangle, why a horse is a horse and a rose a rose, and so forth. We may not always be able to assign the proximate reason for the being and existence of things, but we do know this: 'Every being has a sufficient, determining reason, either in itself or in another being, for the reality and existence which it possesses.'

The Principle of Causality

The *Principle of Causality* states: 'Whatever happens or becomes must have a cause for its happening or becoming.' The words 'whatever happens' mean 'whatever begins to be or to exist'; and the word 'becomes' means 'whatever

passes from potentiality to actuality,' as when a sitting person gets up and starts to run. The word 'cause' here signifies an 'efficient cause, and it is defined as a being which positively influences the production of something by its action. Hence, the Principle of Causality might also be formulated as follows: *Whatever passes from a state of non-existence into a state of existence must have an efficient cause for its existence.*

This latter formulation includes every kind of real production, whether absolute or relative. A real production is absolute, if the 'total being' passes from non-existence to existence without being produced out of the potentiality of pre-existing matter; this is 'creation.' It is *relative*, if the being is produced out of the potentiality of pre-existing matter, or if it passes from one kind of being into another kind of being; this is 'change.' In *substantial change* one substance passes over into another kind of substance, as when dead matter is assimilated and becomes living matter in a living body, for example, in an oak tree. In accidental change the substance remains unchanged in the process but acquires some new property or attribute, as when a person becomes sad or joyful. In either case the principle demands an *efficient cause* to account for the production of the *new reality which has come into existence.*

The *problem* revolves around realities which are or have been existent' but which were previously in a state of non-existence, so that they have ceased to be merely 'possible'; such a reality, whatever it may be, passes from non-existence to existence, and it is this that must be accounted for. The problem, therefore, is: Must every being passing

from non-existence to existence, whether absolutely or relatively, be brought to existence *through the active influence of an adequate efficient cause*? The answer is affirmative.

By the very fact that a being passes from non-existence to existence, it is assumed and stated that at first it was *nonexistent*. In that state it was as such only *possible*, that is to say, 'capable of existence.' In this state of possibility, 'existence' was not present in any form within the possible being; other-wise it would have been existent at the very time it was nonexistent, which is impossible because contradictory. If and when this non-existent but possible being passed into a state of existence, it must have *received* existence (because it did not have existence in its own being). Now, there are only three conceivable ways in which this possible being could have received existence: either it received it from '*nothing*,' or from '*itself*,' or from '*some other being*.'

It is impossible that it could have received existence *from 'nothing'*. If this possible being depended on 'nothing' for its existence, it could never receive the perfection of existence and would remain forever merely possible, i.e., non-existent.

It is also impossible that it could have received existence from '*itself*.' A possible being, from the standpoint of physical actuality, is nothing; this lies in the fact that it is only a *possible* being. As a 'possible' being it is as yet in a state of nonexistence, and it becomes 'actual' by receiving existence. If it were to give itself existence, it would be necessary that it *produce itself*. A being, however, that does

not as yet exist and is actually nothing, cannot act. Hence it cannot produce anything, least of all itself. Consequently, a being which passes from non-existence to existence cannot receive this existence from 'itself.'

The sufficient reason, why a possible being passes from nonexistence to existence, is not found in 'nothing,' nor is it found in this possible being 'itself.' Hence, by a process of elimination, it is clear that '*some other existing being*' must give existence to it. To 'give existence,' however, means to *produce it* by the positive influence of *its action*. If it did not exert a 'positive influence of its action,' it would not do anything and could not *give* anything; but in that case nothing would happen to the possible being, and the latter would remain in its state of mere possibility, which is non-existence. This other being must, then, be an *existing* being itself and *give existence* to the possible being by means of a *positive productive influence*. But to produce a being, that is, to bring it from non-existence to existence, by the positive influence of its own action, is the definition of an *efficient cause*.

The truth and validity of the Principle of Causality is thus established: 'Whatever passes from non-existence to existence must have an efficient cause for its existence.'

Basic Concepts and First Principles

This analysis of the First Principles, from the Principle of Identity to the Principle of Contradiction, enables us to fix the meaning of certain basic ideas which will play an important part in subsequent discussions.

There is the idea of the *impossible*. Something is said to be 'impossible' when its concept involves a contradiction, so that it *cannot exist* under any conditions and circumstances. A 'square circle,' for example, is contradictory in its very idea, and as such it has never existed and can never exist. Then, there is the idea of the *possible* being. Something is 'possible' when it does not exist but is capable of existence, so that it *can exist*. A 'mountain of gold' does not exist and probably never will exist; but it is capable of existence and therefore is 'possible.' When a 'possible' being receives existence, it is no longer merely possible but 'actual.' Even as an 'actual' being, however, its existence is a 'received' or 'produced' existence, and such a being is called *contingent*; a 'contingent' being is one which *exists* but *need not exist*. Plutonium, for instance, now exists; but a few years ago it did not exist, and the time may come again when it will no longer exist. Finally, there is the necessary being. A being is said to be 'necessary,' when it actually *exists* and also *must exist*. A 'necessary' being has always existed in the past, exists now in the present, and will always exist in the future, because existence is a constitutive part of its nature or essence.

According to the Principle of Causality, then, neither the 'impossible' being nor the 'necessary' being can ever be the *effect* of an efficient cause. The 'impossible' is absolute nothingness, so that there is no essence to receive existence. The 'necessary' being cannot receive existence, because it must always exist; what already 'is' cannot be produced.

By contrast, a 'contingent' being and a 'possible' being have a reality in which existence is not a constitutive part (not a part of the constitution) of their nature or essence, so that their existence, if and when it happens, must be produced by an efficient cause.

Empiricism

John Locke opposed Descartes's theory that all knowledge of man is derived from innate ideas. He contended that knowledge comes solely from *experience*. But he followed Descartes when he maintained that the 'object' of man's knowledge is restricted to internal conscious states, to 'ideas.' Locke's views gave rise to empiricism.

Strict *empiricists*, like Hume, admit nothing but sense-knowledge of phenomena. For them there is no such thing as a supra-sensible, or intellectual, knowledge. 'Ideas' are but refined sense-images; consciousness is a bundle' or stream of perceptions. Since all phenomena are but passing, changing realities, there can be no permanent and necessary knowledge in any form. Their theory of sensism precludes all knowledge which would possess a universal and necessary character. Yet it cannot be denied that we consider the *First Principles to be necessarily and absolutely true*. How account for this fact?

Hume finds their origin and explanation in the *association* of our ideas. Certain ideas or images are always experienced as occurring together; certain phenomena always appear in a regular sequence of time or in a definite contiguity in space. Thereupon we uniformly and

continuously 'associate' these things in our mind. This is done in virtue of the *law of association* inherent in the mind itself, because the mind is so constituted; and this is a subjective law with a purely subjective effect. Consequently, the 'necessity' of the First Principles is not due to the reality represented in these principles, but solely to the *associative force* existing in the mind. It is a *subjective* and *psychological*, not an objective and ontological, necessity. The mind does not judge these First Principles to be necessarily true because it sees that they cannot be otherwise; it cannot see them to be otherwise because the mind in its present constitution must judge them to be true. There is nothing *intrinsically* impossible in an object having contradictory properties or in a thing coming into existence without a cause.

Here is the *argument* Hume³ uses in order to show that the transition from non-existence to existence does not necessarily involve a 'cause.'

"The separation ... of the idea of cause from that of beginning of existence is plainly possible for the imagination; and consequently the actual separation of these objects is so far possible that it implies no contradiction or absurdity; and is therefore incapable of being refuted by any reasoning from mere ideas; without which 'tis impossible to demonstrate the necessity of a cause... As all distinct ideas are separable from each other, and as the ideas of cause and effect are evidently distinct, 'twill be easy for us to conceive any object non-existent this moment and

existent the next, without conjoining to it the distinct idea of a cause or productive principle.”

— DAVID HUME

In analyzing this argument, one must remember that all knowledge, according to Hume, is *sense-knowledge*; and when he speaks of ‘ideas,’ he means the vague copies of sense-impressions which exist in the *imagination*. What Hume means to say, therefore, is this: We can *imagine* something as non-existent one moment, and we can imagine it as existent the next moment; consequently, we can imagine it as coming into existence without a producing cause; and hence a productive cause is not necessary. To put it concretely: We can imagine a man as non-existent one moment and then as existent the next moment; consequently, parents and any other kind of cause are not necessary to bring this man into existence.

Imagination, and *not reason*, thus furnishes the ultimate criterion of what is real and not real, possible and not possible. Certainly, one can *imagine* something coming into existence without imagining its cause. That, however, does not prove that something can actually come into existence without a cause; it merely means that I have ‘imagined’ an effect with out ‘imagining’ its cause, but *reason* alone can tell me whether something can really come into existence as I ‘imagine’ it.

According to Hume,⁴ J. S. Mill,⁵ and empiricists generally (and this includes many present-day scientists), the Principle of Causality is but a mental expression of

‘invariable sequence’: because we observe things following each other invariably in time, we are compelled by the law of association to judge that the preceding object produces (cause) the one following (effect). And so it is with all First Principles. If we think that these principles *must* be true for all times and in all places and for all minds, we are harboring an illusion; for other minds, in other places, at other times, and under other conditions, the First Principles may not be true at all.

Empiricism fails to give an adequate account of the logical necessity existing in our judgments as expressed in the First Principles. If the theory were correct, we should perforce experience the same psychological necessity of judgment *in every case* where we observe a uniform and constant association of objects or ideas in our consciousness. This, however, patently is not the case. For instance, day follows night in an invariable sequence; however, nobody thinks that night is the ‘cause’ of day. Cars follow each other in invariable sequence on the highway on a Sunday afternoon, yet no one applies the Principle of Cause and Effect to them. Every time we lift our eyelids during the day, we invariably see; nevertheless, we do not judge that the lifting of the eyelids ‘causes’ our actual ‘seeing.’ On the other hand, we feel the necessity of applying the Principle of Causality in *isolated cases* that happen seldom and even only once. When a car, for example, suddenly ceases to run, we immediately look for the ‘cause.’ When a train leaves the track, we do not need a frequent repetition of the occurrence to establish an association of perceptions; we know that there must have

been a 'cause' of the derailment, even if this was the first derailment that ever happened. And so with a thousand and one other solitary occurrences. Hence, the necessity inherent in our judgment expressing the Principle of Causality (and the same line of reasoning applies to all First Principles) is not derived from the subjective influence of the association of our ideas.

The very *arguments* the empiricists use to prove the truth of their theory are not based on 'experience' but on reasoning. These arguments are in no way 'objects of experience' derived from sense-perception; they go far beyond the reaction of the senses. The very reasons empiricists give to impugn the validity and necessity of the First Principles *presuppose* the Principles of Contradiction and Sufficient Reason; only on the supposition that the First Principles are valid have these reasons any semblance of validity. Such a procedure, however, is illogical and inconsistent. Any theory which implicitly affirms what it explicitly denies and attempts to disprove must be false, or knowledge is impossible. Hume realized this eventually and became a skeptic.

The fact is, as we stated above, that our *intellect has an intuitive insight* into the objective validity and necessity of the First Principles.

Idealistic Monism

Georg Hegel (1770—1831) was an idealistic monist. 'Monism' is the doctrine which holds that there is but one fundamental reality or being. If this reality is matter,

monism is 'materialistic; if it is idea, it is 'idealistic.' Hegel, too, followed Descartes's basic tenet that the mind is restricted to ideas. From this, Hegel concluded that all reality is the *Absolute Idea*. Through a process of logical development the Absolute Idea becomes matter (nature) and spirit (mind).

Hegel begins by identifying all reality with the Absolute idea of *Being*. In order to explain its development, he sacrifices the validity of the Principles of Identity, Contradiction, and Excluded Middle. Consider his words,⁶ in which he denies the distinction between 'being' and 'nothing.'

"The distinction between Being and Nought is, in the first place, only implicit, and not yet actually made: they only ought to be distinguished. A distinction, of course, implies two things, and that one of them possesses an attribute which is not found in the other. Being, however, is an absolute absence of attributes, and so is Nought. Hence, the distinction between the two is only meant to be; it is a nominal distinction, which is at the same time no distinction. In all other cases of difference there is some common point which comprehends both things. Suppose, e.g., we speak of two different species: the genus forms a common ground for both. But in the case of mere Being and Nothing, distinction is without a bottom to stand upon: hence, there can be no distinction, both determinations being the same bottomlessness... Nothing, if it is thus immediate and equal to itself, is

also conversely the same as Being is... In Being we have Nothing, and in Nothing Being... In Becoming the Being which is one with Nothing, and the Nothing which is one with Being, are only vanishing factors; they are and they are not."

— GEORG HEGEL

Contradiction thus lies in the very heart of Being and Idea and makes the 'becoming' or development of the Absolute possible.

Hegel identifies 'being' and 'nought' because, as he contends, "Being is an absolute absence of attributes, and so is Nought." Since there is "no distinction" between the two, both are identical. In this Hegel was guilty of a gross misconception. *Being*, as we have pointed out, always possesses the attribute of a *relation to existence* inasmuch as it 'exists' (actual being) or at least 'can exist' (possible being). *Nought* (absolute nothing) has *no relation to existence* and as a consequence never exists' and 'cannot exist.' 'Being' thus has a *positive* content; 'nought' is purely negative in content, since it represents the negation of all being. From this it should be clear that the concept of 'being' is not empty of all content and as such indistinguishable from 'nought,' as Hegel maintained. Hence, Hegel bases his whole system of idealistic monism on this initial *misconception*.

Besides, when Hegel formulates his arguments, he always (though inconsistently) *implies* that the First Principles are valid. The very fact that he identifies 'being'

and 'nought' because of their supposed indeterminateness and emptiness really *presupposes* the validity of the Principles of Identity and Contradiction. By denying, therefore, the Principle of Contradiction and making contradiction itself the basis of all 'becoming,' he not only cuts the ground from under his own system but destroys the foundation of all knowledge. After all, *thought* and *reality* are not the same, but the First Principles apply with equal force to both because the laws of thought are taken from the laws of reality.

Pragmatism

Pragmatism is a repudiation of absolutism and idealism and a return to empiricism. It originated with Charles S. Peirce in 1878, and its chief exponents are William James, F. C. S. Schiller, and John Dewey.

It is more a *method* than a philosophical system in the strict sense of the word. Still, inasmuch as pragmatism professes certain fundamental principles, it can be classed among the philosophies.

According to pragmatists, truth is nothing permanent, necessary, universal, objective, absolute; it is relative, transient, particular, subjective, personal. Truth is 'made' by means of hypothesis and experiment, so that something is 'true' if it satisfies some human need or interest and 'false' if it does not. Good or bad *consequences* are all that count. If an idea, judgment, assumption, axiom, postulate, theory, or system of thought 'works' and satisfies our mental or emotional or social needs, it is, *so far and so long*

as it does this, valuable and true. Truth is not an inherent property of ideas or judgments: *they become true and are made true by events.* Ideas, judgments, and inferences possess only a 'functional' and 'provisional' character; among such judgments are the *First Principles*. Dewey⁷ denies that we have an "immediate knowledge" of their truth, and Schiller⁸ ridicules the attitude of accepting the truth of certain propositions because we "feel it in our bones." Consequently, a conviction may be true at one stage of development and false at a different stage; it may be true for one class of people and false for another, depending on the intellectual and cultural conditions prevailing at a particular time and in a particular locality. Truth, therefore, is entirely *subjective*.

One can admit with the pragmatists that in the *field of science* it is necessary to 'verify' a certain opinion by hypothesis and experiment rather than accept a scientific conclusion as 'self-evident.' But when they deny the self-evidence and immediate knowledge of *all truths* whatever, even that of First Principles, they destroy the foundations of the *experimental sciences* together with that of *knowledge in general*. All science is based on the existence of truth and certitude. If contradictories can be true together, if a phenomenon can occur without a cause, and if nature is not uniform in its operation, then every form of experimentation and induction on the part of science is valueless from the start. Some truths must be *self-evident*, because they are 'implied' in every form of inference, whether that inference be deductive or inductive. They are

clear to the mind through *intellectual insight*, not because we “feel it in our bones.”

And pragmatists are *inconsistent*. They identify ‘truth’ with ‘utility.’ Nevertheless, they appeal to the intellect with a great array of arguments, to prove that ‘truth’ consists in beneficial results; in doing so, they appeal to the *objective evidence* of facts and reasons to establish their case. These arguments, however, have no value except under the supposition that the First Principles are true and valid. Their own attitude and action is their best refutation.

The First Principles are thus seen to be ‘necessary’ in their truth and validity. They are *not empirical*, as if their truth and validity can be discovered only through ‘experience.’ Rather, they are *analytical*, because an analysis, based on self-evidence and intellectual insight, reveals their necessary character. Once these First Principles are understood, the proofs for God’s existence will also be more readily understood.

Summary of Chapter II

Since the *First Principles* govern all reality and thought, their validity must be established.

1. *First Principles*. — Some judgments are ‘contingent’ in character, and their truth can be discovered only by ‘experience.’ Other judgments are ‘necessary’ in character; they are necessarily true and therefore without possibility of change or error. Among these are the First Principles. *The First Principles* are the Principles of *Identity*, *Contradiction*, *Excluded Middle*, *Sufficient Reason*, and *Causality*.

2. *The Principle of Identity*. — ‘Whatever a thing is, it is’; ‘A being is identical with itself.’ This principle is grounded on the concept of being, namely, something that ‘exists’ or is ‘capable of existence.’ The opposite of ‘being’ is *non-being*, *absolute nothing*, namely, something that ‘neither exists nor is capable of existence.’ Since ‘being’ always contains a positive (actual or possible) relation to existence, while ‘absolute non-being’ contains no such relation, it is clear that ‘being is being’ and ‘non-being is non-being’ (Principle of Identity).

3. *The Principle of Contradiction*. — ‘A thing cannot be (something) and yet not be (it) at the same time under the same respect.’ A comparison between ‘being’ and ‘non-being’ makes it self-evident that the one is not, and cannot be, the other; these two concepts mutually exclude each other with *absolute necessity*, because ‘being’ and ‘non-being’ can never be identical.

4. *The Principle of Excluded Middle.* — ‘A thing either is or is not (something)’; ‘Between two contradictories a middle is excluded.’ There is no middle thing possible between ‘being’ and ‘non-being,’ between ‘is’ and ‘is not’; they represent *a complete division of all things*, so that everything conceivable must be either the one or the other.

5. *The Principle of Sufficient (Determining) Reason.* — ‘A thing must have a sufficient reason for its being and existence.’ Whatever reality a ‘being’ has, it must have either of and by *itself* or from and by *another* being; in either case it has a ‘sufficient’ reason to account for its being and existence. If it could have reality without receiving it either from itself or from another being, it would have to receive it from ‘*nothing*’; but ‘nothing’ has no reality and can give no reality. Consequently, were this reality without a sufficient reason either in itself or in another, it would both ‘be’ and ‘not be’ at the same time under the same respect. Hence, every being must have a *sufficient reason* for its being and existence.

6. *The Principle of Causality.* — ‘Whatever passes from a state of non-existence into a state of existence must have an efficient cause for its existence.’ It is assumed that a being was at first *non-existent but possible*. Such a non-existent being, if it reaches existence, must receive this existence either from ‘nothing’ or from ‘itself’ or from some ‘other being.’ It cannot receive it from ‘*nothing*,’ because ‘nothing,’ having no existence, cannot give what it does not possess. It cannot receive it from *itself*, because to give existence to itself would mean to ‘act’ before it exists. Hence, it can receive existence only from *some other being*

already in existence; but if the latter did not exert a 'positive influence of its action,' it would 'do' nothing and could not 'give' anything. Consequently, a non-existent being can receive existence only through the 'positive productive influence' of another being. Now, a being which gives existence to another through the positive influence of its action is an *efficient* cause.

7. *Basic Concepts and First Principles.* — The *impossible* is something that 'cannot exist' and therefore cannot be produced. A possible being 'does not exist' but 'can exist,' and as such it can be produced. A *contingent* being 'exists' but it 'need not exist'; it is, therefore, a produced being. A *necessary* being actually 'exists' and 'must exist'; since it always has been, it could not have been produced.

8. *Empiricism.* — We judge the First Principles to be necessarily and absolutely true. Hume and the empiricists place the 'necessity' of these principles in the *Law of Association* present in the mind; the principles need not be true in themselves.

This theory is *false*. We feel the necessity of looking for the cause in *isolated* events, when no repeated occurrences happen; in such instances no 'association' can form. Finally, empiricists present arguments not based on 'experience' but on 'intellectual reasoning,' and their reasons *presuppose* the validity of the Principles of Contradiction and Sufficient Reason.

9. *Idealistic Monism.* — Hegel identifies *Being and Nought* because, as he claims, "Being is an absolute absence of attributes" and therefore identical with 'Nought.'

‘Being,’ however, always possesses the attribute of a *relation to existence* (actual or possible being), while ‘Nought’ (absolute nothing) has no relation to existence and as a consequence never exists and cannot exist. Although Hegel, in his arguments, denies the Principles of Identity and Contradiction, his arguments (inconsistently, of course) *presuppose* their validity.

10. *Pragmatism*. — According to the pragmatists, truth is subjective and provisional; a principle is ‘made true’ and ‘becomes true’ by its consequences. Even the First Principles are not necessarily true in themselves.

Pragmatism *destroys* the foundation of all knowledge and science, if the Principles of Identity and Contradiction have no objective value. Pragmatists are also *inconsistent* in appealing to the *objective evidence* of facts and reasons to establish their case.

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Chapter 3

THE POSSIBILITY OF PROOF

THE PROBLEM OF GOD'S EXISTENCE IS VITALLY IMPORTANT. THE history of human thought shows that a wrong approach either leads to serious error or ends in a blind alley.

The validity of the First Principles having been established as rationally certain, the next step will be to inquire as to the *proper method* which must be employed in proving God's existence, provided His existence can be proved at all. Some thinkers claim that man cannot prove that God exists; others, that His existence is intuitively clear to man's mind, so that a rational proof is unnecessary. Even among those who admit that God's existence can and must be proved to the satisfaction of reason, there is a difference of view as to the proper method to be used in establishing the proof. The matter of God's existence or non-existence is too grave to be left open to serious doubt concerning the proper approach to the problem.

It will be necessary, therefore, to remove some misconceptions, before a definite attempt is made to formulate the arguments for God's existence. Some of these misconceptions result from the 'scientific attitude' so

prevalent in our day; others are more 'philosophic' in nature. In either case the ground must be cleared.

Scientific Explanation

Scientists frequently state that they are concerned only with a description of *facts*, because that alone is in accord with the 'scientific temper' and the 'scientific attitude.' Science, they say, must be 'exact,' and only if science deals with facts will it be an *exact science*.

Accuracy is a necessity for any science worthy of the name. When, therefore, scientists seek to attain accuracy or 'exactness' in their findings, their endeavor is entirely praiseworthy. Hence, they seek to eliminate all prejudices and unwarranted presuppositions in their research. This, too, is praiseworthy.

However, *facts alone are not a science*. They are but the raw materials with which scientists work in order to construct a science. More is needed than facts alone. Facts must be 'correlated' and 'explained' before one can speak of having a 'science.' Relevant facts must be arranged in a definite order, and an explanation given of the operation of things, before one can speak of 'scientific knowledge.' The characteristic of science is *law*, and law is the result of the proper interpretation and explanation of facts in their relations to one another.

No real scientist is ever satisfied with a mere 'description' of facts, be these facts 'things' or 'events.' Scientists always seek to *explain why* things are as they are and events happen as they do. That is the whole purpose of

hypothesis and its *verification* by observation and experiment. Unless they sought to find an answer to the 'How?' and 'Why?' of things and events, there would be no rhyme or reason for formulating a hypothesis and proceeding to prove or disprove its truth. True to the preconceived tenet of strict empiricism, they may speak of an 'invariable sequence of antecedents and consequents'; but in reality they look for the *causes* which will explain them as *effects*.

A cursory perusal of any scientific article or book will prove that scientists attempt to give the causal *explanation* of things and events, not merely their factual or 'phenomenal' appearance and occurrence. Most astronomers, when they discuss the 'red shift' in stellar spectra, the occurrence of a 'nova' in the heavens, the movements of stars and galaxies, and other matters, almost invariably seek to give a rational 'explanation' of the phenomena. From the data as perceived and recorded, physicists and chemists proceed to 'infer' the existence and structure of atoms, molecules, and sub-elemental particles, although no one has ever actually perceived such realities. How correct their 'deductions' can be was shown by the terrific explosion of the atom bomb. Medical scientists are not content with a description of the symptoms of diseases and abnormalities, but seek to determine their 'causes' so as to remove them by surgery or medication. All scientists act in this manner, because only through inference from perceived data can their science make substantial progress; and no one will deny that substantial progress in scientific knowledge has been made.

Everyone is aware, of course, that much of the so-called 'scientific knowledge' is only approximation, resting on the foundation of hypotheses and theories which still are far from complete verification. On the other hand, many hypotheses and theories have been verified in the course of time and many more will be verified in the future. The point of the whole matter is this: *inferences are a process of reasoning*. Reason, therefore, has a legitimate place in the experimental sciences, although reasoning goes beyond the bounds of factual description. After the empirical facts are all in and have been accurately recorded, science must (and actually does) attempt to find the causal connections which 'explain' the phenomena. Man being rational, he must use whatever powers he has, including his reason, to arrive at a complete explanation of things and events through their causes.

Scientists feel satisfied with their efforts, if they succeed in specifying the 'proximate' causes of things and events present in the physical world, and they have a perfect right to restrict their field of research in this manner. But if they are justified in the restriction of their reasoning powers for the discovery of truth, they are not justified in the *restriction of reason itself*. Since reason is an adequate instrument of true knowledge in the discovery and assignment of 'proximate' causes, why should reason not be capable of penetrating farther and of discovering the *ultimate cause or causes* of the physical world? The proper test of a power is in its actual accomplishment. If reason fails in its endeavor to determine the ultimate cause or causes of the universe, well and good; but it should not be

prejudged to be incapable of doing so. After all, human reason is the same, whether it be used in the discussions of physical science or of philosophy. Philosophic knowledge is scientific knowledge, too, even though it essays to go deeper than physical science. So long as philosophy argues from the same physical world and uses the same First Principles as ordinary science does, the competency of reason must be accepted in both. To assume its competency in the natural sciences and deny its competency in philosophical science is illogical and inconsistent. Such an attitude, if accepted in principle and carried out to its inevitable consequences, would undermine the foundations of the natural sciences and lead to *universal skepticism*.

Hence, the competency of human reason in its endeavor to prove God's existence as the rational explanation of the physical world must be accepted in principle.

Deism and Agnosticism

Deism was a quasi-philosophic movement, promoted mainly by a group of thinkers in England who attacked revealed religion. *Lord Herbert of Cherbury* (1581—1648) had already defended deism, but it took the empiricism of John Locke to give it a strong impetus. Deism had no uniform system of doctrines. Chiefly, it defended a *universal natural religion*. Deists conceded that it could be proved on rational grounds that God exists and is the Creator. Many deists, however, contended that God, after creating the world, took no interest in mundane affairs. Chief among the advocates of deism were Charles Blount (1654-1693), John Toland

(1670—1722), Matthew Tindal (1657—1733), and Henry St. John, Viscount Bolingbroke (1678—1751). The movement eventually gave way to outright atheism and agnosticism.

Without passing judgment on the anti-revelationist part of deism, but merely viewing it from the standpoint of theodicy (natural theology), deism must be criticized as being *too narrow and restrictive*. It is inconsistent to admit that God's existence can be proved on rational grounds and then stop short. The deists, like the theists, prove God's existence from the character of the physical world; but the physical world may reveal many things about God besides His existence, such as divine concurrence, divine providence, and the possibility of revelation. To deny their possibility or actuality is therefore totally unwarranted.

Agnosticism has a number of meanings. Literally, it means 'lack of knowledge.' However, Thomas Huxley (1825—1895) coined the word in 1869 to mean the attitude of a person who advocated the inability of the mind to know the reality represented by man's ultimate scientific, philosophic, and religious ideas. *Modern agnosticism* is a philosophic theory which affirms the constitutional inability of the human mind to know reality, so that all investigation pertains merely to the 'phenomenal.' Behind the phenomena, most agnostics assert, is an *absolute reality* of some sort, but this reality is intrinsically *unknowable*. Such is the view of Immanuel Kant (1724—1804), Sir William Hamilton (1788—1856), Henry L. Mansel (1820-1871), and Herbert Spencer (1820—1903).

Kant divided the objects of knowledge into two general classes, 'phenomena' (appearances) and 'things-in-

themselves'; the former are all we know, the latter are inaccessibly hidden behind the phenomena and are absolutely unknowable. God is, therefore, unknowable, so far as human reason is concerned. *Hamilton* maintained that "all knowledge is relative"; of existence, absolutely and in itself, man can know nothing. Man cannot, therefore, acquire any real knowledge of God, because God is the Absolute, the Unconditioned, the Infinite; man's reasonings in this respect are mere negations of thought." *Mansel* followed Hamilton's relativism, asserting that man cannot form a positive concept of God, because man is unable to obtain an 'exhaustive' concept of God in all its 'positive' contents. While Hamilton and Mansel denied man's ability to know God on rational grounds, both affirmed that faith and revelation can impart true knowledge of God and His nature. *Spencer*, too, was a relativist. Since the 'relative' always presupposes the 'absolute' as its correlative, Spencer postulated the existence of Absolute Reality; however, neither knowledge nor belief can give man any insight into the nature of this reality, because all ideas are merely 'symbolic' of reality.

Nevertheless, he often speaks of the Unknowable as the "Power manifesting itself in phenomena."

Agnosticism rests on the fallacious basis of Hume's *unwarranted empiricism*. True, if the ideas of reality are mere constructions of the mind, so that man's mind is the sole source of all knowledge, then man's efforts to know the physical world are inextricably enmeshed in the net of *subjectivism*. But if man can perceive the external world, then his reason must be able to pierce the appearances of

things; in that case he can also know something of their nature and activity, and from their nature and activity draw rational inferences as to the nature and activity of their cause, because *every effect manifests the nature and activity of its cause* in some manner. Reason may not be able to know everything about God, but it should be able to know something, no matter how imperfectly. 'Imperfect' knowledge is not the same as 'indefinite' or purely 'negative' knowledge; though not complete, imperfect knowledge would still be true knowledge. When agnostics acknowledge that God (or the Absolute) 'exists,' or when they speak of God (or the Absolute) as the 'Unconditioned' and the 'Power manifesting itself in phenomena,' they express ideas which reveal *some* knowledge of the supposed 'Unknowable'; and thereby, on their own principles, they involve themselves in a contradiction.

Fideism and Traditionalism

Fideism and *traditionalism* are theories or attitudes which hold that human reason is incapable, of its own native ability, reaching certitude regarding any truth or at least regarding truths of the philosophical and religious order; they affirm that knowledge of truth consists in an act of *faith* (hence 'fideism'), and the supreme criterion of certitude is the authority of revelation as given to man through *tradition* (hence 'traditionalism'). Like agnosticism in general, fideism and traditionalism are based on a conviction of the natural impotence of human reason in the discovery of truths referring to God's existence and nature.

In order to combat agnosticism and empiricism, fideists and traditionalists sought the fundamental source of all knowledge of God in 'faith' and 'tradition,' rather than in the rational inferences of the human mind.

Among the chief exponents of fideism and traditionalism are Louis G. de Bonald (1754-1840), Félicité R. de Lamennais (1782—1854), L. Bautain (1795—1867), A. Bonnetty (1798—1879), G. Ventura (1792—1861), and C. Ubaghs (1800—1875). They differed in details, but their fundamental distrust of reason was the same, and so also was their demand that an act of faith in God's revelation precede any rational discussion on His existence and nature.

It does not need much reflection to see that *faith cannot precede reason* as a source and criterion of truth in philosophical and religious matters. Revelation of any kind and faith in its pronouncements can never engender conviction in the mind unless it is first clear that God exists and that He has revealed Himself. Hence, the reasonableness and validity of revelation and the subsequent act of faith must first be established; otherwise their acceptance is a blind assent. Consequently, if our assent is to be reasonable and not blind, reason must precede faith. Only if man can prove God's existence on rational grounds, will it be possible for him to know whether revelation could have occurred at all. To assume the impotence of reason as the starting-point would involve *universal skepticism*.

Ontologism

Ontologism holds that God and *Divine Ideas* are the first object of our intelligence and the intuition of God the first act of our intellectual knowledge. Ontologism stems directly from Descartes's excessive dualism, in so far as he maintained that man consists of two separate substances, namely, the body as inert extension and the soul as the exclusive source of all knowledge.

N. Malebranche (1638—1715) is commonly held to be an ontologist. He maintained that man envisions all things by means of a direct intuition of God's ideas. Just as bodies have their location in space, so our ideas have their location in God. Our ideas, he says, are the divine essence itself, inasmuch as God's essence is the model of all things. It follows from this that God is always present to our intelligence and manifests to our minds the nature and existence of all we know. *V. Gioberti* (1801—1852) also maintained that our first intellectual perception is an intuition of God as creating existences. *A. Rosmini* (1797—1855) held the view that man has a direct intuition of Being in its supreme ideality, and this innate concept or intuition makes the soul intelligent. When this Ideal Being is analyzed, it is seen to pertain to God.

The doctrine of ontologism may seem strange. Two principal reasons account for it. According to these thinkers, the presence of the idea of the 'infinite' in man's mind cannot have its origin in finite beings, because the finite does not contain the infinite; the eternity, universality, and necessity which characterize many judgments,

especially the First Principles, cannot be derived from finite reality (such a reality is temporal, particular, and contingent) but must originate in the mind from the Eternal, Universal, and Necessary Being or God.

In answer to the ontologists it must be stated that man has *no experience* of a direct intuition of God; if man had such an experience, he would have to be *conscious* of it at all times. Such an intuition of God would make all doubt or error concerning God's existence and nature utterly impossible; yet *doubt and error* in this respect can and do exist. If man knew all things in the ideas of God, man's knowledge would always be *infallibly true*, because God Himself is infinite truth. As for the reasons advanced by ontologists in defense of their position, they are based on a misconception. It is true that man has an idea of the 'infinite,' but the very word shows that it is derived from the finite ('in-finite') by removing the limitation of finiteness; hence, it must be obtained by a process of abstraction from finite beings. It is also true that our ideas and judgments frequently possess the characteristics of eternity, universality, and necessity. However, in God these attributes belong to His nature and being, while in our ideas and judgments these characteristics refer merely to their 'application to things' as a result of abstraction. Hence, these characteristics are essentially *dissimilar* to the attributes of God.

Religious Experience

Many persons appeal to *religious experience* as proof that God really exists. This experience may be either intellectual or emotional in character, and it is supposed to be 'non-inferential.' *Modernism*, for example, claims that man has a *vital experience* of God dwelling and working in him; God is present in man through 'vital immanence,' in consequence of which man is emotionally conscious of God's presence. Experience of this sort occupies considerable space in much of the religious literature of the past and present. It is claimed that many devout persons during prayer or meditation experience the presence of God in a realistic way; this is especially true in emotional crises which lead to a 'conversion.' In a similar manner, the religious experiences of 'mystics' are adduced as evidence for God's existence.

While it would be wrong to minimize the importance of religious experience in the life of individuals, its *value as evidence* is entirely too *subjective* to convince those who are not already convinced. The experience itself is incommunicable and can hardly be repeated at will. What is required is evidence of such a character that every honest inquirer can obtain it. Man being rational by nature, the evidence must be directed to his 'reason' and not merely to his emotions and intuitions. Such knowledge, therefore, must be obtained by a *process of reasoning*, by means of *inferences*. The ordinary person's inferences are often informal and spontaneous, the result of his native ability to reason; but if these inferences are valid, it should be possible to analyze them according to the laws and rules of logic, so that their validity can be tested. The philosopher,

therefore, has the right to subject the ordinary person's conviction to a thorough analysis and to formulate arguments which, though more difficult to grasp, will survive the critique of reason and be placed upon a more solid foundation.

No one is as blind as he who closes his eyes and refuses to see. No logical proofs will ever be such that one is absolutely compelled to accept them. All that can be expected of any proofs for God's existence and nature is that they be logically unassailable and as such tend to bring the honest, truth-seeking mind to conviction. Not all proofs advanced possess logical unassailability; we have already pointed out some improper Approaches in the foregoing sections. Another improper approach is exemplified in the 'ontological argument.'

The Ontological Proof

The ontological argument is famous in the annals of philosophy. It was first formulated by *St. Anselm* (1033—1109). He presented the argument in two slightly varying wordings,¹ but the fundamental thought is the same.

St. Anselm's proof for God's existence runs as follows. By the term 'God,' we understand the being than which nothing greater can be thought. But a being which not only exists in the mind as an object of thought, as possible, but which has also actual existence outside the mind, is greater than a being which exists in the mind only. Hence, if God did not exist actually outside the mind, He would not be that than which nothing greater can be thought. Consequently,

God exists actually outside the mind, as a reality, and not merely in the mind.

The argument was neither approved nor disapproved by St. Albert the Great; it was rejected by St. Thomas Aquinas; Duns Scotus considered it valid and used it. Descartes and Leibnitz were convinced of its validity and formulated similar arguments.

The ontological argument of St. Anselm must be rejected as an *illegitimate passage from the logical order of thought to the real order of things*. All one can conclude from the argument is this: If an infinitely perfect Being exists, it must have the reason for its existence in itself, and consequently it must exist necessarily. Hence, if one would *think* of this Infinite Being as 'real' and would not also think of it as existing of its own power and essence, one would certainly think something contradictory. But I can think of the *Infinite Being* as existing without, however, knowing whether it actually does exist. Whether the 'if' of the premise is verified or not is something that cannot be known from the idea alone. All the argument shows is that the idea of existence must be included *within the concept of God as such*. One must *think* the Infinite Being to have real existence, if one wants to think of an Infinite Being at all. But that does not prove the real existence of an Infinite Being, because it does not prove that a 'thing' corresponds to the 'idea' in the mind.

St. Thomas Aquinas rejects the ontological argument of St. Anselm in the following words.²

"Nor does it follow, as the first argument alleged, that as soon as the meaning of the word *God* is understood, it is

known that God is. First, because it is not known to all, even to those who grant that there is a God, that God is that thing than which no greater can be thought of, since many of the ancients asserted that this world is God. Nor can any such conclusion be gathered from the significations which Damascene (D. Ia. I, 2.) assigns to the word *God*. Secondly because, granted that everyone understands this word *God* to signify something than which a greater cannot be thought of, it does not follow that something than which a greater cannot be thought of exists in reality. For we must needs allege a thing in the same way as we allege the signification of its name. Now from the fact that we conceive mentally that which the word *God* is intended to convey, it does not follow that God is otherwise than in the mind. And thence it does not follow that there exists in reality something than which a greater cannot be thought of. Hence this is no argument against those who assert that there is no God, since whatever be granted to exist, whether in reality or in the mind, there is nothing to prevent a person from thinking of something greater, unless he grants that there is in reality something than which a greater cannot be thought of." Briefly, the argument of St. Thomas can be summed up as follows: The mere fact that I form an idea of a thing, and then express it in a name, does not prove that the thing, corresponding to this idea and name, actually exists; the actual existence must be proved through some other source.

Descartes proved the existence of God by the argument from effect to cause; but he also used the ontological argument, though the formulation is different from that of

St. Anselm. Here is the argument: Whoever says that something is contained in the nature or concept of a thing, thereby affirms that this something belongs in truth to that thing, is true of it. But now, the necessary existence of God is contained in the idea of God. Hence, it is true to say of God that necessary existence is in Him, in other words, that He exists.

The point of Descartes's argument lies in the phrase that we must affirm the existence of God as 'true,' that existence belongs 'in truth' to Him. This is an *equivocation*. Descartes gives the impression that 'true' and 'in truth' mean the same as real.' But this *need not* be so. Something can be 'true in the logical or the real order or in both. According to Descartes's first premise, the expression 'true' is used of *concepts*; consequently, the existence of God in the 'concept' of God must assuredly be maintained. But whether this also pertains to the 'real' order of things is precisely the point in question. He slips unconsciously from the ideal to the real order, because the *conceptual* truth of the Infinite and His existence remains unshaken, even if we do not consider God to be actually existent. Only then would one be wrong in his concept of God, if one would 'know' Him to exist and then deny the necessity of His existence. But just this knowledge of God's existence is not allowed to be presupposed, but must be *proved*.

Leibnitz also used a variation of the ontological argument to prove God's existence. His argument assumes the following form: It is possible for God to exist, since that does not involve a contradiction. But if God is possible, He

must exist, for a God who is merely possible is not that which is understood by 'God.' Hence, God really exists.

Leibnitz, like St. Anselm and Descartes, is also guilty of an illegitimate passage from the ideal order to the real order. Certainly, if one *thinks* God to be the 'Infinite' and at the same time 'possible to exist,' then, in order to maintain His infinity, one would be compelled to affirm His real existence *in thought*, since a God who is merely considered as 'possible' is not as perfect as one who is considered as 'real.' In *thought*, therefore, one would have to say that the Infinite is really existent. That, however, would not yet prove that God actually exists in the *reality of things*. Hence, we have here an arbitrary and unwarranted passage from the logical order of ideas to the real order of things.

The Necessity of Proof

Many devout persons are of the opinion that it is unnecessary to *prove* God's existence; it is sufficient, they say, to *believe* in Him. One can, of course, 'believe' in God and in His existence on the authority of others, because these others are judged to be worthy of trust. However, belief always presupposes a witness. Belief in God, therefore, must always rely on the testimony of some witness who has 'proof' of God and His existence; otherwise such a belief would be unreasonable and, as such, unworthy of man as a rational being.

We have *no immediate intuition* of God's existence, as each of us knows from his own conscious experience. The

testimony of certain individuals to the contrary must be discarded, because their experience is private and subjective and therefore unconvincing for humanity in general. The fact of God's existence is *not self-evident*. If it were self-evident, the fact could neither be denied nor doubted, because then the fact of God's existence would be as clear to man's mind as the truth of the First Principles and of his own existence; that God's existence has been denied or at least doubted by honest and serious thinkers, is obvious from the history of human thought. This lack of self-evidence is also manifested by the fact that philosophers and theologians through the centuries have felt the necessity of proof and formulated arguments to demonstrate the fact of God's existence.

A judgment or proposition is 'self-evident,' if its truth is revealed to the mind by an *analysis of subject and predicate*. When the concept of the predicate is contained in the concept of the subject, or the concept of the subject is contained in the concept of the predicate, then analysis will reveal that they belong together; an understanding of the one concept entails an understanding of the other, and the truth of the judgment or proposition thus becomes patently clear. Thus, if I understand what is meant by 'to be' and by 'not to be' ('being' and 'non-being'), the proposition is self-evidently true that 'A thing cannot both be and not be (something) at the same time under the same respect.' Similarly, if the judgment or proposition 'God exists' were self-evident to man's mind, an analysis of the concept 'God' and of the concept 'exists' should make it clear that 'God exists' in the *real order*. That, however, is not the case, as

was seen in the discussion of the 'ontological argument'; the proposition is true in the 'logical order of thought,' but it need not be true in the 'real order of things.' Hence, we must say that the existence of God is not self-evident to us.

Now, if man has no immediate intuition of God and His existence and if the truth of God and His existence is not self-evident to man's mind, man can have only a *mediate and discursive knowledge* of God's existence. Hence, God's existence must be *demonstrated*, if man is to have certainty of the fact.

God's Existence Can Be Proved

Since God's existence is not self-evident, the question arises: Can it be *demonstrated*? Can God's existence be known with certainty by means of an *inferential* process of man's reasoning power? We claim that it can be demonstrated to the satisfaction of everyone capable of reasoning and willing to accept the truth.

The denial of the possibility of proving God's existence would be reasonable only on the supposition that God would *not have manifested Himself* in the universe or that man is *incapable of knowing Him* with certainty from the universe. Neither supposition can be upheld.

We have not as yet proved that the physical world needs an efficient cause to account for its existence; nor (if it does need such a cause) have we proved that God is that efficient cause. However, *if* we can prove that the world demands an efficient cause, and *if* God is that cause, then the physical world, as the 'effect' of God's causality, *should reveal*

something of its 'cause.' In other words, if God is the cause of the universe, He *manifests* His being in some manner in the universe He caused. The reason is plain. Every effect must receive its being from the cause; and the reality of the effect must somehow proceed from the reality of the cause: no one can give what he does not have. It follows that the reality of an effect manifests in some manner the reality of the cause. Hence, if God is the cause of the universe, it is necessary that the universe manifest God in some manner. Absolutely speaking, therefore, it should be possible for man to argue from the existence of the world to the existence of God.

The only other supposition which would make such a proof impossible would be that man were *incapable of knowing God*. This incapability could be either 'constitutional' or 'factual.' It would be *constitutional* if man's reason were by *nature* incapable of rising above the merely phenomenal, so that it could draw no legitimate inferences from the physical world to a higher reality; God would indeed be the Unknown and Unknowable. In that case, however, it would be inconceivable how man could even arrive at the *idea of God*. The fact that man has such an idea shows plainly that he is not constitutionally unable to know God.

The incapability of knowing God would be *factual* if man were by nature capable of knowing God and proving His existence, but the conditions surrounding man were such that they lend themselves with difficulty to actual *demonstration* of God's existence. The difficulty would be psychological. However, man, in virtue of his reasoning

powers, is always making inferences from cause to effect and from effect to cause. Scientists continuously argue to the existence of 'proximate' causes. So why should it not be possible for man to reason to 'ultimate' causes and to the First Cause? Scientists conclude from the activities of bodies to the existence of atoms, electrons, protons, neutrons, and similar realities (although no one has ever actually 'perceived' them), and the legitimacy of their inferences is admitted. The inference from the world to God is of practically the same kind.

Everything will depend on the *nature of the inference*, whether it be convincing or not. People differ in individual talents and education. This psychological difficulty can hardly be overcome entirely. Philosophy naturally addresses itself to those interested and versed in demonstrations which are logically correct and convincing. The philosopher, therefore, must endeavor to arrange his demonstrations in such a manner that they comply with the laws of correct thinking and at the same time are clear. How far he will succeed in this endeavor depends on his ability to present the demonstrations and on the ability of the student to assimilate them. In any case, the arguments themselves must be logically flawless, or they will not be able to convince the logically minded.

Granted, therefore, the constitutional ability of man to reason from effect to cause, it must be considered *possible* for man to reason from the existing world to God.

Kant's Formalism

Immanuel Kant (1724—1804) maintained that man is *constitutionally incapable* of proving God's existence by means of his *reason* through a knowledge of the Principle of Causality. In order to understand Kant's position in this matter, it is necessary to go back to Descartes and Hume.

Descartes, as we know, postulated that all knowledge is derived solely from the mind, not from the things. Hume accepted this postulate, and from it he drew the conclusion that all experience is sense- knowledge and pertains to the particular things experienced by the senses; he drew the further conclusion that all 'principles of thought,' like the Principle of Causality, are invalid because they are not given in perception. Kant accepted Descartes's maxim that all real knowledge is derived solely from the mind, but became alarmed at Hume's extreme empiricism. Hume's view would destroy the *universal and necessary* character of all *scientific knowledge* and thus lead to *skepticism*. Kant, therefore, studied the entire field of human knowledge and devised his formalism as a safeguard for scientific (theoretical, philosophic) knowledge. His theory was as follows.

Kant made a distinction between *phenomena* (appearances) and noumena (things-in-themselves). The 'phenomena are what we experience in sense-perception. The appearances or phenomena are the result partly of the physical things and partly of the mind; the manifold of physical objects existing in the universe influence the mind, and the mind responds by ordering them in 'time' and 'space.' It is a postulate of Kant that everything which is 'universal' and 'necessary' in knowledge cannot come from

the things but solely from the mind. 'Time' and 'space' are universal and necessary elements in sense- perception; hence they must come from the mind and they must be *antecedently present* before sensation in the mind in order that perception be possible at all. 'Time' and 'space,' therefore, are *a priori forms* of the mind, and all impressions are clothed or molded in the 'forms' of 'time' and 'space.' 'Space' and 'time' are not attributes of reality in things; they are purely subjective in origin and character. As a result, since all phenomena are clothed by the mind in these two forms, phenomena are more in the nature of 'symbols' of objective reality. Objective reality consists of 'things-in-themselves' or 'noumena,' but these *noumena* are never known and *can never be known*.

Just as on the level of sense man's mind furnishes the forms of 'space' and 'time,' so on the level of intellectual knowledge the mind furnishes the *a priori forms of categories*. According to Kant, there are twelve types of judgments, each with its respective category. The phenomena of sense are drawn under these 'categories,' and the mind applies the 'categories' to them. These 'categories' are also antecedently present in the mind and have a purely subjective character. Whatever has a necessary and universal value in our judgments comes from the 'categories,' and so the 'categories' account for the universal and necessary validity of all principles and of all scientific and philosophic truths. Among these 'categories' or intellectual 'forms' is that of *Causality and Dependence*. The Principle of Causality, therefore, is universally and necessarily true, but *only for the intellect* in its judgments;

the principle does not apply to 'things,' because we cannot know 'things-in-themselves.' Since the Principle of Causality possesses a purely mental character, it can never be applied legitimately to the universe. Hence, man cannot draw any valid conclusions from the universe to the existence of God by means of the Principle of Causality. It follows, says Kant, that man *cannot demonstrate the existence of God*.

Kant's *fundamental error* consists in his acceptance of Descartes's supposition that all knowledge originates solely in the mind, so that the 'object of knowledge' for man consists in his own internal conscious states. On this supposition man cannot contact the outside world through his mental activity, whether that activity be of the senses or of reason, and all knowledge thus becomes vitiated with complete *subjectivism*. This fact alone should have warned Kant that Descartes's initial supposition must be false.

Kant also overlooked the fact that man can establish the universality and necessity of general principles without having recourse to *a priori forms* such as he imagined existing in the so-called 'categories.' True, the senses cannot discover such general principles, because they perceive only particular things and events. However, given the things and events as they actually occur, *reason abstracts ideas* and principles which are universal and necessary in character and are independent of time and space. In perceiving things and events, man's reason soon understands that a mere sequence in time or a mere contiguity in space is insufficient to account for the happenings in nature; something more is required, namely,

real *causality*. By a process of analysis, which is almost an immediate product of experience, man formulates the *Principle of Causality*; the child does this as soon as its reason is awakened. Later on, man links up the Principle of Causality with the concept of 'being' and the Principle of Contradiction; and from this comparison and *analysis* man, through a process of deduction, realizes that the Principle of Causality applies to all things universally and necessarily. To limit the application of this principle to phenomena is an unwarranted restriction and amounts practically to a denial of the Principle of Contradiction and of all possibility of true knowledge.

Hence, if man can know the objective, external world, and he can, and if the Principles of Contradiction and Causality are universally and necessarily true, and they are, it should be possible to apply these principles to the universe and its contents and then draw a legitimate conclusion to the 'cause' of the world, provided a cause is necessary. In other words, since man is constitutionally capable of correct reasoning, a *demonstration of God's existence should be possible*, if God is the cause of the world in its existence and being.

The Method of Proof

We cannot demonstrate God's existence from the idea of God as the most perfect being; the ontological argument, as was shown, is invalid because it involves an illicit passage from the logical order of thought to the real order of

actuality. We must, therefore, proceed in a different manner, if we expect to prove that God actually exists.

Man is a rational animal. As an 'animal,' his knowledge begins with sense-perception. As a 'rational' animal, his knowledge goes farther than sense-perception. The senses having supplied their data, *reason* becomes active and proceeds to form ideas, judgments, and inferences. By means of his reasoning, man transcends the level of sense-perception and is able to draw conclusions which reach to realities which cannot be perceived by the senses. Thus, biologists reason to the origin of living beings (for instance, when they argue about evolution), and geologists argue to the formation of earth deposits, although they are concluding to events which happened (or are supposed to have happened) in the far distant past and which they have not perceived. Unless we wish to fall into universal skepticism, we must admit the legitimacy of our reasoning processes. Reason is just as much a source of true knowledge as is the experience of sense-perception. Knowledge begins in the senses and ends in reason.

Since the proper object of man's intellect is 'material being,' it is natural for man to seek to prove God's existence from the material world by the application of the First Principles. Such arguments are called *a posteriori*, because man proceeds from the *effect* to the *cause*.

This discussion shows that the only proper approach to the problem of God's existence is an *a posteriori demonstration* of His existence.

Summary of Chapter III

The history of human thought shows that the *proper approach* the problem of God's existence is important.

1. *Scientific Explanation*. — Facts alone do not make a science. Scientists always seek to *explain why* things are as they are and events happen as they do; they look for *causes*. Scientists are not justified in the restriction of reason itself; if they may seek the 'proximate' causes, reason must be allowed to seek the ultimate cause causes of things and events.

2. *Deism and Agnosticism*. — Deists maintained that God exists and is the Creator; but that is all man can know about God. *Agnostics* affirm the constitutional inability of the human mind to know anything hut the 'phenomenal.' Agnosticism rests on the fallacious basis of Hume's unwarranted empiricism.

3. *Fideism and Traditionalism*. — These theories maintain that the knowledge of truth consists in an act of faith (hence 'fideism'), and the supreme criterion of certitude is the authority of revelation as given through tradition (hence 'traditionalism'). Reason must precede faith, or faith will be a blind assent and therefore unreasonable. Both theories lead eventually to *skepticism*.

4. *Ontologism*. — Ontologists held that God and the *Divine Ideas* are the first object of our intelligence and the intuition of God the first act of our intellectual knowledge. If the theory were true, we should be *conscious* of the

intuition of God; there would be no possibility of *error* or *doubt*; man would be *infallibly* certain of truth.

5. *Religious Experience*. — Many people claim to have a direct *experience of God's presence* during prayer. Such experiences are too *subjective* and have no value as evidence.

6. *The Ontological Proof*. — This proof argues from the *idea of God* as the most perfect Being to His existence, because an existing being is more perfect than a merely possible being. The argument is invalid, because it involves an illegitimate passage from the *logical order* of thought to the *real order* of things.

7. *The Necessity of Proof*. — Since we have no immediate intuition of God's existence, and since the fact of God's existence is not self-evident, man can have only a *mediate and discursive* knowledge of God and His existence. Hence, God's existence must be *demonstrated*.

8. *The Possibility of Proof*. — If God has *manifested* Himself in the universe, and if man is *capable of knowing* Him through the universe, it must be possible to 'prove' His existence. Every effect reveals something of its cause.

9. *Kant's Formalism*. — Kant maintained that the speculative reason of man is *constitutionally incapable* of proving God's existence from the physical world. The 'world' and 'God' are noumena, not phenomena; but man can know only phenomena, and the phenomena, due to the *a priori forms*, tell us nothing of the reality of noumena. Kant's theory must be rejected. The universality and necessity of scientific knowledge can be accounted for without having recourse to antecedent mental 'forms.' By

means of induction and deduction from the facts of the physical world, man arrives at a knowledge of causality; and by abstraction and analysis, he understands the *Principle of Causality*. Hence, a *demonstration* of God's existence should be possible.

10. *The Method of Proof*. — The only proper approach to the problem of God's existence is an *a posteriori demonstration* from effect to cause.

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Chapter 4

CHANGE

WHATEVER SORT OF DEMONSTRATION IS USED TO PROVE GOD'S existence, the conclusion must embody the judgment that 'God exists.' First of all, then, we must be clear about the meaning of the words 'God' and 'exists.'

What is meant by 'exist' (and 'existence')? *Negatively*, it means to be not merely an 'idea' present in some mind, nor to be merely a 'possible' thing capable of being produced by some cause. *Positively*, it means *to be actually*, just as you and I and the sun and the rivers and everything else in the physical world are 'actual' beings. Something, therefore, is said 'to exist' or 'to have existence' when it is outside the producing power of a cause and is actually present in the world of reality, so that it has 'being' of its own.

And what is meant by 'God'? We must begin with a *provisional notion* of what we understand by the term 'God.' As we proceed in our discussion, this provisional idea, if need be, may be revised and purified. Polytheists and monotheists have different ideas of 'God.' We must make a choice. As a 'provisional definition' we will begin with the concept of 'God' which is current in the Christian Western

World, namely, the 'Maker and Ruler of the universe.' Whether this notion can be validated remains to be seen.

The first argument for God's existence is taken from the fact of change. In order to obtain a proper perspective, it will be advantageous to view the problem in the light of history.

Parmenides, Heraclitus

Parmenides (born about 544 or 540 B.C.) was one of the first thinkers to occupy himself with the problem of permanence and change, both of which seem to be a definite part of reality in nature. He became the foremost representative of the School of Elea. Parmenides was an intellectualist for whom the principles of thought and being are identical.

He began with the Principle of Identity and Contradiction: Being is being; non-being is non-being; both can never be identical.' From these principles he drew the conclusion: 'Whatever is, is; whatever is not, is nothing; from nothing nothing can become, because nothing has nothing to give; what already is, cannot become, because it already is what it is: hence, all becoming (change) is impossible.' It follows, he maintained, that every being remains unchangeably what it is and cannot become something else, and no possible being (since it is actually 'nothing') can ever become existent: nothing ever becomes, and nothing ever ceases. Being, since it cannot be separated from itself, is indivisible; and, since it is identical with itself, it is changeless. Being, therefore, is one,

immobile, and eternal, a continuous and indivisible whole; there exists only the All One absorbing all reality.

And yet, multiplicity and change appear everywhere in the universe. How account for them? Parmenides had a simple solution for the problem: they are nothing but the illusions of the senses; they do not and cannot exist, because reason assures us of the oneness and eternity of being. The final conclusion of Parmenides and his followers was that permanence alone exists and change is only apparent.

Heraclitus (535—475 B.C.) was an empiricist. As a contemporary of the Eleatics, he opposed their doctrine of unchanging being with that of continuous 'change.' Everything changes, and there is nothing permanent in the world. The one and only thing which is real is process, perpetual flux, change. While Parmenides found the essence of being to be an immutable reality, Heraclitus identified it with 'becoming' itself. The principle of change is 'fire.' Everything without exception is fire in some form or other, and fire is constantly undergoing transformation. Nothing becomes being, and being becomes nothing. Hence, being and non-being are identical; 'change' or 'becoming' is the only reality, and contradictories are fundamentally the same. The stability and permanence of being is the result of man's belief and as such is an *illusion*. Just as Parmenides placed his absolute credence in reason and its principles, ignoring and repudiating the testimony of the senses, so Heraclitus relied completely on the deliverances of sense-perception, ignoring and repudiating the reliability of reason and its principles.

Parmenides and Heraclitus were both right and wrong. Parmenides was right in affirming the permanence and stability of being; but he was wrong in denying the reality of change and becoming. Heraclitus was right in affirming the change and becoming of things, but he was wrong in denying the permanence and stability of being amid the change. Permanence and change are both present in nature. Things change, but something permanent remains throughout the process of change. Parmenides was in error when he considered 'permanence' to be absolute, and Heraclitus was in error when he considered 'becoming' to be absolute; in the things of this world *permanence and change are relative*, not absolute. The senses perceive the 'change' in things, but reason recognizes that change demands something that is a 'permanent subject' undergoing the change.

The solution to the vexing problem of permanence and change was given by the genius of Aristotle.

Aristotle

Aristotle (384—322 B.C.) saw the flaw in the reasoning of Parmenides and Heraclitus. The former relied solely on reason, and the latter solely on sense-perception. Man, since he is a 'rational animal,' has two sources of knowledge and truth, the senses and reason; knowledge begins in the senses, but is completed in the reason. Both sources are legitimate in their proper sphere, but they must be combined if man is to acquire real knowledge and attain to truth. Sense-perception acquaints us with the reality of

change and reason acquaints us with the reality of permanence; and both are correct, because change and permanence are realities of nature, independent of the mind of man. But how can 'change' and 'permanence' of being be reconciled?

The solution which Aristotle proposed was the division of all reality into *potency* (*potentiality*) and *act* (*actuality*). Whatever exists is 'actual being.' Whatever is possible is 'potential being.'

For instance, the acorn is an 'act,' an 'actual being,' and as such it exists. The oak tree into which the acorn will eventually grow is as yet non-existent; but it is 'potentially' in the acorn, because the acorn will 'become' the oak tree later on, provided the hidden life of the acorn is awakened by heat, moisture, and soil, so that it will 'become' an oak tree through growth and development. The 'potential' oak tree thus 'becomes eventually an 'actual' oak tree, and the acorn is thus seen to be an oak tree 'potentially,' even though the acorn as such is not yet an oak tree 'actually.' While the oak tree lives, it is an oak tree 'in act' and not 'in potency' to become an oak tree; but when it dies, it 'ceases to be' an actual tree and gradually changes through decay into chemical compounds and elements. What is said here of the acorn and oak tree applies with equal force to every living being. Change, therefore, occurs in *animate* beings throughout nature.

The distinction between 'potency' and 'act' is also found in *inanimate* beings. To take an example from modern chemistry, the elements of oxygen and hydrogen, while they exist as such nature, are 'actually' oxygen and hydrogen;

but 'potentially' they are whatever compound either will make through combining chemically with some other substance. Thus, when oxygen and hydrogen are viewed as having the possibility of combining to form water, water is 'potentially' (though not 'actually') present in oxygen and hydrogen, because these two the other hand, once oxygen and hydrogen have combined are capable of 'becoming' water when combined. On chemically, what is 'in act' is water. Inasmuch, however, as water can again be decomposed into oxygen and hydrogen, these elements are present 'in potency' in water.

What has been discussed so far is 'change' or 'becoming' among substances. Many changes, however, affect merely the *quantity* or *quality* of a substance, leaving the substance itself intact. Thus, during a snowstorm the quantity of snow increases, so that there is a 'quantitative change' in the amount of snow, but the snow as snow is not changed thereby; a reverse form of change occurs when the snow disappears. When the filament in a light bulb begins to glow, it undergoes a 'qualitative change,' the material of the filament remaining unchanged in the process. A similar qualitative change occurs when bodies become hot and cold, magnetized and demagnetized, pass from one color to another, and so forth. In all such cases, something becomes 'actual' which was formerly only 'potential.'

Change, or *becoming*, therefore always means the actualization of something potential; it implies the passage of a being from one state to another. Whatever 'changes,' must be *capable of receiving* some new determination and perfection through the power of a moving (efficient) cause;

it must be *in potency to be* what it can *become actually*, otherwise it could never receive this actuality. Act, therefore, is the perfection, determination, or degree of reality present in a thing as it exists. *Potency*, or potentiality, is the aptitude of a thing to receive a perfection, a determination, or degree of reality. The being in potency always possesses within itself the germ of future actualization, even though it never becomes actualized in reality. Aristotle called this actualization (the passage of a being from a state of 'potency' to a state of 'act') *movement* and defined¹ it as "the act of a being in potency in so far as it is in potency." In every case of actualization or 'movement' there is the following sequence: Before the thing 'moves' it is in potency for both the movement (process of actualization) and the final actuality to be acquired by it; when it begins to be 'moved,' it is no longer in potency for the movement (process of actualization), but has already acquired movement as an intermediary act; while 'moving' (while in the process of actualization), it still remains in potency for the final and complete actuality to be acquired at the ending-point of its movement; when the thing has acquired its final and complete act (perfection, determination, degree of being), movement ceases, and the thing comes to rest as completely actualized. Aristotle's definition of 'movement' (process of actualization) is thus seen to be very concise and correct.

Aristotle stresses the fact that all change (becoming) in nature presupposes a *subject* which persists in existence throughout the change and in which the change occurs. The subject of change, therefore, is *relatively permanent*.

That this is a fact should be obvious from an analysis of any type of change which happens in nature. Whenever an organism originates or dies, matter is present as the subject of change. Whenever a chemical compound is formed or dissolved, chemical substance in some form or other is the subject in which the change takes place. In quantitative and qualitative changes, the reality gained or lost presupposes some being which gains or loses the reality, as when a person grows larger in size or becomes sick.

Aristotle's doctrine of 'potency' and 'act' thus solved the problem of permanence and change very neatly. Aristotle showed that Parmenides was right in insisting on 'permanence,' because the 'subject of change' persists during the entire process of becoming; but also that Parmenides was wrong in denying the existence of change in things, because change is too evident to be argued out of existence through an appeal to rational principles. In a similar manner, Aristotle showed that Heraclitus was right in recognizing the presence of change in the universe, but that he was wrong in his claim that nothing permanent exists and in his assertion that the principles of reason have no value. In this way Aristotle safeguarded the validity of sense-perception and of reason as legitimate sources of knowledge and avoided the error of extremism present in the doctrines of Parmenides and Heraclitus. Neither reason nor sense may be sacrificed in a theory.

Bergson

Henri Bergson (1859—1941) was the most important exponent of ‘perpetual becoming’ in modern times. Like Heraclitus, he was an anti-intellectualist. According to Bergson, everything is a continuous flux of becoming and change, *without any underlying subject* which becomes and changes. *Change is the whole of reality*. Everything changes, but there is no thing which changes; everything is in movement, but there is no thing which moves; everything is in a state of continuous progress, but there is no thing that progresses; everything is in a process of evolution, but there is no thing that evolves: as Bergson says², movement is reality itself, and immobility is always only apparent or relative . . . there are no *things*, there are only actions.”

And yet Bergson speaks constantly of ‘man,’ ‘animal,’ ‘plant,’ ‘universe,’ ‘matter,’ and so on. This is due to his distinction between *intuition* and *intellect*. Man is characterized by ‘intellect’ rather than by ‘intuition,’ although ‘intuition’ is intrinsically more capable of grasping the flow of becoming. Intellect has as its function the formation of concepts, and concepts are mere ‘snapshots’ of reality; they represent the dynamic process of reality in static pictures. Intuition immerses itself into the very stream of life and ‘feels’ the rhythm of flux; it is a developed refinement of animal instinct and as such more in ‘sympathy’ with the process of becoming than the intellect. Intellect is concerned with ‘action’ and ‘unorganized solids,’ that is to say, with matter and its use for practical needs. Intuition reveals life and is associated with the hidden secrets of consciousness and with speculation; it comes to man in rare flashes, but it is charged with life and is the

only faculty of man capable of perceiving pure duration, pure movement, creative evolution, the very inwardness of life itself.

Movement is creative evolution. This ceaseless evolutionary movement is the result of a double factor — *matter and the vital impulse (élan vital)*. From the beginning ‘matter’ existed, and so also did the ‘vital impulse.’ Movement simply began. Since life is tendency, it surges continuously upward toward different forms of life. But matter acts as an obstacle to the surge of the vital impetus and must be overcome incessantly. The vital impulse is only finite in its action, and its tendency is not directed toward any definite goal; as a result, the vital impulse, in pushing against the refractory medium of matter, gives rise to different levels of being in the course of the evolutionary process — inanimate nature, plants, animals, and men. Intellectuality and materiality are simply an “inversion of the same movement,”³ because the upward movement or ‘ascent’ of the vital impulse always implies the downward movement or ‘descent’ of matter. Vital activity is thus “a reality which is making itself in a reality which is unmaking itself.”⁴

As far as *creation* and a *Creator* are concerned, Bergson says:

“Everything is obscure in the idea of creation if we think of *things* which are created and a *thing* which creates, as we habitually do, as the understanding cannot help doing... God has nothing of the already made; He is unceasing life, action, freedom.”⁵ In

other words, if we wish to speak of God at all, we must consider Him, not as a 'thing' or substance existing prior to the world, but as a part of the very *process of formation*. Reality is nothing but 'movement.' That we think of 'static things' instead of pure 'dynamic process,' is an *illusion of the intellect*.⁶ Similarly, our idea of the 'nought' is an illusion: "If we analyze this idea of Nothing, we find that it is, at bottom, the idea of Everything. . . It is therefore an idea eminently comprehensive and full, as full and comprehensive as the idea of *All*, to which it is closely akin."⁷

— HENRI BERGSON

It is a 'pseudo-idea,' as Bergson calls it. Bergson thus ends by denying the validity of the Principles of Identity and Contradiction.

In evaluating Bergson's system of perpetual flux a number of *adverse observations* must be made.

Bergson's description of the entire process of world evolution is mere *conjecture*. No one, obviously, ever witnessed it; experience, therefore, is lacking. Bergson uses many arguments to make his theory plausible; but such arguments are *inferences* of the intellect, and the intellect, in his view, is deceptive and erroneous. His appeal to 'intuition' is of no value, because 'intuition' is a peculiarly Bergsonian notion which is too *subjective* in character to be submitted to objective tests of evidence; its very existence is, at best, extremely doubtful. Even if it exists, its 'flashes'

are so rare and short-lived that no one can be sure of its deliverances.

Bergson's dictum that all *reality* is 'movement,' 'becoming,' 'change,' but that there are *no things* which move, become, and change, is not only strange but contrary to all science and philosophy. The world we know is a world of *things*. Things change, of course, but they are 'things' nevertheless. If we cannot trust the testimony of our senses and reason, what is the use of science and philosophy? All knowledge and all truth would be impossible if reality were nothing but process and if there were *no one to know*. Even Bergson was a permanent being, and so are his writings. St. Thomas Aquinas'⁸ remarks are true and validated by the findings of exact science:

"Every movement presupposes something immovable [permanent, stable]: for when a change of quality occurs, the substance remains unchanged; and when there is a change of substantial form, matter remains unmoved [unchanged]."

— ST. THOMAS AQUINAS

When Bergson discredited intellect and reason in favor of intuition, he overlooked the fact that he thereby *destroyed the foundation of his entire system of knowledge and reality*. It was only through his intellect and reason that he set up the arguments and drew out the conclusions that made his theory of 'creative evolution' in any way plausible. But if we cannot trust reason in its normal operations, of

what value are its arguments and conclusions? If intellect and reason are habitually deceptive and erroneous, giving us a distorted view of reality, then knowledge and truth are impossible for us, and *universal skepticism* is the logical outcome of such an attitude. Bergson showed this when he sacrificed the Principles of Identity and Contradiction by practically identifying Nought and All (being) for the sake of overcoming a difficulty arising from his theory of ceaseless flux. Every theory, no matter how ingenious, must collapse, once the fundamental principles of logical thinking are discarded.

Change and Causality

Every *change demands a sufficient reason*. Everything without exception demands a sufficient reason to account for what it is and for what it does and for what happens to it. This sufficient reason may be either inadequately or adequately sufficient. An *inadequately* sufficient reason will explain partly and proximately why a certain being exists or changes, but it will not explain the 'totality' of the occurrence. On the other hand, an *adequately* sufficient reason explains the 'totality' of a thing in all its phases, so that nothing remains to be accounted for. For example, if one were to explain the movement of a locomotive by saying that the engineer pulled the lever of the throttle, one would give an 'inadequately' sufficient reason for this movement, because one leaves out of consideration the steam in the boiler, the pipes, the pistons, the wheels, and all the other parts and activities that have a role in producing the motion

of the locomotive. In order to account for change, therefore, in its entirety, an 'adequate' sufficient reason will have to be given for its total being and existence, and this must be an *adequate efficient cause*.

Change implies the actualization of some potentiality. A being changes so as to obtain some *reality, determination, perfection* which it does not at present possess. In every change, therefore, something new is received by a being *which did not exist as such in the being before the change*; the being was merely in receptive potency (potentiality)⁹ for this perfection. This change, with its perfection, is the result of an activity of some sort and, since it is *produced* by this activity, is the effect of an adequate efficient cause. If the efficient cause is to be the 'adequate' cause of the new perfection, it must *contain* the perfection within itself either 'formally' or 'eminently.' This new perfection is a *real being* and as such must *really* exist somewhere or somehow in its (adequate) cause; otherwise there would be a remainder and part of it without a cause to account for its existence, and the being after the change would have received more than the cause could give. It is not sufficient that the new perfection be merely *virtually* contained in the cause. If one means by 'virtually' that the perfection is present in its 'entirety' in the cause, this can only be either as a *real being* (and then it is present in the cause *formally*) or as contained in the *higher perfection* of the cause (and then it is present in the cause *eminently*). And if one means by 'virtually' that the perfection is not contained formally or eminently in the cause, but only that it can be produced by the activity of the cause in some way, then one violates the

Principles of Sufficient Reason and Causality, because what a cause does not *already possess* (either as a reality or as contained in higher perfection) it *cannot give to another* — no one can give what one does not have. In the latter case, it cannot be the ‘adequate’ cause of the new perfection, but must be assisted by something else which contains the totality of the perfection and can supply the deficiency. It follows that the ‘adequate cause’ of change must contain the new perfection acquired in the change either ‘formally’ or ‘eminently’; any other supposition would involve the *contradiction* that the perfection acquired in the change is fully accounted for and not fully accounted for, is adequately produced and not adequately produced, at the same time under the same respect.

But now, it is clear that a *being which acquires* a perfection by means of change *cannot already possess* it either ‘formally’ or ‘eminently’ (namely, in its reality or as contained in a higher perfection). If it possesses it thus already, it has it, and there is no possibility of acquiring what it already possesses. Hence, a being which is changed in order to acquire a perfection cannot be its own *adequate cause* of that perfection; otherwise it would possess the perfection (that is necessary for an adequate cause, as just pointed out) and not possess it (because it is through the change that it is supposed to ‘acquire’ the perfection) at the same time — a patent *contradiction*. The being, therefore, which is changed in order to acquire a new perfection cannot be the adequate cause of the perfection that it receives by means of the change.

The *new perfection* itself cannot be the adequate cause of its own existence. The new perfection is a produced reality. This reality *could not produce itself*. To produce itself would mean to act, and activity presupposes existence; how can anything act before it exists? It would both exist (because it 'produces itself,' and to do that it must exist) and not exist (because it is supposed to 'receive existence' through its productive action in the change); but to exist and not to exist at the same time is a *contradiction*.

Since a contradiction is absurd and impossible, it is evident that neither the being receiving the new perfection nor the new perfection itself can be the 'adequate cause' of the change. It follows as a necessary consequence that the 'adequate cause of any such change must be a *being distinct* from the changing being, namely, some *external cause* producing the change. It follows furthermore that the adequate cause must be an *existing reality* capable of giving the perfection to the being which 'is to receive it by means of the change. It follows finally that the adequate cause must *contain* the perfection to be given in one of two ways: it must contain it either 'formally,' so that the reality of the perfection is actually present as such in the cause, or 'eminently,' so that the cause contains the perfection 'in a superior manner in some higher perfection. Unless all 'these conditions are fulfilled, one cannot account for the change and the acquired perfection in its *totality*. If any of these conditions were missing, it is evident that the changing being would receive a *plus-amount* of perfection not present in the producing cause. This 'plus-amount' would have no sufficient reason to account for its presence

and as such it could not come into existence at all. In no case is it possible to have more perfection in the effect than the cause is able to give: *the more perfect simply cannot proceed from the less perfect*. If it did, the 'more,' the 'plus-amount,' would both exist and not exist: it would exist (that is the supposition); and it would not exist (because the cause cannot give what it does not have).

The Universality of Change

Change affects all things in the world; nothing is exempt, whether it be living or nonliving.

That *living beings* in this world undergo constant change is attested by all the sciences which treat of them — biology, botany, zoology, physiology. Plants, animals, and men are in a constant process of change; they grow, mature, and die. The cycle of life is characterized by activity and change from the moment of fertilization until the moment of death.

Nonliving beings are also subject to constant change. Chemistry, physics, geophysics, and astronomy are based on the fact of change among inanimate bodies. The natural sciences assure us that all bodies without exception are affected by various forces, such as heat, electricity, magnetism, light, mechanical motion, gravity, and so on. Every chemical compound, element, and sub-elemental particle is a storehouse of *energy*. Energy is either *potential or kinetic*. The former is energy at rest (position); the latter is energy in action. A constant transformation of energy takes place in the universe, so that potential energy becomes kinetic and kinetic energy becomes potential. This

transformation or change occurs in the bodies, so that the bodies themselves are in a continuous process of change.

The *universe at large* consists of the same elements as are found on earth. And so it happens that the universe as a whole is also subject to ceaseless change, both in the stars and in the matter occupying interstellar space. Activity is found everywhere. And where there is activity, there is change; and change implies causality. To mention merely one fact: heat is generated all the time in the sun and stars; this heat is diffused through space uniformly and affects every particle of matter, thereby producing qualitative changes. Every kind of radiation exerts a causative influence and brings about changes of one form or another, and radiation is found everywhere in nature. Motion is universal, and motion means change. Whether the bodies be sub-visible particles or astronomical galaxies, all are active in some manner. Action, however, issues into effects. As a result, the Principle of Causality reigns over the entire world.

Extra-mundane Cause of Change

It is now time to draw the threads of our argument together and formulate the conclusion.

Both permanence and change exist in the world. Substances are relatively permanent, and changes take place in them. But substances are not absolutely permanent, because one substance may change into another. Every change, whether substantial or accidental, demands an adequately sufficient reason to account for it.

Change implies the actualization of some potentiality in the changing subject; it supposes that something new, some determination, some perfection is received which did not exist as such in the being before the change, so that this being was merely in 'receptive potency' for the perfection.

Since the change, with its resultant new perfection, is the product of activity, it is the effect of an efficient cause; and this cause must be 'adequately' efficient to produce the total effect. The adequate efficient cause of change must contain the new perfection either 'formally' or 'eminently' within itself, otherwise it could not give the perfection to another by means of the produced change; the reason is that the being acquiring the new perfection cannot already possess it, nor can the new perfection produce itself. Hence, the adequate efficient cause must be a being distinct from the being receiving the perfection. Change in the meaning here given affects all things in the world, living and nonliving.

Consider the implications.

Every single being in the universe is subject to change, i.e., is in receptive potency for new perfections to be acquired through change. But the universe is the sum-total of all the single beings present in it. The universe as a whole, therefore, is the subject of change, i.e., is in receptive potency for new perfections to be acquired through change. The actualization of a receptive potency, however, requires an adequate efficient cause to bring about the change and thereby confer the new perfection (determination) on the recipient subject. Since the adequate efficient cause must contain within itself the

reality of the new perfection either formally or eminently, and since the recipient subject does not contain the new perfection either formally or eminently, the adequate cause must be a being distinct from the recipient subject. Now, the universe as a whole requires an adequate efficient cause in order to account completely for the changes which occur in the universe. Therefore the changing universe demands an adequate efficient cause, *distinct from the universe as such*, in order to account for the changes which occur in the universe.

One cannot escape this conclusion by postulating an *eternal existence* of the universe or an *infinite series* of changes in the universe. An adequate efficient cause 'outside' the universe and 'distinct' from the universe, and therefore extra-universe or *extra-mundane*, would still be indispensable.

Even if the material universe existed from eternity, so that it had no beginning in time, the conclusion would be inevitable that an *eternal* adequate efficient cause would be required. This cause would then not exist prior to the world, but it would have to 'co-exist' eternally with it. The universe, whether eternal or temporal, would need this cause in any event.

The same observation holds true in the supposition of an infinite series of changes in the universe. The nature of the changes, as the actualizations of receptive potencies acquiring new perfections, would remain the same. An infinite process of such changes does not alter their nature and would still require an adequate efficient cause *outside the infinite series* existing in the universe, in order to make

the fact of such changes completely intelligible and possible.

Hence, whether the universe be eternal or temporal and the series of changes infinite or finite, the universe as a whole demands the existence of an *extra-mundane cause* to account completely and adequately for such changes.

Unchangeable Cause

Now, it is impossible that absolutely every being be changed by another. Eventually we must admit that there must exist a being which is not subject to change: *an unchanged and unchangeable cause of change*. The material universe, as astronomy and astrophysics testify, is a unitary system, consisting of the same kinds of elements and bodies, performing the same general types of operations, obeying the same chemical and physical laws, and following same pattern of changes. Due to this fact of unity and uniformity, the extra-mundane cause, to which these changes lead, must be a single cause.

This extra-mundane cause of the changes in the universe must itself be either not subject to change or subject to change. If not subject to change, we have arrived at the 'unchanged cause.' If subject to change, it must itself be changed by another cause. The same question then arises regarding this 'other cause.' Is it subject to change or not? If not, we have now arrived at the 'unchanged cause.' If subject to change, it must again be changed by another cause. Now we have two such causes subject to change; a new series of changing causes has arisen. This series as a

series demands an outside cause. And so the whole question comes up again. Is the series finite or infinite? No matter whether finite or infinite, the series demands an 'outside cause' as the sufficient reason and adequate cause of the change in the series. If a second and a third and a fourth Series is postulated, we have a series of series, none of which is capable of accounting for the occurring changes in all of them except by an *outside cause*. We must eventually arrive at a *cause which is not subject to change*, or the changes will not be adequately accounted for. Outside of 'all' there is nothing, and nothing accounts for nothing. Hence, if 'all beings' are changed, there would be no being outside of 'all' to start the change in the others. Consequently, there must be some being which is the adequate efficient cause of change in the others, but it is *not subject to change itself*; it is at the *beginning of all change* and as such is the *unchanged cause of change* in the others. Since no other being exists which can change this unchanged cause, it is *unchangeable* as well as unchanged.

Many people are under the impression that they can escape the logic of the conclusion by pushing the problem into the vague mist of the far-distant past or by multiplying the instances indefinitely. This procedure is followed by those who think that 'eternity' or an 'infinite number' will nullify the force of the argument. What they fail to understand is that mere succession in time and multitude of numbers does not affect the *nature* of a thing. A dog, for example, will not become rational, even if he lives for an eternity; the dog would simply be a dog eternally. Similarly,

a million or an infinite number of dogs will not make a dog's nature rational, any more than a million or infinite number of zeros can ever add up to a positive sum. And so it is with *change*, i.e., with the actualization of receptive potencies. The *nature* of such change in an existing being demands a principle of change distinct from the being which is changed and must lead to a being which is not subject to change itself; all change must emanate from this being as the *Prime Changer Unchanged and Unchangeable*.

The Argument of St. Thomas

St. Thomas Aquinas (1224 [or 1225]—1274) was undoubtedly the greatest and clearest thinker of the Christian era. He gives five main proofs for God's existence. The first is the argument based on *motion*.

Motus (motion), in the mind of Aristotle and St. Thomas, implies 'change' in the sense of local motion and in the sense of accidental or substantial change. Even local motion is merely a species of 'change.' When, therefore, St. Thomas formulates his argument of 'motion,' this wider sense of the term 'motion' must always be borne in mind.

"The first and more manifest way [to prove God's existence] is the argument from motion. It is certain, and evident to our senses, that in the world some things are in motion. Now whatever is in motion is put in motion by another, for nothing can be in motion except it is in potentiality to that towards which it is in motion, whereas a thing moves inasmuch as it is in

act. For motion is nothing else than the reduction of something from potentiality to actuality. But nothing can be reduced from potentiality to actuality, except by something in a state of actuality. Thus that which is actually hot, as fire, makes wood, which is potentially hot, to be actually hot, and therefore moves and changes it. Now it is not possible that the same thing should be at once in actuality and potentiality in the same respect, but only in different respects. For what is actually hot cannot simultaneously be potentially hot; but it is potentially cold. It is therefore impossible that in the same respect and in the same way a thing should be both mover and moved, i.e., that it should move itself. Therefore, whatever is in motion must be put in motion by another. If that by which it is put in motion be itself put in motion, then this also must needs be put in motion by another, and that by another again. But this cannot go on to infinity, because then there would be no first mover, and consequently, no other mover; seeing that subsequent movers move only inasmuch as they are put in motion by the first mover; as the staff moves only because it is put in motion by the hand. Therefore it is necessary to arrive at a first mover, put in motion by no other; and this everyone understands to be God.”¹⁰

— ST. THOMAS AQUINAS

It will be noted that St. Thomas, although he uses the word ‘motion,’ really speaks of ‘change’ in the broader

meaning of the term. His formulation of the argument is very concise, and it is skeletonized to such an extent that the various steps in his process of reasoning might be open to question and not be altogether convincing. Hence the more extensive formulation as given in the body of this chapter. As a consequence, this argument can also be called the argument proving the existence of a Prime Mover. And so it is usually designated.

Consequences

The argument as presented seems to lead to a rather vague and nondescript being, that of Prime Mover or First Changeless Changer. Yet St. Thomas says: “and this everyone understands to be God.” Is St. Thomas not guilty of a tremendous ‘logical leap’ in this statement? We usually understand by the term ‘God’ something very different from a ‘Prime Mover’ or ‘First Changeless Changer.’ However, an analysis of what is implied in the concept of the ‘Prime Mover (First Changeless Changer)’ reveals much more of this being than is apparent at the first glance.

First of all, the Prime Mover can never have passed from non-existence to existence. To have done so would mean that it was once merely ‘possible’ and was therefore in potency (potentiality) for the act (actuality) of ‘existence.’ As such, existence could only be given to it by some other being actually existing. That, however, would involve a ‘movement’ or ‘change’ radically much greater than being ‘moved’ or ‘changed’ while possessing existence. Since the Prime Mover or First Changeless Changer is the ‘principle

of change,' it is evident that such a being could not have 'received existence' from another. Hence, the Prime Mover always had existence in virtue of its own being. It follows, therefore, that the Prime Mover (First Changeless Changer) is *eternal*.

Furthermore. The living beings in this world are in many ways subject to change, so that they pass from receptive potentiality to actuality, even in matters pertaining to their vital functions. Ultimately, this reduction from potency to act must be referred back to the Prime Mover as the first 'principle of change.' Hence, the being of the Prime Mover must contain the reality of 'life' formally or eminently and as such must be a *living being*.

Again. Among the manifestations of life in this world is the intellect and volitional life of the soul of man; and man's soul is spiritual. However, the intellect, will, and soul of man are also subject to 'change'; they are not pure actuality. These changes must find their adequate sufficient reason in the Prime Mover or First Changeless Changer. Hence, the Prime Mover must possess the perfection of *intellect, will, and spirituality*.

Finally. A being which is spiritual and possesses intellect and will is a 'person,' the same as man is a 'person' in the true sense of the word. Hence, the Prime Mover is also *personal*.

Now a being which is eternal, living, intellectual, volitional, spiritual, and personal is indeed, as St. Thomas observes, what everyone understands to be God."

Therefore, *God exists*. The analysis just given is very brief. These phases of God's being will become clearer as

the other proofs for His existence are unfolded in the following chapters.

Summary of Chapter IV

We begin with the provisional notion of 'God' as the 'Maker and Ruler of the universe.' The first proof for God's existence is taken from the fact of change.

1. *Parmenides, Heraclitus.* — *Parmenides* was an intellectualist for whom the principles of thought and being were identical. He denied change and maintained the *permanence* of all being in the All-One.

Heraclitus was an empiricist. He denied the permanence of being and maintained that the only reality is process, flux, change.

Parmenides was right in affirming the permanence of things, but wrong in denying the reality of change and becoming; Heraclitus was right in affirming the presence of change and becoming, but wrong in denying the permanence of being.

2. *Aristotle.* — Aristotle solved the problem by his division of all reality into *potency* (potentiality) and *act* (actuality). Whatever exists is 'in act'; whatever is possible is 'in potency.' What is a potential being' is as yet non-existent, but it is something which can become,' provided some efficient cause can give it existence; hence, it is not 'nothingness.'

Change, or becoming, means the actualization of something potential; when the potential being is actualized, it receives some perfection, some determination, some degree of reality. All change presupposes a *subject* which

persists in relative permanence throughout change; the change occurs 'in the subject.'

3. *Bergson*. — Bergson followed the doctrine of Heraclitus that everything is a continuous *flux of becoming and change*, without any underlying subject: "There are no things, there are only actions." The intellect, in testifying to the existence of 'things,' is erroneous; *intuition*, which is always reliable, testifies to the reality of mere 'change.' 'Movement' is creative evolution and is the result of the double factor of *matter* and the *vital impulse (e'lan vital)*, giving rise to inanimate beings, plants, animals, and man. God is a part of this evolving nature. Bergson practically identified the Nought and the All (being), thereby denying the Principles of Identity and Contradiction.

4. *Change and Causality*. — In order to account for 'change (becoming)' in its entirety, an 'adequate' sufficient reason will have to be given for its total being and existence, and this must be *an adequate efficient cause*. Since change implies the reception of a new reality (perfection, determination) which did not exist as such in the being before the change, it must be produced by the activity of an efficient cause, and the efficient cause must contain this reality either 'formally' or 'eminently.' Neither the being receiving the new perfection nor the new perfection itself can be the 'adequate cause' of the change. Hence, the efficient cause, in its reduction of receptive potency into act, must be a being distinct from the changing being.

5. *The Universality of Change*. — All beings in the world, whether living or nonliving, undergo change, i.e., pass from

receptive potency into act in some form. Energy, potential and kinetic, is in a constant process of transformation in the elements and compounds. The universe as a whole is subject to ceaseless change.

6. *Extra-mundane Cause of Change.* — Every single being in the universe is in receptive potency for new perfections to be acquired through change. And since the universe is but the sum-total of all the single beings present in it, the universe is in receptive potency for new perfections to be acquired through change. Therefore, the universe demands an adequate efficient cause, *distinct from the universe*, in order to account for the changes occurring in the universe.

Even if the universe were supposed to exist from *eternity*, or if an *infinite series* of changes were postulated, the nature of change would still demand an extra-mundane cause.

7. *Unchangeable Cause.* — It is impossible that absolutely every being be changed by another. This extra-mundane cause must itself be either not subject to change or subject to change. If not subject to change, we have arrived at the 'unchanged cause.' If subject to change, it must be changed by another. This 'other cause' will either be not subject to change or subject to change. We must eventually arrive at a *cause not subject to change*, or the changes will not be adequately accounted for, because outside of 'all' there is nothing. Hence, there must be an 'unchanged cause of all change' and, since no other being exists which can change this unchanged cause, it is both *unchanged* and *unchangeable*.

There exists, therefore, a *Prime Changer Unchanged and Unchangeable*.

8. *The Argument of St. Thomas*. — St. Thomas uses this same type of argument. Usually it is called the *argument from motion*. But ‘motion’ (motus) means ‘change’ in the terminology of St. Thomas and Aristotle. The argument leads to a ‘Prime Mover.’

9. *Consequences*. — The Prime Mover or First Changeless Changer must be *eternal, living, intellectual, volitional, spiritual, and personal*. And that is what “everyone understands to be God.”

Therefore, *God exists*.

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¹ *Physics*, III, 201a. For an elucidation of this definition, see the author's *The Domain of Being* (Milwaukee: The Bruce Publishing Co., 1939), Chap. VIII.

² *Creative Evolution*, tr. by Arthur Mitchell (New York: Henry Halt & Co., 1911), pp. 155, 248.

³ *Ibid.*, p. 206.

⁴ *Ibid.*, p. 248.

⁵ *Ibid.*, p. 248.

6 *Ibid.*, p. 273.

7 *Ibid.*, p. 296.

8 *Summa Theologica* (New York: Benziger Bros.), I, qu. 84, art. 1, reply to obj. 3. This and subsequent passages from the *Summa Theologica* are reprinted with permission of Benziger Brothers, Inc., publishers and copyright owners.

9 For the difference between 'receptive' and 'operative' potency, see the author's *The Domain of Being*, op. cit., p. 61.

10 *Summa Theologica*, op. cit., qu. 2, art. 3

Chapter 5

DESIGN

THE VAST MAJORITY OF PEOPLE ARE CONVINCED OF THE existence of a Supreme Being above and beyond the world, no matter how imperfect their conception of this Supreme Being may be. Usually this conviction has its foundation in a contemplation of the order existing in the universe. Order presupposes *design*. Design presupposes an *intelligent designer*. Man's reason thus makes a spontaneous conclusion from the order of the world to an *Intelligent Supreme Being* who is the author of the order existing everywhere in nature.

The philosopher, however, cannot be satisfied with such a spontaneous conviction. He must dissect the argument and reduce it to its logical form; in doing this, he will test the validity and force of the argument.

Science should be of considerable help in pointing out order in the universe. The field of the sciences, however, is so vast that in most instances mere hints must suffice. A more extensive knowledge of the individual sciences will naturally tend to strengthen the *argument from order and design*.

Order and Design

Since this argument for God's existence has as its foundation the 'order' and 'design' present in the universe, an explanation of these terms will be necessary.

Order is the arrangement of various items into a system or whole according to some relationship existing or placed between them. This order will be *static*, if the items are ordered with regard to their entity or being; such is the order of books in a library and of cars in a parking lot. This order will be dynamic, if the items are ordered with respect to the performance of a unified function; for example, the parts of an automobile are arranged so. that the driver can make it travel, and the organs of digestion are arranged so that they can perform the action of digesting food. The division of order into 'static' and 'dynamic' is not necessarily exclusive. Thus, there exists a 'static' order of the various parts of a machine, if the machine is considered merely as a mechanism made up of different entitative parts; but a machine also possesses a 'dynamic' order, because the parts as a system are made to perform a definite operation.

Order will also be either natural or artificial. *Natural* order, whether static or dynamic, is the result of powers operating in the nature of the items which are ordered; the order, for instance, which exists in the organization of a plant or animal body is 'natural' order. *Artificial* order is not due to the nature of the items themselves, but is put into them by an outside agent arranging these items; the arrangement of the parts of a locomotive, for example, is

‘artificial,’ because the machinist puts the parts together in a definite manner to produce a definite result.

Design in a strict sense is planned, intended order, namely, the arrangement of various items into a system or whole, so that this arrangement is the result of plan and intention. Wherever there is design, there is purpose — the purpose to achieve a *definite end through the use of definite means*. When a student sets as the purpose of his life the following of a certain professional career, his course of studies is planned and designed to enable him to reach this goal.

Not all order is ‘designed’; there is also ‘random’ order. Order is *designed*, when all the various items are arranged so as to realize a certain purpose or aim through the use of appropriate means. In an automobile factory, for example, the purpose of producing a self-propelled vehicle effectively influences the draftsmen and mechanics in the making and assembling of all the parts which are necessary for achieving such a type of vehicle. On the other hand, order is *random*, when the effect of the cause results in some sort of actual order, although this order was never intended as the effect of this causality. Thus, the order of the cards existing in the various hands after an honest shuffle and deal is an accidental and ‘random’ order, because there is no effective intention of arranging the cards in this particular order. Of course, if this order is achieved through the deft manipulation of the dealer, it is ‘designed’ order.

Order and Chance

Chance may be defined as a mode of causal activity, not purposive in character, regarded as determining an event. Such an event, when the result of 'chance,' simply 'happens'; it is not the result of any intention or purpose on the part of the agent producing the effect.

Examples will clarify the concept of 'chance.' A strong wind blows some straw around; three pieces of straw are thrown against a fence, forming the letter 'N.' Now, it is neither the purpose of the wind nor of the three pieces of straw to form a letter of the alphabet. Hence, the effect produced is a 'chance event,' and the arrangement of the three straws is the result of 'chance.' — Two highways intersect. Two men are driving their cars, each on one of the two highways. Due to slippery roads, they collide at the intersection. Each driver, of course, intended to make his trip, and so the order of the trip was the result of a purposive action, of 'design.' However, since no mutual agreement was made by the two drivers as to the time of departure and the road to be traveled, the collision itself was not intended in any way; that they happened to meet at the intersection at the same moment was entirely due to 'chance.'

A chance event, therefore, is not the effect of a predetermining law, of a preconceived purpose, of an intelligent intention. *Regularity* is a characteristic of law, and a law produces uniform effects. Chance implies the absence of regularity, and for that reason it *excludes predictability* except on the basis of a statistical average. Insurance companies, for instance, can predict the average number of deaths or accidents which will occur in the

course of a year; but they cannot specify the individuals to whom these events will occur, because many deaths and accidents are due to chance' and as such are not amenable to law. In many cases scientists are ignorant of the causes producing certain regularly occurring events. They perceive the *order* of events, but they do not know the cause; in such cases it would be wrong to ascribe these events to 'chance.' Chance is a factor when each individual being acts on its own, without conspiring with others to produce a definite effect as the result of their *concerted action*. Whenever concerted action on the part of many individual beings occurs, there is order among their individual actions; and this order is the effect of law, not of chance in the strict sense of the word.

Chance and Probability

Scientists, in general, leave 'purposiveness' out of consideration when treating of the phenomena of nature. Materialistic scientists do this, because purposiveness implies intelligence, and intelligence in nature is something they must exclude. Other scientists do this for the reason that purposiveness is unobservable' by the senses, and sense-perception is the foundation of all experience and therefore also of all science. Because of this attitude, the *origination of all phenomena* through chance is the normal scientific view of a large number of scientists.

As a consequence, the possibility and probability of natural phenomena happening through chance must be an all-important part in the scientific method. Where pure

chance is concerned, the *mathematical laws of probability alone* govern everything. Those scientists, therefore, who rule out intelligence in the universe and attempt to explain all happenings on the basis of pure chance, must be *consistent* and apply nothing but these laws of probability in giving an explanation of the origin and operation of natural phenomena. Any other procedure would be an abdication of reason in favor of arbitrariness and wishful thinking.

Probability on the basis of chance follows the ratio of *geometrical progression*. A person flipping a coin has a fifty-fifty chance of calling heads or tails correctly, so that the statistical average of 'one-in-two' should always prevail in the long run.

There are only two possibilities in the case of flipping a coin ('head' or 'tail'), and the average of correctly calling the result is therefore $1/2$ or 0.5 .

When the number of items involved increases, the probability of success through chance becomes progressively less. In a game of dice each cube has six sides and six numbers, the numbers running from 1 to 6. The probability, therefore, of any number showing on top will be 'one-in-six' or $1/6$. Consequently, a player calling for the number 3 has a probability of $1/6$ that this number will appear. That the number 3 appears twice in succession reduces the probability to $1/36$ ($1/6 \times 1/6$, or $.0277$). The probability of obtaining the number 3 ten times in succession is $1/60,466,176$ ($0.000,000,016$).

Probability decreases enormously when higher numbers are used. Pierre Lecomte Du Noüy¹ imagines a powder

composed of 1000 white particles and 1000 black particles, all absolutely alike except for their color. After being thoroughly mixed in a container, the powder is allowed to run into a tube whose diameter is slightly larger than that of the particles so that one grain of powder follows another in the tube. "The probability that the 1000 white particles will be entirely separated from the 1000 black ones after being shaken is expressed by 0.489×10^{-600} or 489 preceded by 600 zeros to the right of the point; about twelve lines of zeros in an ordinary book. It is evident that exponents of over 100 lose all human significance."

The *probability* of an event through pure chance is the ratio of the number of cases favorable to the event to the total number of possibilities, provided all cases are equally probable. *Theoretically*, the event could happen at any time; *practically*, it will happen according to the 'law of statistical averages' as given above, and that means that in cases where fairly large numbers of items are involved the probability of the event happening is practically nil. Speaking *scientifically*, therefore, the probability of *ordered events* happening in nature through pure chance is *practically impossible*, especially when 100 or more items are regularly disposed in an orderly arrangement.

Order and Intelligence

According to the calculus of probability, the ordered arrangement of things and events might happen once in a while, but the same calculus of probability would make the *regular and constant* ordered arrangement of things and

events through chance utterly impossible. And yet, such order exists.

To account for the cases of existing order where none should logically exist, scientists often speak of *anti-chance* — a term introduced by Eddington. The term means ‘a factor opposed to chance,’ and such a term is devoid of all sense unless this factor be specified as something concrete. As such, the term ‘anti-chance’ is delightfully vague, coined to hide ignorance to supplant the intellectual urge of seeking a rationally satisfying answer to the problem. What could this so-called ‘anti-chance’ be?

‘Anti-chance’ can only mean *design due to intelligence*. If order is not due to chance, then it can only be due to intelligence designing the order by arranging the various items into a system or whole according to some definite plan. Where intelligence is absent, chance must explain everything; and where chance cannot account for an orderly arrangement, intelligence must be assumed to make up for the deficiency of chance. There is no other possibility.

*Aristotle*² was well aware of the fact that chance cannot explain the order of nature: “In general, the theory [of chance, as the dominant factor in the universe] does away with the whole order of Nature, and indeed with Nature’s self. For natural things are exactly those which do move continuously, in virtue of a principle inherent in themselves, toward a determined goal; and the final development which results from any one such principle is not identical for any two species, nor yet is it any random result; but in each there is always a tendency toward an identical result, if

nothing interferes with the process. A desirable result and the means to it may also be produced by chance, as for instance we say it was 'by luck' that the stranger came and ransomed the prisoners before he left, where the ransoming is done as if the man had come for that purpose, though in fact he did not. In this case the desirable result is incidental; for, as we have explained, chance is an incidental cause. But when the desirable result is effected invariably and normally, it is not an incidental or chance occurrence; and in the course of Nature the result always is achieved invariably or normally, if nothing hinders. It is absurd to suppose that there is no purpose because in Nature we can never detect the moving power in the act of deliberation.

That Nature is a cause, then, and a goal-directed cause, is above dispute."

Aristotle, in this passage, plainly indicates that all natural processes are for an *end or purpose*. In other words, there is, in his view, *finality* in nature. His entire argument in this chapter (Chap. 8) revolves around the finality present in nature, and finality, he argues, presupposes *intelligence*. As he says:³

"Action for an end is present in things which come to be and are by nature . . . where a series has a completion, all the preceding steps are for the sake of that. Now surely as in intelligent action, so in nature; and as in nature, so it is in each action, if nothing interferes. Now, intelligent action is for an end; therefore the nature of things also is so. Thus if a house, e.g., had been a thing made by nature, it

would have been made in the same way as it is now by art; and if things made by nature were made also by art, they would come to be in the same way as by nature. Each step then in the series is for the sake of the next; and generally art partly completes what nature cannot bring to a finish, and partly imitates her. If, therefore, artificial products are for the sake of an end, so clearly also are natural products. The relation of the later to the earlier terms of the series is the same in both.”

— ARISTOTLE

From the *relation of means to end*, both in the products of art and of nature, Aristotle concludes that the order of nature is the result, not of chance, but of *purposive intelligence*. He cites many instances to prove his point.

Scientists, unless they are also philosophers, simply refrain from considering intelligence as a factor in the order of nature. From the standpoint of ‘science’ such an attitude is permissible. To refrain from considering intelligence is one thing; to deny its existence is an unwarranted step outside their restricted field of research. Hence, when a scientist *denies intelligence* as a factor in the order of nature, he is guilty of the fallacy of *false exclusion*.

‘Purposiveness’ in nature may not readily be detectable, due to the limitations of the human mind. *Order*, however, is an *observable fact* present throughout the universe.

Order in the World of Stars

In the following discussion, relative to the order present in the universe, the philosopher relies to a great extent on the materials furnished by the scientist. The scientist operates here in his proper field. However, one must distinguish between facts and theories, data and interpretations. In the past many theories have been advanced to explain the facts. The facts remain, but the theories have often been modified or even discarded. The theories of electricity and light are such. The general philosophic system advocated by the scientist obviously has much to do with his scientific interpretation of facts, and this must be borne in mind when considering the statements of scientists.

By means of the telescope, the spectroscope, the interferometer, and other instruments, astronomers have made great strides in their knowledge of the world of stars.

The immensity of the world of stars staggers the imagination. Human words are inadequate to describe the bulk, the magnitude and the complexity of the universe. Nevertheless, *the fact of order* throughout this vast expanse is unmistakable.

One of the most remarkable facts disclosed by spectography is the sameness of the materials everywhere; the same kinds of elements built our earth and built the stars. The same kinds of *radiation* occur in our sun, in the remotest stars and galaxies, and in the entire range of interstellar space. The *structure* of the galaxies is fundamentally uniform. The same laws operate here on earth and in the farthest reaches of the world.

Mathematicians express all this in extremely complicated formulae. Such mathematical formulae, discovered after centuries of constant toil, are proof positive that the world of stars is not only 'intelligible' but the work of an extraordinary *intelligence* which grasps everything from a photon to the unimaginable immensity of the world at large.

Astronomers become almost lyrical in their praise of the beauty, the grandeur, the magnificence, and the symmetry of the universe. They speak of the *organic unity* present throughout the universe. Witness Robert Grant Aitken⁴:

"For all its gigantic dimensions, all the bewildering complexities of its structure and motions, all the endless variety of its contents, our great stellar system, our universe so far as it has come within our range of observation, is an organic whole, exhibiting an underlying structural symmetry, built up throughout of the same basic elements, and governed by the same great laws. That the mind of man has been able to reach these great generalizations and through them to attain to the power of prediction, is proof of order and rationality in the universe. It is a universe, in my belief, with thought and more than thought within it."

— ROBERT GRANT AITKEN

Order in the World of Atoms

The world of atoms is just as marvelous as the world of stars. Formerly it was thought that the atoms were solid and indivisible substances. Since the turn of the century, however, this concept has been changed completely, mainly through the research of men like J. J. Thomson, E. Rutherford, H. Mosely,

L. LeBroglie, N. Bohr, W. Heisenberg, E. Schrödinger, M. Born, P. Dirac, and M. Planck. While much of what follows still theory, the views of these scientists have been signally vindicated through the technique of 'atom-smashing' and the explosion of the atom bomb.

There are ninety-four, perhaps ninety-six, natural kinds of atoms or *elements*. The pattern of their construction is fundamentally the same. Each one consists of a *nucleus and electrons* (or, as in the case of hydrogen, of a single electron). The nucleus represents the weight or mass of the atom, and it consists of protons possessing a positive charge of electricity and of neutrons. Neutrons are electrically neutral. Electrons are particles possessing a negative charge. Both the proton and the electron have an *equal charge* of electricity, namely, 4.8025×10^{-10} electrostatic units, and this charge never varies. There are also other particles, such as positrons, mesons, neutrinos, etc., but they need not concern us here.

Each element has distinctive physical and chemical properties. Among them are specific gravity, melting point, boiling point, ductility, malleability, compressibility, hardness, coefficient of expansion, refractive index, density, heat of combustion, heat of formation, conductivity of

electricity and heat, combining weight, and so forth. These properties are *constant* for the various elements.

Elements with similar properties occur periodically. The periodic recurrence of similar elements is termed the *Periodic Law* and this law states that the properties of the elements are the periodic functions of their atomic number, not of their atomic weight. The periodic table is arranged according to groups and series.

As early as 1914 Rydberg called attention to the fact that the 'atomic numbers' of the group 0 gases can be calculated from a series of numbers now called the *Rydberg Series*, expressed in the simple formula:

$$2(1^2+2^2+2^2+3^2+3^2+4^2....)$$

According to this formula we obtain these results:

<u>Element</u>	<u>At. No.</u>	<u>Rydberg Series</u>
Helium.....	2.....	$2(1^2) = 2$
Neon.....	10.....	$2(1^2+2^2) = 10$
Argon.....	18.....	$2(1^2+2^2+2^2) = 18$
Krypton.....	36.....	$2(1^2+2^2+2^2+3^2) = 36$
Xenon.....	54.....	$2(1^2+2^2+2^2+3^2+3^2) =$ 54
Radon.....	86.....	$2(1^2+2^2+2^2+3^2+3^2+4^2) = 86$

We also discover a remarkable *parallelism* in the series. The first series, that of hydrogen and helium, is unique. Hydrogen is active, helium is inert. This small series of two

elements epitomizes within itself all the subsequent series of the periodic table. The lithium and sodium 'short' series are parallel in nearly all respects, each containing 8 elements. The potassium and rubidium 'long' series are also parallel to each other, each consisting of 18 members, of which 10 are transitional. The caesium 'longest' series is composed of 32 elements. If the last (radioactive) series, as some scientists believe, also had originally 32 elements, the parallelism would be complete; but that is only a conjecture, although the discovery of neptunium and plutonium (and perhaps other elements mentioned more recently) tends to verify this belief at least in part. The fact of periodicity and parallelism among the groups and series of elements is undeniable.⁵

When we consider that everything in the entire universe is built up from these elements and subatomic particles, we come face to face with one of the most astounding illustrations of *orderly arrangement*. This is particularly true when we also consider the chemical combination of elements into compounds.

Chemical *compounds* are never the result of haphazard, random combinations; they are always subject to definite laws. A compound is not a mere 'mixture' of chemical substances. A true chemical compound is *homogeneous* throughout; it is a chemically new substance with new properties, the original elements losing their chemical identity in the process of combination. A compound is a combination of elements in *definite proportions of weight or volume*. This *law of combining weights affects all matter*,

whether present in the test tube or on the earth or in the remotest nebula.

Electrons, protons, and neutrons *tend* to form elemental atoms, and elemental atoms tend to form chemical compounds according to the inexorable law of their combining weights. This tendency is frequently called *chemical affinity*. Such is the tremendous fact of orderly arrangement governing the entire universe.

No wonder, then, that Sir Oliver Lodge wrote:⁶ claim that the material universe with its variously designed atoms, and the way they have been used in the construction of all the objects, minerals, vegetable, and animal, that we see around us, is a sign also of gigantic Design and Purpose, and is a glorious Work of Art.”

Order in the World of Plants

The *plant* is the lowest form of life on the globe. It possesses no recognizable consciousness. Nevertheless, even the unicellular plant has a structure and performs functions which are amazing in their intricacy and inherent purposiveness. It acts almost as if it had knowledge of a definite goal and consciously strove to realize it.

The fundamental unit of life is the *cell*. Just as the physicists formerly thought that the atoms were simple substances, so the biologists thought that the ultimate constituents of living beings were relatively simple parts. However, the more biological research penetrates into the structure and function of the cell, the more mysteries it discovers.

The cell is not a mere mass of matter: it is *organized*. A watch, a linotype machine, a rotary printing press, a diesel engine, when compared to the complexity and sensitivity of a cell, are but clumsy contrivances. This fact becomes more obvious when consideration is given to the hundreds of thousands of species and hundreds of millions of *individual plants* existing on earth, all of which are different and yet are built up of single cells which are fundamentally alike as to plan. That each plant body is a *unit* is evident; it possesses organs or structural parts distinct from one another, and the different organs have specific functions to perform, as can be observed in the roots, the stem, the leaves, the flowers, and the fruits. All parts and all functions are present not for their own sake, but for the sake of the *organism as a whole*; they are mutually dependent and conspire toward the welfare of the individual as a totality. It is the individual which counts, not so much the parts. The individual is, in all truth, more than the sum of the atoms and molecules and parts which make up its body.

Two specific functions of plant life deserve special attention: metabolism and cell division. Both functions show definitely the use of proper means to realize specific ends or purposes — *self-preservation and the perpetuation of the species*.

The cell is a magnificent *laboratory*. Without electric appliances and furnaces, without the aid of heat and pressure, without technical knowledge and experimentation, the cell manufactures organic compounds and by-products which man has found extremely difficult to make synthetically and which still escape, in very many

instances, man's skill and ingenuity. Depending upon the part the cells play in the general economy of the total organism, each one will absorb only the kind of material needed and fabricate the type of compound required.

Nutrition, growth, and propagation⁷ are the main functions of vegetative life. Although the plant has many diversified activities, they are all subservient to these three. Volumes could be, and have been, written about the wonders of plant life. These few points have been stressed so as to bring out the orderly arrangement and purposiveness existing in *all plants*.

The plant is indeed a *whole-making and self-regulating structural Unit*.

Order in the World of Animals

Like the plant, the animal is a vegetant being. It is a remarkable feature of the animal body that all vegetant life is subordinated to the building of a body specifically *ordered to sentiency*.

Every animal has a nervous system of some kind, because nerves are necessary for sentiency. The basic unit of the nervous system is the neuron, or nerve cell.

The nervous system in its structures and functions is without question a very complicated but orderly arrangement of means toward end, namely, a method to bring the animal in contact with its environment through knowledge and to enable it to preserve its own life and its own kind. Each sense and organ is marvelously constructed and designed for its particular function.

Consider the eye. Long before man invented the camera, the principles of optics embodied in the camera were already existing in the eye, only in a simpler and more efficient manner. The front of the eye must be transparent, and yet the cornea is fashioned out of the opaque connective tissue of the sclerotic coat. The convex lens of the camera is also found in the eye, made out of opaque epithelium; so as to focus the picture properly, this lens is capable of changing its convexity, something the glass lens of the camera cannot do. The iris is the diaphragm of the camera; in order to correct any aberration of light rays and to block out marginal rays, and in order to obtain a clear picture, the iris is automatically adjusted by the amount and intensity of the light rays entering the eye. Like all optical instruments, which must be blackened inside in order to quench any reflecting light from the walls, the inside of the eye is covered with a black pigment (melanin). The photo-sensitive plate of the camera is duplicated in the retina of the eye. The retina, however, is far better than the photographic plate, because the retina need not be replaced for successive pictures. The retina is constructed of cones for color vision and of rods for plain luminosity. The eye, unlike the camera, repairs its damaged parts and keeps all parts in working condition. Due to accident, disease, and heredity, the eye may be defective, but it will always be superior to the camera by the fact that it enables the individual to have *conscious perception* of images in three- dimensional views. The eye is a marvelous instrument in its order.

Practically all animals have the power of *locomotion*, and the structures are perfectly adapted to their environment in the air, on the land, and in the water. Eons before the coming of man and his inventions, levers existed in the animal body; the eyeball is moved by a muscular pulley; the heart is a force-pump; valves are used in the heart and in the veins; the poison fang of the snake is a hypodermic syringe; the cilia in the windpipe are brushes to remove mucus; electric eels have charged electric batteries; the glow- worms and fire-flies manufacture heatless light; the submarine's principle of flotation and submergence is utilized in the swim-bladder of the fish; the bird is the ideal heavier-than-air flying craft. If man's inventions are the result of design and purpose, these must also be such.

In commenting on the co-ordination and adaptation of that extraordinary piece of workmanship, the bird's *wing* and *feather*, Alfred Russell Wallace,⁸ the eminent scientist, remarks as follows: "Each feather 'grows,' as we say, out of the skin, each one from a small group of cells, which must be formed and nourished by the blood, and is reproduced each year to replace that which falls away at moulting time. But the same blood supplies material for every other part of the body - builds up and renews the muscles, the bones, the viscera, the skin, the nerves, the brain. What, then, is the *selective or directing* power which extracts from the blood at every point where required the exact constituents to form here bone-cells, there muscle-cells, there again feather-cells, each of which possesses such totally distinct properties? And when these cells, or rather, perhaps, the complex molecules of which each kind of cell is formed, are

separated at its special point, what is the constructive power which welds them together, as it were, in one place into solid bone, in another into the extremely light, strong, elastic material of the feather — the most unique and marvelous product of life?

“Yet again, what is the nature of the power which determines that every separate feather shall always ‘grow’ into its exact shape? For no two feathers of the twenty or more which form each wing, or those of the tail, or even of the thousands on the whole body, are exactly alike (except as regards the pairs on opposite sides of the body), and many of these are modified in the strangest way for special purposes. Again, what directive agency determines the distribution of the coloring matter (also conveyed by the blood) so that each feather shall take its exact share in the production of the whole pattern and coloring of the bird, which is immensely Varied, yet always symmetrical as a whole, and has always a purpose, either of concealment, or recognition, or sexual attraction in its proper time and place?”

— ALFRED RUSSELL WALLACE

Wherever we look in the world of animals, we discover millions of examples of order, design, and purpose, but the animals themselves know nothing about them.

Order in the World of Men

Man is an epitome of the universe. In him are united the atoms and molecules and energies of the inanimate world, the power of nutrition and growth and reproduction of the vegetant cells found in plants, the sensory organs and functions present in the animal body.

Yet so completely are these three worlds integrated in man that he is a *unitary substance* in every respect. The atoms and molecules are subservient to his vegetant life, the vegetant structures and activities are subservient to his sensory life, and the sensory organs and functions are subservient to his intellectual life. In him everything is harmoniously united and becomes one. In this connection, little more can be done than point out a few pertinent facts.

Like every plant and animal, man originates from a single *fecundated cell*. As Alexis Carrel⁹ observes: "An organ builds itself by techniques very foreign to the human mind. It is not made of extraneous material, like a house. Neither is it a cellular construction, a mere assemblage of cells. It is, of course, composed of cells, as a house is of bricks. But it is born from a cell, as if the house originated from one brick, a magic brick that would set about manufacturing other bricks. Those bricks, without waiting for the architect's drawings or the coming of the bricklayers, would assemble themselves and form the walls. They would also metamorphose into windowpanes, roofing-slates, coal for heating, and water for the kitchen and bathroom. An organ develops by means such as those attributed to fairies in the tales told to children in by-gone

times. It is engendered by cells which, to all appearances, have a knowledge of the future edifice, and synthesize from substances contained in blood plasma the building material and even the workers.”

The formation of the *human embryo* in the mother’s womb is one of the many wonders of nature. Bones, nerves, hands, feet, eyes, ears, heart, lungs, viscera, and every other type of structure and organ are made in the dark cavern of the womb long before they can be used. The mother does not consciously form the parts of the body of the child and assemble them into the pattern possessed at birth. If the formation of the child depended on the knowledge and conscious activity of the parents, no child would be born or even go beyond the first stage of life. Nonetheless, the miracle of conception and birth happens, not once but millions and billions of times.

Among all the other things, the *hand* is formed in the embryo at a rather early period. “The hand,” says Alexis Carrel,¹⁰ “is a masterpiece. Simultaneously, it feels and it acts.

It acts as if endowed with sight. Owing to the unique properties of its skin, its tactile nerves, its muscles, and its bones, the hand is capable of manufacturing arms and tools. We never would have acquired our mastery over matter without the aid of our fingers, those five small levers, each composed of three articulated segments, which are mounted upon the metacarpus and the bones of the wrist. The hand adapts itself to the roughest work as well as to the most delicate. It has wielded with equal skill the flint knife of the primitive hunter, the blacksmith’s hammer, the

woodcutter's ax, the farmer's plow, the sword of the medieval knight, the controls of the modern aviator, the artist's brush, the journalist's pen, the threads of the silk-weaver. It is able to kill and to bless, to steal and to give, to sow grain on the surface of the fields and to throw grenades in the trenches." Similar words could be said of any number of human organs.

Or, consider the human *brain*. The substance of the brain consists of more than twelve thousand millions of cells, all connected together by fibrils, so that the cells associate several trillions of times. The entire nervous system of man centers in the brain. The brain is the seat of consciousness. Even thought is somehow connected with the activity of the brain. The brain is far more complicated and intricate in its structure and operation than the whole material universe. Notwithstanding the unimaginable number of its component parts and the immense complexity of its activity, the brain functions as an *essential unit*.

From the standpoint of physical size, man is halfway between the big stars and the infinitesimal atoms; he thus occupies the pivotal position in the universe. The crowning achievement of man, however, lies in the field of his *intellect and will*. Through these powers he surpasses the material world and the kingdoms of plant and animal. By means of his intellect man is able to penetrate the mysteries of nature and interpret it. Civilization and culture, science and art, commerce and industry, government and social service, peace and war, good and evil — all derive their beginning and fulfillment from the use of man's intellect and will. Saint or sinner, man is in truth "wonderfully made."

The more the sciences advance, the more they discover of order and design. Much more could have been said than is said here, but this brief survey will suffice.

The world is, without doubt, a *universe*, a *cosmos*.

Conclusions

A system of order is the result either of chance or of intelligence. Now, the universe is a system of order. Therefore, the universe is the result either of chance or of intelligence.

Order may be, and sometimes is, the result of *chance*. However, a chance effect must conform to the probabilities inherent in chance. Statistical averages are all that can be expected in such effects, because the calculus of probability admits of nothing more uniform than a statistical average. The greater the number of items involved in the chance effect, the smaller (in geometrical progression) the probability of occurrence. Where more than one hundred items are concerned, the statistical average is so small as to be *practically impossible*. Theoretically, of course, the chance effect may occur at any time, because no opportunities are privileged. Nevertheless, chance is governed entirely by the calculus of probability and the statistical average derived there from. Due to this fact, a chance effect involving a large number of items can only occur here and there, now and then. As a consequence, chance can never achieve anything like *uniformity*, *regularity*, and *constancy* in its effects; otherwise these effects would simply not be due to 'chance.' Where there is

uniformity, regularity, and constancy in an arrangement of entities or operations, there is *law*; and law is the very antithesis of chance. Hence, when law governs an event, chance is eliminated as the governing factor.

Now, the *universe*, as science testifies in each of its departments, *is governed by law*. The universe is a vast system of orderly arrangements, whether viewed in the light-year expanse of the material world at large or in the millimicron smallness of atoms and subatomic particles or in the beautifully designed kingdoms of plants, animals, and men. This order prevails not only here and there, now and then, but *everywhere* and *always*. Chance effects, of course, do occur; however, the order present everywhere of nature is uniform, regular, and constant. Order is the rule; chance effects are the exception. It follows then, that the order present in the universe cannot be explained and accounted for by 'chance.'

A system of order must be the result either of chance or of intelligence. The universe is a system of order. Since it cannot be the result of chance, it must be the result of *intelligence*.

Every atom, every element, and every chemical compound is based on an orderly arrangement of parts and activities; as such, they must be the effect of an intelligence as their proper cause. The entire universe, however, is composed of the same kinds of atoms, elements, and compounds. Hence, the same intelligence which is responsible for the orderly arrangement present in the atoms, elements, and compounds must also be responsible for the orderly arrangement of the entire universe. All

plants, animals, and men are composed of fundamentally the same kinds of cells, and these cells in turn are composed of atoms, elements, and compounds taken from the inanimate world (though changed considerably in the vital processes going on in the living tissues), and all cells reveal an orderly arrangement of structures and functions. Consequently, the same intelligence which is responsible for the orderly arrangement present in the atoms, elements, and compounds must also be responsible for the orderly arrangement of the kingdoms of plants, animals, and men. In other words, since the entire universe is a system of unity, the order of the entire universe and of all its parts must be referred to the *self-same ordering intelligence*.

Arthur H. Compton,^{[11](#)} one of the great modern scientists, recognized this principle when he wrote:

“If we see in nature evidence of a plan, this will imply intelligence, for a plan or purpose is otherwise meaningless. The alternative to an intelligent plan for the world is that things have happened to be as they are through chance... Here we are concerned with statistics, and the statistical probability of a world’s happening to have a form similar to ours is so fantastically small that even in the billions of years that astronomers might allow for the age of our galaxy it must be considered as a highly improbable hypothesis... If the simple yet prolific set of pushes and pulls to which the electrons are subject result from pure chance, then chance is more ingenious than the most clever of our scientists.”

Philosophy, on the strength of the Principle of Sufficient Reason, demands intelligence as the logical explanation of order. Structures and functions always exist in order to realize a definite effect; that is their purpose — they are a *means toward a specific end*. However, only an intelligent being is capable of grasping an end to be realized and of designing the means necessary to realize the achievement of this end. Philosophy, therefore, also demands intelligence as the sufficient reason for accounting for the order of the universe.

Proof of God's Existence

Order demands intelligence, when order is uniform, regular, and constant. The order in the universe, therefore, is an intelligent order and can only be the effect of an *intelligent cause*.

It should be evident that *the universe itself does not possess intelligence*. The universe as a whole is inanimate. Intelligence, however, presupposes life, because intelligence is a form of life. The great bulk of the universe outside our earth is altogether devoid of life. All the bodies existing in the vast expanse of the world are made up of the same kinds of atoms and compounds present on the earth. The single atoms, however, lack intelligence; even if they had intelligence, they are all individual units, and it is inconceivable that they would be the cause of the general order prevailing everywhere. Plants, animals, and men have

life. But the plant has no consciousness, and the animal no rational mind. Of all the beings in the world, man alone possesses a rational mind. This rational intelligence of man, however, is not due to himself; it is given with his nature, and man is not the cause of his own nature. Man is an integral part of the universe, and as such his rational intelligence must be derived from the same rational mind which ordered the entire universe; and this rational mind must be as much more powerful than man's mind as the order of the universe is greater than the order existing merely in man.

The entire universe and all its parts are *subject to the law of order*. Order has been *imposed* on them, and they *obey* the law of order in their whole being. It follows, then, that the rational intelligence which put the law of order into them *cannot be the universe itself* nor any part of the universe; otherwise it would impose the law and be subject to it, be 'orderer' and 'ordered,' at the same time under the same respect. This means that the rational mind or intelligence responsible for the order and design present in the universe is itself 'extra-universe,' *extra-mundane*, distinct in being from the universe and from all beings comprising it. And since man is an intelligent person, this rational intelligence ordering the world must also be *personal*. Now, the personal, extra-mundane designer and orderer of the universe we call God.

Therefore, *God exists*.

The Argument of St. Thomas

The proof for God's existence, based on order and design, is called by St. Thomas¹² the 'way taken from the governance of the world.' It is his fifth proof, and he formulates it as follows:

"The fifth way is taken from the governance of the world. We see that things which lack intelligence, such as natural bodies, act for an end, and this is evident from their acting always, or nearly always, in the same way, so as to obtain the best result. Hence, it is plain that not fortuitously, but designedly, do they achieve their end. Now whatever lacks intelligence cannot move toward an end, unless it be directed by some being endowed with knowledge and intelligence; as the arrow is shot to its mark by the archer. Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God."

— ST. THOMAS AQUINAS

One cannot help but admire the brevity and penetrating logic of St. Thomas in this argument. It contains everything essential. Its brevity, however, might fail to convince the average student; and so his line of reasoning has been expanded in the foregoing sections, in the hope that the student will grasp the significance of the argument better.

We close our discussion of order and design in nature with the words of Robert A. Millikan:¹³ "Wise men have always looked in amazement at the wonderful orderliness of

nature and then recognized their own ignorance and finiteness and have been content to stand in silence and in reverence before Him, repeating with the psalmist: 'The fool hath said in his heart, there is no God.'

Summary of Chapter V

Another proof for God's existence is the one based on the *order* and *design* present in the universe.

1. *Order and Design.* — 'Order' is the arrangement of various items into a system or whole according to some relationship existing or placed between them. Order may be 'static' or 'dynamic,' 'natural' or 'artificial.'

'Design' is the arrangement of various items into a system or whole, so that this arrangement is the result of plan and intention. Wherever there is design, there is purpose.

2. *Order and Chance.* — 'Chance' is a mode of causal activity, not purposive in character, regarded as determining an event. Chance implies the absence of regularity, and for that reason it excludes predictability except on the basis of a 'statistical average.'

3. *Chance and Probability.* — Where pure chance is concerned, the mathematical laws of probability alone govern everything. Probability on the basis of chance follows the ratio of 'geometrical progression.'

4. *Order and Intelligence.* — Where intelligence is absent, chance must explain everything; and where chance cannot account for an orderly arrangement, intelligence must be assumed to make up for the deficiency of chance.

5. *Order in the World of Stars.* — The fact of order in the universe is unmistakable. This is seen in the elements, radiation, structure of the galaxies, and the laws governing the universe. The universe is a *system*, a *unit*.

6. *Order in the World of Atoms.* — The elements, the atoms, and the subatomic particles reveal an orderly arrangement, as can be seen in the Table of Elements and in the Periodic Law. Chemical compounds are regulated by the law of combining weights, and this law affects all matter.

7. *Order in the World of Plants.* — The fundamental unit of life is the *cell*. Its activities are metabolism, growth, and reproduction. Cell division in 'mitosis' and 'maturation division' are functions directed toward self-preservation and the perpetuation of the race. The plant is a whole-making and self-regulating structural *unit*.

8. *Order in the World of Animals.* — All activities are ordered to sentience. The *neuron* is the basic unit of the nervous system. The organs of perception are marvels of construction and function. The structures involved in locomotion are perfectly adapted to the environment in the air, on the land, and in the water.

9. *Order in the World of Men.* — The activities of the inanimate atoms, the vegetant functions of the plants, and the sensory functions of the animal are all subservient in man to his intellectual life. Man is a *unitary substance* in every respect. The crowning achievement of man lies in the field of his intellect and will.

10. *Conclusions.* — Chance cannot achieve anything like *uniform* regularity, and constancy in its effects. The universe, however, is governed by law, and as a result there is everywhere uniformity, regularity, and constancy. Hence, the universe, as a system of order, must be the result, not of chance, but of intelligence, and this intelligence must be

one for the entire universe. This conclusion is borne out by common sense, by science, and by philosophy.

11. *Proof of God's Existence.* — The universe itself does not possess intelligence. The entire universe is subject to the law of order. Hence, the intelligence responsible for the order in the universe cannot be identified with the universe, but must be extra-mundane. Since man is a 'person,' the rational intelligence ordering the world must also be *personal*. This personal, extra-mundane designer and orderer of the universe we call God. Therefore, God exists.

12. *The Argument of St. Thomas.*—The fifth proof of St. Thomas is the argument based on order and design. It is essentially the same as the argument developed in this chapter.

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¹ *Human Destiny* (New York: Longmans, Green & Co., Inc., 1947), p. 31 f.

² *Physics*, Bk. II, Chap. VIII, 199 b 15-30 (Cambridge, Mass.: Harvard University Press, 1929).

³ *Loc. cit.*, 199 a (New York: Random House, 1941).

⁴ Frances Mason, ed., *The Great Design* (New York: Macmillan, 1934), p. 36.

5 For a more detailed discussion of the structure of matter, see the author's *From Aether to Cosmos* (Milwaukee: The Bruce Publishing Co., 1941), Chaps. 2

6 As quoted in *The Great Design*, op. cit., p. 231.

7 For illustrations of the cell division in mitosis and maturation division, see the authors *The Whole Man* (Milwaukee: The Bruce Publishing Co., 1945). Chap 2.

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9 *Man the Unknown* (New York: Harper and Bros., 1935), p. 107 f.

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11 "A Modern Concept of God," *Man's Destiny In Eternity* (Boston: The Beacon Press, 1949), p. 8 f. 55

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Chapter 6

CONTINGENCY AND CAUSALITY

MOST PEOPLE ARE CONVINCED OF GOD'S EXISTENCE THROUGH A contemplation of 'order and design' in the universe, because order demands intelligence, and intelligence is not found in inanimate things themselves. Many scientists accuse such persons of *anthropomorphism*, that is to say, of attributing human activities to nonhuman beings; because man has an intelligent purpose in ordering things, therefore also the order manifest in the world must have an intelligent cause. The principle, however, underlying order is a logical principle, one demanded by reason as the rational explanation of order; otherwise 'chance' must be accepted as the sole explanation of order, and chance is totally inadequate as a rational explanation. Hence, the proof from 'order' leads to the existence of God.

Another argument, more philosophical in character, is based on the *contingency* of the beings present in the universe. The argument from *causality* is closely related to that of contingency. These will now receive consideration.

Necessity and Contingency

For a clear presentation of the argument, the terms involved must be defined.

Necessity is that state in virtue of which something cannot be otherwise than it is. Something, therefore, is said to be *necessary* if it must be what it is; or, to put it negatively, something is necessary if it *cannot not be* what it is.

A distinction is made between moral, physical, logical, and ontological necessity. *Moral* necessity is the 'obligation' which a moral law imposes on the will; such is, for instance, the obligation to respect human life as required by the law 'Thou shalt not kill.' *Physical* necessity is the necessity imposed on a thing according to the law of physical nature; thus, the movements of the planets around the sun are physically necessary. *Logical* necessity is the necessity resulting from the force of a law of logic; it is, for example, a law of logic that contradictories can neither be true nor false together. Ontological necessity is the necessity which arises in a thing because of its 'being,' essence,' 'nature'; because a being is an 'organism,' it necessarily possesses 'life.' Something, therefore, may be necessary in any of these given meanings. Here we are concerned solely with 'ontological' necessity.

A further distinction is made in 'ontological' necessity. In the order of its being a thing may be either 'hypothetically' or 'absolutely' necessary. Something is said to be *hypothetically* necessary when its existence is dependent on a cause, but which, once the condition of its existence is given, must be (cannot not be) a definite reality; man need not, for example, always exist but, if he exists, he must be

an 'animal' while he exists. Something is *absolutely* necessary when it exists in such a manner that it *must exist*, independent of any condition; such a being *cannot not exist*, because its non-existence would imply a contradiction.

Since non-existence would be a contradiction in an absolutely necessary being, it is evident that it *cannot receive existence* from another being; that means that it is uncaused and must exist always. Such a being can have the sufficient reason for its existence in itself only, so that it exists entirely of itself and by reason of its *nature or essence*. Existence belonging to the constitution of its essence, the absolutely necessary being includes existence in its very concept and definition, at least implicitly. To exclude actual existence from the concept of the necessary being, or to consider actual existence as something superadded to its essence, would deny absolute necessity itself, because then this being would have the sufficient reason for its existence in itself and not have it in itself at the same time and under the same respect. In the absolutely necessary being, therefore, essence and existence must actually be identical; otherwise it would necessarily exist and not necessarily exist, and that would be a contradiction.

Contingency is that state in virtue of which something can be otherwise than it is in its being or existence or both. A *contingent* being is a being which is what it is, but could be different; if it actually exists, it exists in such a manner that its non-existence would involve no contradiction because existence does not belong to the constitution of its essence.

‘Contingency’ is the contradictory of ‘necessity,’ and a ‘contingent being’ is the contradictory of a ‘necessary being.’ A contingent being is essentially *non-necessary*: if it does not exist, it can receive existence; and if it exists, it can lose its existence (or at least be thought of as non-existent), without a contradiction being expressed or implied. It follows that a contingent being has not the sufficient reason for its existence in itself and by reason of its nature or essence; if it had, it would be a necessary being and would exist through absolute necessity.

Since the contingent being has not the sufficient reason for its existence in itself, it can have this sufficient reason only *in another*. The necessary being’s existence is uncaused, and as a consequence the contingent being’s existence must be caused. Just as ‘absolutely necessary’ and ‘contingent’ are contradictory terms and cannot be true together, so ‘uncaused existence’ and ‘caused existence’ are contradictory terms and cannot be true together.

Contingency and the World

Having explained the meaning of a ‘contingent being,’ we must now turn our attention to the different types of being present in the universe and establish the *fact of their contingency*. The first point to consider is the *mode of the physical world at large*.

Astronomers and astrophysicists assure us most emphatically that the *mode of the universe* never remains the same; it has undergone a great change in the past, is changing continuously in the present, and will continue to

do so for eons to come. Not only do 'new stars' explode into brilliance, but all the stars slowly alter their physical and chemical form without cessation, as can be observed in the emission of various kinds of radiation, particularly of light and heat. The vast galaxies, according to all evidence, are in a constant evolution of structure, as would be expected if this is an expanding universe. Motion exists everywhere, and motion means physical change.

Our *earth* is a typical planet-star. That it is presently undergoing an incessant process of form and structure, is an observable fact. The evidence accumulated by the science of geology points in a fairly conclusive fashion to the fact that the earth was a molten body in the far-distant past and has gradually cooled off through radiation; the oceans flowed together; the continents rose; the mountain ranges upheaved their massiveness; extensive deposits of rocks covered the globe. And all this happened in calculable time. What occurred on the earth presumably also took place in similar fashion on planets such as Mars and Venus and other stars, and all celestial bodies are headed toward a similar fate.

Since the mode or structure of the universe at large is continuously changing now, the conclusion is justified that it has changed in the past and will change in the future. The process may take millions or billions of years, but the time element is of no particular significance. The fact of change in the structure of the universe is positive proof that it *does not exist necessarily*; if this structure were a 'necessary being,' it would have to remain as it always has been. The *mode* of the universe, therefore, is contingent.

Contingency and Organisms

So far as we know, the earth is the only planet which contains organisms. Plants, animals, and men comprise the three kingdoms of living beings. If it should ever be established that life also exists on some other planet or star, it would still remain a fact that *organisms are contingent beings*.

Organic life cannot exist on the incandescent stars; the heat is far too intense to sustain it. Even on this earth organisms did not always exist, because the earth, as geologists point out, was formerly in a stage of incandescence; this is shown by the sequence of the rock deposits, because the oldest formations are layers of igneous rocks.

In any case, the idea of 'kingdoms' of plants, animals, and men is an abstraction. In reality, nothing exists but *individual* plants, animals, and men. That every one of them is a contingent being,' is obvious. Each one has had its origin in time. The life span of every organism is relatively short, and then it dies and *ceases to exist*.

Anything, however, which has a beginning and an end to its existence cannot be an absolutely necessary being, because a necessary being must be whatever it is and remain such at all times. Organisms, therefore, are non-necessary and, as a consequence, *contingent*.

Contingency and Atoms

Wherever there is *composition* there is *contingency*. Protons, electrons, and neutrons may exist in a 'free state' or in 'conjunction.' At one time they may exist in the one state and at another time in the other. Elements, of course, are being continuously formed and dissolved, both in the laboratory and in nature; they are, therefore, manifestly contingent. Atoms and elements do not remain the same at all times, because they are in a constant process of change, whether viewed individually or as constituents of chemical compounds; they, too, must be classified among the contingent beings. Even the subatomic particles undergo change in many ways, because their behavior is different when in the 'free state' and when in conjunction with others in an element or compound; one cannot say, therefore, that they 'must be' forever what they are at any particular point of time. For the scientist who is convinced that matter and energy are interchangeable the conclusion must be inevitable that subatomic particles, elements, and compounds are by their very nature unstable in their entity. Whether one agrees or disagrees with this view, that fact of *change* and *composition* in all bodies constituting the universe is proof positive that individual bodies are not absolutely necessary.

Subatomic particles, atoms, elements, and compounds, no matter what their size or number, are therefore *contingent beings*.

Contingency and Matter

While many persons, particularly materialistic scientists, are willing enough to admit that individual bodies and their component particles change continuously, they maintain that matter is eternal and therefore necessary. If matter is actually eternal, without a beginning and a passage from non-existence to existence, it has its existence in virtue of its essence; such a being is not hypothetically but absolutely necessary so that it *must be whatever it is*.

Now matter does not exist in the abstract but in the concrete. Matter exists in specific forms, namely, concretely as subatomic particles, elements, chemical compounds, plants, animals, men, stars, galaxies, and interstellar material. They change, and matter changes in and with them. Because of this constant change, matter cannot be said to be 'necessarily what it is.'

If matter were necessary and eternal, then it would necessarily and eternally be and remain the same, because it would be absolutely independent of every other being in its essence and existence. Regarding a state of *rest* or a state of *motion*, it would have to exist at rest or in motion, whichever is first. Both states cannot be present at the same time under the same respect, because that would be a contradiction, and contradictories cannot be true together. If matter existed from eternity in motion, then motion is necessary, because motion would be given with the essence of matter; motion would simply be a mode of the existence of this essence and as necessary as the essence of matter itself. If a state of rest is considered as being present at first, then *rest is necessary and essential to matter*. Scientists are more inclined to the viewpoint that all matter

is in motion. However, motion is always definite with regard to *velocity* and *direction*; there is no such thing as 'indeterminate' motion. Consequently, if matter were in motion eternally, it would necessarily have a motion which is definite with regard to velocity and direction, and this motion *could never change*. Now, motion changes continuously, both as to velocity and direction. Therefore, motion is not essential to matter. But neither is rest, since there is real motion in the world. Consequently, the essence of matter is not necessary, but must be *contingent*.

Materialists put forth the claim that matter is eternal. In this claim they contradict the best *evidence of science*. Thermodynamics assures us that the amount of energy available for useful work is diminishing; various forms of energy are converted into heat, and heat is being dissipated into space. Since heat can do work only when passing from a higher to a lower level, it is 'unidirectional' in its activity, with the result that the universe is caught in an *irreversible process*. This means that the universe is gradually running down and is slowly proceeding toward energy-death. The end of activity in the universe may be immeasurably far away in the future, but it is unavoidable and final because the supply of energy in the stars is not unlimited. The supply of energy being limited, the conclusion is evident that sometime in the past there was a *beginning to the universe as presently constituted*: where there is an end there must be a beginning. But if there is a beginning to the activity of the universe, there must also be a beginning to the matter of which the universe is composed. Hence, the universe and its matter is contingent in its existence.

Scientists have discovered various clues which enable them to calculate the *age of the universe*. The radioactive elements, such as uranium, thorium, and actinium, have a stable and unvarying rate of disintegration, and no known force is capable of inaugurating, accelerating, retarding, or stopping this process. The amount of radioactive elements is relatively small, and there is no indication whatsoever of the formation of a further supply. The entire supply, for example, of uranium on earth must therefore have had its beginning at *one specific time in the past*; it could not have existed from eternity, otherwise it would now, according to the established rate of disintegration, be already converted into radio-lead. Geophysicists calculate that the origin of radioactive elements occurred about two billion years ago. Astronomers, judging from the rate at which radiation takes place in the stars, also arrive at the figure of approximately two billion years for the beginning of the universe. Similarly, the cosmogonists, in their study of the velocity of the receding galaxies, calculate that the beginning of the expansion of the universe occurred about two billion years ago. All these clues indicate that the universe will come to an end definitely fixed in time and for the same reasons had a beginning definitely fixed in time. If these calculations are basically sound, the universe, together with its matter, *cannot have existed from eternity but must have had a beginning in time*. Even if one assumed (and this is a gratuitous assumption, without any foundation in fact) that a previous world existed, out of which the present world was somehow formed, one would have no rational explanation of the *collocation of matter* so as to account for

the *original formation* of the present world. After all, the only universe we know is the present one, and it is the origin of this universe which must be accounted for. The pertinent facts of our present universe, however, all lead to the conclusion that it began in time. And since matter in the concrete is identical with the present universe, matter too must have had a beginning. But if matter had a beginning, it cannot be eternal and it must be *contingent*.

The same conclusion is reached on purely *rational grounds*. An absolutely necessary being is such that its non-existence would imply a contradiction. Hence, *it cannot be thought of as non-existent without a contradiction*.

I can take any single molecule, atom, or subatomic particle (for example, any electron or proton in the ink of my pen) and think of it as ceasing to exist, without any contradiction in the thought. I see no 'necessity' in its existence; the rest of the world could and would exist without its presence. If it were possible to annihilate it, the universe would suffer no perceptible loss thereby; its non-existence would involve no contradiction. And that holds true of every single molecule, atom, or subatomic particle existing as an individual reality in the world; each one is no more absolutely necessary in its existence than the one present in the ink of my pen. Now, the universe as a totality consists entirely of such individual molecules, atoms, and subatomic particles. Hence, if the individual entities can be non-existent without a contradiction being implied, their totality (the universe) can also be non-existent without a contradiction being implied. Consequently, the totality of all material beings is not absolutely necessary. The *universe*,

and all the *matter* composing it, is non-necessary and therefore *contingent*.

Proof for God's Existence

A contingent being is the contradictory of an absolutely necessary being. The necessary being owes its existence to itself in such a manner that it has existence in virtue of its own essence. The necessary being *must be what it is*, both as regards its essence and existence; hence, it must be unproduced, independent of every other being. Non-existence would imply a contradiction in the very idea of the necessary being.

The contingent being, on the other hand, since it is the contradictory of the necessary being, cannot owe its existence to itself in such a manner that it has existence in virtue of its own essence; its essence is such that it can exist or not exist. The contingent being *need not be what it is*, both as regards its essence and existence; if it has a definite essence and existence, it is not due to the contingent being itself. The contingent being, unlike the necessary being, must be produced, because its existence is dependent on some other being. The non-existence of the contingent being does not imply a contradiction in its very idea.

Therefore, the contingent being does not contain the sufficient reason for its essence and existence in itself. Of itself, the contingent being is nothing. Whatever it is and has it owes, not to itself, but to some other being. Consequently, if a contingent being has determinateness of

essence and has actual existence, it must have *received* everything from *some other being* distinct from itself.

This 'other being' must also be either *contingent or not contingent*; this division is one of contradictories and as such exclusive. If it is *not contingent*, then we have arrived at an absolutely necessary being whose non-existence implies a contradiction in terms; and this being has the sufficient reason for its total essence and existence in itself and is absolutely independent of every other being in all that it is and has. If *contingent*, it will not have the sufficient reason for its essence and existence in itself but in some other being. Then this 'other being' must again be either contingent or not contingent; and this process of elimination will have to continue until we eventually arrive at the *absolutely necessary being* which has the sufficient reason of its own essence and existence in itself and also the sufficient reason of the essence and existence of the contingent beings throughout the universe.

To postulate an *infinite number* of contingent beings will not save the situation for those who do not admit the existence of an absolutely necessary being outside the present universe. This entire infinite series, since it is contingent in every member, would not have the sufficient reason for its existence in itself, and so the *entire series* and all its members could not exist. The mere multiplication of numbers explains nothing and does not account for their existence, if every single member of the series is a contingent being: an infinite number of blind persons will not give sight to a single one of them. Now, contingent beings actually exist, as we know from experience and the

present universe is contingent. Therefore, an *absolutely necessary being exists* outside the present universe, and the universe and everything in it depends on this necessary being for its essence and existence.

This being is absolutely necessary and therefore unconditioned and eternal. Its existence is due solely to its own essence. Since this being cannot have received its essence and existence from any other being, it is essentially and existentially *self-sufficient* and *self-existent*. Philosophers express this idea by the term *ens a se*, namely, a being which is what it is and exists 'of and by itself.' The expression *ens a se* does not mean that it 'produced' itself, because such an interpretation of the phrase would contain a contradiction. The absolutely necessary being can never have 'received' existence, neither from itself nor from another, but has always existed and will always exist; otherwise it would be 'contingent.' To 'produce itself' would involve the further contradiction that such a being would exist and not exist at the same time under the same respect: it would not exist, because the supposition is that existence was produced and given to the being; it would exist, because the being must already exist in order to produce anything. The fact is simply that the existence of the *ens a se*, of the absolutely necessary being, can never have been produced at all; existence belongs to the very *constitution of the essence* of the absolutely necessary being, so that this essence cannot be conceived except as existing. The necessity of such a being is so unconditioned and absolute that the completely sufficient reason for its essence and existence is found solely in itself, not in

another. For this reason it is said to be 'self-sufficient' and 'self-existent' or '*ens a se*.'

This absolutely necessary being or *ens a se* we call 'God.' God, *therefore, exists*; and He is the one and only sufficient reason to account adequately for the essence and existence of all the contingent beings present in the universe.

God exists, and He is eternally what He is.

The Argument of St. Thomas

St. Thomas¹ gives his formulation of the argument from contingency or, as he expresses it, possibility and necessity as follows:

"The third way is taken from possibility and necessity, and runs thus. We find in nature things that are possible to be and not to be, since they are found to be generated, and to corrupt, and consequently they are possible to be and not to be. But it is impossible for these always to exist, for that which is possible not to be at some time is not. Therefore, if everything is possible not to be, then at one time there could have been nothing in existence. Now if this were true, even now there would be nothing in existence, because that which does not exist only begins to exist by something already existing. Therefore, if at one time nothing was in existence, it would have been impossible for anything to have begun to exist; and thus even now nothing would be in existence — which is absurd. Therefore, not all beings are merely possible, but there must exist something the existence of which is necessary. But every necessary thing either has its necessity caused by another, or not.

Now it is impossible to go on to infinity in necessary things which have their necessity caused by another, as have been already proved in regard to efficient causes. Therefore we cannot but postulate the existence of some being having of itself its own necessity, and not receiving it from another, but rather causing in others their necessity. This all men speak of as God.”

A few comments will be in order regarding the formulation of the argument on the part of St. Thomas. He speaks of ‘possibility and necessity.’ It should be clear from the context that what he calls ‘possibility’ is identical with ‘contingency.’ A ‘possible’ being is evidently only contingent, not absolutely necessary. A ‘contingent’ being, by the very fact that it is not absolutely necessary, must receive its existence from another; hence, there must have been a time when it was non-existent and merely ‘possible.’

The terms ‘generate’ and ‘corrupt’ will be misleading, unless one knows the meaning of these words in the technical philosophic language of Aristotle, St. Thomas, and scholastics generally. In their language ‘generation’ means the formation of a material body through the union of matter and form; and ‘corruption’ means the dissolution of such a being through the separation of matter and form. It makes no difference whether this body be inanimate or animate. Thus, the origin of a chemical compound and of a living being (for example, of a plant or animal), would be termed ‘generation’; similarly, their dissolution would be termed ‘corruption.’ With us, ‘generation’ is commonly restricted in meaning to the origin of a living body, and ‘corruption’ has a distinctly moral connotation. The context

shows that St. Thomas used these terms in their technical aristotelian meaning.

The Principle of Causality

A *cause* is anything which assists in the production of a thing through some positive influence. There are four kinds of causes: material, formal, final, and efficient. The problem of God's existence revolves around the *Principle of Efficient Causality* which reads: That which begins to exist demands a cause (an efficient cause) for its beginning; that is to say, it demands an existing being to bring it from non-existence to existence.

The *validity* of this principle has been established before (Chap. 2). Here a few summarizing remarks must suffice. A being which does not actually exist but is capable of existence is a 'possible being.' In order that a possible being actually exist, it must pass from non-existence to existence. Now, there must be a sufficient reason to account for the possible being's passage from non-existence to existence. This reason cannot be *nothing*, because 'nothing' can produce nothing; it possesses no activity which would enable it to bring a possible being from non-existence to existence. Mere *possibility* cannot be the sufficient reason, since 'possibility' is actually nothingness, so far as existence is concerned, and as such cannot be the reason why a possible being should receive existence; otherwise all possible beings would become existent, and that is obviously not true. A non-existent, though possible, being *cannot produce itself*; because to 'produce' means to act

and 'acting' demands existence, and so the possible being would have to exist in order to make itself exist, which is absurd. Hence, whatever begins to exist (passes from non-existence to existence) demands another being, an *efficient cause*, for its existence.

As will be seen from the preceding paragraph, the Principle of Efficient Causality is an *analytical* principle, i.e., its truth is established by means of an analysis of the terms; anyone who knows what the terms mean must recognize the validity of the principle both in the order of thought and in the order of reality. The principle, taken alone, does not prove that any thing has ever passed from non-existence to existence; observation proves that.

The Fact of Causality

Observation proves that many things pass from non-existence to existence throughout nature. We behold *new things* and *realities* coming into existence which were non-existent before. The facts are innumerable. Here are a few.

Geophysics acquaints us with many realities that come into existence: hurricanes and ordinary storms are produced through the clash of air masses; volcanoes erupt violently and then quiet down; earthquakes throw up vast mountain ranges and level entire cities; heat and cold, wind and rain erode the soil; rivers rise and carry silt through hundreds of miles of flowage; lakes and pools emerge and then disappear; oceans roll tempestuously against the shores of continents, taking away and depositing land through their powerful action.

Physics tells us of the activity of various forces: electricity drives buses and streetcars, machines and appliances of a million and one kinds; magnetism generates electric currents in powerhouses and lifts tons of metal; light from the sun and stars illuminates the earth and the world; gravitation draws together the smallest particles of matter and the systems of galaxies; mechanical force makes walls crumble under the impact of cannon shells and splits a tree through the fall of an axe.

Chemistry shows the causality of things in their reactions: the elements are formed through the combination of various subatomic particles; chemical compounds are made and unmade through the interaction of different elements constantly uniting and dissolving; atoms are ionized through the addition and subtraction of electrons; radioactive substances disintegrate at a definite rate according to their own inherent laws, forming new substances in the process.

Biology deals with the activities of life and organisms: the assimilation of nutritive material in the plant, animal, and man; the vital processes going on continuously in the organic body the growth of the organism through the purposive action of mitosis; the marvelous structure and function of asexual and sexual reproduction.

Psychology describes the functions of the mind; the organs and wonderful activities of sense-perception; the formation of ideas, judgments, and inferences on the part of the intellect; the eminently useful actions performed under the stimulus of instinct and free will; the direction of

individual and societal life through moral principle and action.

These and a billion other facts are witness to the influence of efficient causes in leading realities from potentiality to actuality, from possibility to reality, from non-existence to existence. New atoms, new elements, new compounds, new plants, new animals, new men, new stars, new solar systems — they continuously appear in nature through the positive influence of producing agencies. Whenever a new reality of any kind makes its appearance, it is the result of *efficient causality*, and without efficient causality nothing new can appear. The chain of causality reaches back into the past in an *unbroken series*, one reality producing another in uninterrupted sequence. There are, of course, *many series* of such causal relationships in the world, but they are all *interrelated* and *interdependent*. In the universe there is no complete isolation.

Finite or Infinite Series of Causes

Concretely, causality means the active production of a new being or reality by bringing it into existence from a state of possibility. This production, as was pointed out before, demands the active influence of an efficient cause. Cause and effect are merely two aspects of one and the same action: in so far as this action pertains to the producing agent, we speak of a 'cause'; in so far as this action pertains to the produced thing or reality, we speak of an 'effect.' *Cause and effect* are, therefore, *correlative terms* and

mutually include each other whenever there is a question of actual production of any kind.

Obviously, something might be a cause without itself being an effect, as when it produces another thing or reality but is not itself produced; and something might be an effect without itself being a cause, as when it is produced by another but does not itself produce some other thing or reality. Every *effect*, however, *must have a cause* for bringing it from non-existence to existence. Whenever an effect is produced by a cause, and this cause is produced by a second, and this second cause is produced by a third, and so on, there is a *series of causes and effects*. Nature abounds in many such series which reach into the far-distant past.

Now, the series of causes and effects in the universe is either *finite and limited* in number or *infinite and unlimited*. In either case efficient causality inevitably leads to a *First Uncaused Cause*.

If this series is *finite and limited*, it can be counted out, because the number of effects would be finite and limited. This means that the series has an end in the past, no matter how far into the past the series may go. But if the series has an *end in the past*, there must be a *first* cause in the beginning of the series which started the chain of production. And this first cause could not itself be produced (caused), because it is the 'first' in the series and nothing can precede the 'first.' If it were itself caused, it would have to be produced by another being, since it cannot cause its own existence; then this 'other being' would be the 'first' in the series. Hence, that cause alone is the 'first' which alone

is at the end of the series and is not preceded by another cause. It follows, then, that the first cause of a finite and limited series must be a cause but *not an effect*; that is to say, it must be uncaused, it must exist in virtue of its own essence, it cannot have passed from non-existence to existence, it must have the sufficient reason for its existence in itself and not in another. If this were not so, the 'first' cause could never have been brought from non-existence to existence and there could be no effects following it. However, effects do actually occur, as we know from experience. Consequently, if the series of causes and effects is finite and limited, this finite and limited series demands an uncaused cause as the 'first.' Under this supposition, therefore, there exists a *First Uncaused Cause*.

If this series is *infinite* and *unlimited* (and atheists usually assume this, so as to eliminate the existence of a First Uncaused Cause), the conclusion is the same. There are certain properties which apply to the single parts of a whole, but not to the whole as a totality (e.g., those pertaining to the hand or foot, and so forth, of man); others, which apply to the whole as a totality, but not to the single parts comprising the whole (e.g., those pertaining to an army, a family, a society, and so forth). There are other properties which apply both to the whole and to all its parts, because they are 'essential' to the whole and to the parts together. In a series of men who descended in a direct line from one another, each one is a man, and the totality is a totality of men, no matter whether the line of descent be finite or infinite, because each member of the series is 'essentially' a man. And the same is true of a *series of*

causes and *effects*. It is essential to an effect to have a cause; and every 'caused cause' is thus 'essentially' an effect demanding an other being as its cause; i.e., it must have been produced by *another*. This property is essential to each member of the series of 'caused causes,' whether the series be finite or infinite in number. Hence, the *total series*, even though *infinite*, is always and will always remain a *caused* or *produced totality*. Here, too, the entire produced series either produced itself or was produced by some other cause outside the series of produced causes; there is no other possibility. It is self-evident that the series, even though supposed to be infinite, could not produce itself, because in that case it would exist and not exist at the same time. Hence, *a cause outside the entire series of caused causes* is required as the adequate sufficient reason for the production and existence of this series. If this extra-serial cause were itself produced by another cause, a second series, either finite or infinite, would be started, and the argumentation given above would apply to this series as well. Consequently, even an infinite series of causes and effects eventually requires an uncaused cause, that is, *a cause or being un-produced and existing of itself*.

It follows with necessity, then, that there must be a *First Uncaused Cause* to which every causal series of the universe must be referred as its ultimate producing cause. This First Uncaused Cause, because it is unproduced, is essentially and existentially self-sufficient and self-existent, an *ens a se*.

Infinite Series Impossible

In the foregoing section it was *assumed* that an infinite series of causes and effects in the universe could *possibly* exist. We will now examine this possibility itself. Can an infinite series of causes and effects actually exist?

Where there is a 'series' of discrete entities, such as causes or effects obviously are, there is 'number.' By number we understand a *collection* or *aggregate measured by a unit*. An infinite series of causes and effects thus implies an *infinite number* of causes and effects arranged in a sequence so as to form a series.

In speaking of an 'infinite number,' it is necessary to distinguish between a 'potentially infinite number' and an 'actually infinite number.' A *potentially* infinite number is a number which is finite and limited in itself, but is capable of being increased indefinitely, without limit. An *actually* infinite number is an existing number greater than which none can be conceived. It is, therefore, *incapable of increase*, because the increased number would evidently be greater than if the increase had not occurred; and it *cannot be exhausted* by successive subtractions, because a number that can be exhausted in this way is manifestly limited and as such finite. An actually infinite number is thus seen to be *positively without limit in its sum of units*. This latter, the 'actually infinite number,' is in question when we speak of an 'infinite series' of causes and effects; and we contend:

AN ACTUALLY INFINITE NUMBER IS IMPOSSIBLE.

Such a number involves a *contradiction in terms*. Every number begins with the unit 1; this is followed by 2, 3, 4, 5, and so forth, until the infinite number is reached. Half of this supposedly 'infinite' number consists of odd numbers (1, 3, 5, 7, 9, etc.) and half of even numbers (2, 4, 6, 8, 10, etc.); the sum of these two series (odds plus evens) forms the infinite number. Is the odd series infinite? Obviously not; it is only half as large as the original infinite number. If it were 'infinite,' it would be equal to a number double its size, and the original number would be equal to a number half its size; that would be a contradiction. The odd series, therefore, is finite and limited. For the same reason, the even series must be finite and limited. Both series, singly and individually, being finite and limited, each can be exhausted by subtraction of individual units or groups of units. However, the odds plus even form the original 'infinite' number. Since both can be exhausted, their sum can be exhausted. Their sum, however, is the original 'infinite' number. Consequently, the original 'infinite' number can be exhausted. If it can be exhausted, it is not infinite, but finite. Hence, the 'infinite' number is a 'finite' number — a contradiction in terms.

An actually infinite number is thus seen to be absurd. The fundamental reason for this contradiction should be evident: since any number, even a supposedly infinite number, is nothing but the sum of units or groups of units, *each of which is finite in itself*, the total collection or aggregate of such units must itself be finite. Like a 'square circle,' an 'infinite number' is simply a mental fiction, an *ens*

rationis, a logical or conceptual being, which can never become or be actual.

And so it is clear that we can indeed speak of an 'infinite series' of efficient causes, but such a series can never actually exist. Even omnipotence could not make an infinite series of efficient causes actually exist, not because of lack of power, but because there is, under such conditions, nothing to make or posit without introducing a contradiction into omnipotence itself.

When, therefore, atheistic materialists, compelled by their philosophic doctrine of materialism, appeal to an 'infinite series' of efficient causes, they can do so only upon denial of reason. No series of efficient causes can exist except it be a *finite and limited series*, and such a series logically demands a First Uncaused Cause.

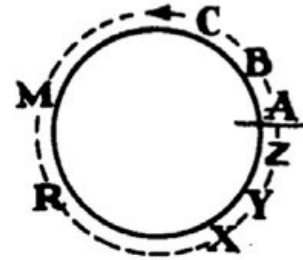
Circle of Causes Impossible

Some thinkers, in order to evade the logical necessity of admitting a First Uncaused Cause, have had recourse to a *circle of efficient causes*. A circle of produced causes, however, is as *self-contradictory* as an 'infinite' series.

The circle of causes and effects operates as follows. The cause *A* produces the effect *B*; *B* produces *C*; and so forth. Eventually *X* produces *Y*; and *Y* produces *Z*. Now *Z*, in turn, produces *A*; and then the process continues. As the result of this process of production, a *circle* of producing and produced causes is brought about, and the circle goes around and around without coming to an end and to a 'first

cause.' The circle of efficient causes is illustrated in the subjoined diagram:

This idea of a circle of causes and effects is not even ingenious. The *contradiction* involved in such a circle is apparent. *A* would have to *exist and not exist* at the same time under the same respect, and that is absurd. *A*, in order to produce *B*, must exist, otherwise it could not act in the production of *B*; but at the same *A* would not exist until *Z* produces it.



Now *A*, since it does not exist until *Z* produces it, cannot produce *B*, and *B* cannot produce *C*; consequently, *X* does not exist and cannot produce *Y*, nor can *Y* produce *Z*. Since *Z* cannot be produced by the non-existent *Y*, *Z* does not exist and cannot produce *A*. Consequently, under the conditions as envisioned, the *entire circle is non-existent*; nothing exists. On the other hand, if *A* does actually exist, *Z* is too late to produce it and bring it to existence. But then, what produced *A*, if *A* is not a First Uncaused Cause? A circle of produced causes reminds one of the possibility of a man becoming the father of his great-great-great-grandfather. The whole idea is simply contradictory.

Proof for God's Existence

The *proof* for God's existence, taken from the fact of *efficient causality* in the universe, can be briefly stated.

The universe is replete with instances of efficient causality. Real effects exist. They demand efficient causes. Real effects are not brought from non-existence to existence by themselves, but by other beings through their productive action as causes. Such an efficient cause is itself either produced or not produced. not produced, it is uncaused, and we have arrived at the Uncaused Cause. If produced, it was produced by some other efficient cause. Then this 'other' efficient cause must either be produced or not produced. We will face this alternative until we arrive at an un-produced being or commit ourselves to a circle of producing causes or have recourse to an infinite series of efficient causes. However, the circle involves a contradiction, and an infinite series does not eliminate a 'first uncaused cause.' consequently, the fact of efficient causality in the universe leads irrevocably to a First Uncaused Cause. And this First Uncaused Cause, the beginning of all efficient causality, we call 'God.'

Therefore, God exists.

The Proof of St. Thomas

St. Thomas,² with his usual brevity and clarity, formulates the argument from efficient causality in few and simple words: "The second way is from the nature of the efficient cause. In the world of sense we find there is an order of efficient causes. There is no case known (neither is it, indeed, possible) in which a thing is found to be an efficient cause of itself; for so it would be prior to itself, which is impossible. Now in efficient causes it is not possible to go on

to infinity, because in all efficient causes following in order, the first is the cause of the intermediate cause, and the intermediate is the cause of the ultimate cause, whether the intermediate cause be several or one only. Now to take away the cause is to take away the effect. Therefore, if there be no first cause among efficient causes, there will be no ultimate, nor any intermediate cause. But if in efficient causes it is possible to go on to infinity, there will be no first efficient cause, neither will there be an ultimate effect, nor any intermediate efficient causes; all of which is plainly false. Therefore it is necessary to admit a first efficient cause, to which everyone gives the name of God."

Corollaries

As in the argument based on 'change,' these proofs from contingency and efficient causality seem to lead to a being which is rather drab and impersonal. But that is only apparently so.

All these proofs for God's existence have their foundation in the phenomena observed in the *same universe*, and these phenomena pertain to the *same objects*. The same objects change, are contingent, and are the subjects of efficient causality. The same objects of the same universe show order. Hence, these proofs must all be referred to the *self-same* being as regards change, order, contingency, and causality; it would be illogical to refer change to one being, order to another, contingency to another, and causality to another. Since the universe is one, though viewed in

different aspects, all the phenomena of this one universe must be referred to *one single being* responsible for them.

Now, this one single being is changeless, intelligent, necessary, and the first cause. *Intelligence* of the highest degree is manifested in the order of the universe, and this intelligence must be at least as understanding as that of man. Therefore, if man, with his intellect, is a 'person,' it is evident that the

Changeless Changer, the Absolutely Necessary Being, and the First Causeless Cause is also *personal*. There is nothing drab about a 'person,' and this Supreme Being is obviously much more than man. When, therefore, St. Thomas ends each of his proofs with some simple phrase like "This is God," he states the exact truth.

Notwithstanding the intensity of man's study of nature, he has been able to glimpse only an infinitesimal fraction of the beings in the universe. However, what he has been able to observe and understand reveals an *immense intelligence and power* extending all the way from the minuteness of subvisible atoms to the light-year vastness of billions of stars. All the potentialities which underlie every change of every body in the world, all the mathematical intricacies governing the ordered movements of innumerable interrelated beings, all the mysteries of essence and existence due to the contingency of things, all the inconceivable multiplicity of causal activities spread throughout the length and breadth and height of the universe — all owe their origin and being to the one, personal, Supreme Being who is eternal, changeless, absolutely self-sufficient and self-existent.

These are a few of the implications residing in the proofs for God's existence developed so far. Little by little our knowledge of God is taking shape.

Summary of Chapter VI

The following proofs for God's existence are based on the fact of *contingency* and *efficient causality*.

1. *Necessity and Contingency*. — *Necessity* is that state in virtue of which something cannot be otherwise than it is. A *necessary being* is one which must be what it is. Necessity may be either moral, physical, logical, or ontological. *Ontological* necessity is the necessity which arises in a thing because of its 'being,' 'essence,' 'nature.' Ontological necessity may be either 'hypothetical' or 'absolute.' Something is *absolutely* necessary when it must exist, independent of any condition; non-existence would imply a contradiction.

Contingency is that state in virtue of which something can be otherwise than it is in its being or existence or both.

A *contingent being* is a being which is what it is but could be different; if it actually exists, its non-existence would not imply a contradiction. 'Contingency' is the contradictory of 'necessity.' A contingent being is essentially non-necessary.

2. *Contingency and the World*. — The *mode* of the physical world at large is contingent, because it is subject to continuous change and never remains the same.

3. *Contingency and Organisms*. — Organisms are contingent. They did not always exist. Each has a beginning, grows, and dies.

4. *Contingency and Atoms*. — Atoms, elements, and compounds are in a constant process of formation, change,

and dissolution. Their change and composition imply contingency.

5. *Contingency and Matter.* — Materialists maintain that *matter is eternal*. Now matter does not exist in the abstract but in the concrete, namely, in actual bodies; since bodies change, matter changes with them, and matter must therefore be contingent. If matter were eternal and necessary, it would eternally and necessarily have to be in a state of rest or motion, whichever is first; but matter is now at rest and now in motion.

On purely *rational* grounds matter must be said to be contingent. A 'necessary' being *cannot be thought* of as non-existent without a contradiction. Now, any single molecule, atom, or subatomic particle can be thought of as ceasing to exist, without any contradiction in the thought. Since the universe is but the sum of such realities, it also can be thought of as non-existent without contradiction. Hence, the universe, and all the matter composing it, is contingent.

6. *Proof for God's Existence.* — The necessary being has the sufficient reason for its existence in itself; the contingent being, since it is the contradictory of the necessary being, cannot have the sufficient reason for its existence in itself but in *some other being*. This 'other being' must also be either contingent or not contingent. If not contingent, we have arrived at the absolutely necessary being; if contingent, it will be dependent on some other being. The process of elimination will continue until we arrive at the absolutely necessary being, unless we postulate an infinite number of contingent beings, one

dependent on the other. But an *infinite number* of contingent beings also demands an absolutely necessary being as the sufficient reason for its existence, because the *entire series* is contingent and as such requires an absolutely necessary being as the sufficient reason for its existence. Hence, there must exist a being which is absolutely necessary. This being is essentially and existentially *self-sufficient* and *self-existent*, an *ens a se*. This being we call *God*. Therefore, God exists.

7. *The Argument of St. Thomas*. — It is substantially the same as the argument just proposed.

8. *The Principle of Causality*. — The Principle of Efficient Causality reads: That which begins to exist demands an efficient cause to bring it from non-existence to existence. The *validity* of this principle has been established in Chapter II.

9. *The Fact of Causality*. — Geophysics, physics, chemistry, biology, and psychology show that *new things* and *realities* come into existence which were non-existent before. These new things and realities are the result of efficient causality.

10. *Finite or In finite Series of Causes*. — Causes and effects in the universe appear in various *series*. Now, such a series is either finite or infinite. If finite, the number of causes is limited and has an end in the past. Since the series has an end, there must be a first cause in the beginning of the series which started the chain of production. This *first* cause is uncaused, because it is the 'first,' and so we arrive at a First Uncaused Cause. If the series is postulated as *infinite*, the entire series is a caused

or *produced totality* and as such demands a cause outside the entire series to be the sufficient reason for the existence of the produced series. This cause is, therefore, un-produced and exists of itself. Hence, there must exist a *First Uncaused Cause* which is essentially and existentially self-sufficient and self-existent, an *ens a se*.

11. *Infinite Series Impossible*. — Where there is a series of discrete entities, there is number; an infinite series of causes and effects means an *actually infinite number* of causes and effects. Now, an actually infinite number is impossible because *contradictory*. Numbers are odd and even in a series; half are odd and half are even. Both the odd series and the even series are limited, because each is only half the total series; since each is limited, each can be exhausted. But the sum of the odds and evens constitutes the total series; therefore, the total series can also be exhausted and must be limited and finite. The ‘infinite’ series is thus seen to be actually ‘finite,’ and that is a contradiction. Consequently, an ‘infinite series’ is *impossible*.

12. *Circle of Causes Impossible*. — A circle of produced causes is as self-contradictory as an ‘infinite series.’ In such a circle *A* produces *B*, *B* produces *C*, and so forth; eventually *X* produces *Y*, *Y* produces *Z*; *Z* in turn, produces *A*, and so the circle is completed without the necessity of an ‘uncaused cause.’ The result of such a circle would be as follows: *A* must exist, in order to make *B* and *Z* existent; but *A* cannot exist until produced by *Z*. Therefore, *A* will both exist and not exist at the same time, and that is a contradiction.

13. *Proof for God's Existence.* — Every efficient cause is itself either produced or not produced. If *not produced*, we have the 'uncaused cause.' If *produced*, it was produced by some other cause, and this other cause will either be produced or un-produced. Eventually, we must arrive at an 'uncaused cause' or have recourse to a 'causal circle' or an 'infinite regress.' Since a 'causal circle' and an 'infinite regress' are impossible, there must exist a *First Uncaused Cause*; and this is *God*.

14. *The Proof of St. Thomas.* — It is the same as the one given above, only in brief form.

15. *Corollaries.* — All these proofs are drawn from the *same objects* of the *same universe*. Hence, these proofs must be referred to the selfsame being. This one being is changeless, intelligent, necessary, and the first cause. This Supreme Being is also *personal*, endowed with immense intelligence and power; He is eternal, absolutely self-sufficient and self-existent.

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1 *Summa Theologica* (New York: Benziger Bros.), I, qu. 2, art. 3.

2 *Ibid*

Chapter 7

LIFE AND PERFECTION

CONTINGENCY AND CAUSALITY ARE FACTS PRESENT throughout all nature. Nothing escapes them. Because of their universal presence, as we have seen, the things of this world demand a necessarily existing and uncaused (eternal) Supreme Being as the sufficient reason for their being and existence. An infinite regress involves a contradiction, and a contradiction involves an intrinsic impossibility. Both contingency and causality thus lead to a Supreme Being who is and must be self-sufficient and self-existent, the *ens a se*, the uncaused cause of the physical world.

From a philosophical standpoint the arguments from contingency and causality are the most cogent of all arguments. They are based on the self-evident principle that everything must have a *sufficient reason for what it is*. Whatever has not the sufficient reason for its being and existence in itself must have it in another. Such are the things in the universe, and such is the universe itself: they need an extra-mundane being as the sufficient reason for everything they have and are, and without this Absolute Being they could neither exist nor be what they are. This Absolute Being is God.

There are other arguments which prove God's existence. However, in order to possess full cogency, they must eventually be based on contingency and causality. The arguments taken from the *origin of life* and the *grades of perfection* in the physical world are of this kind. These will now be presented.

The Problem of Life

None but the most confirmed materialist will deny that a *radical difference* exists between *living and nonliving* beings. The materialist, of course, asserts that the only kind of activity which is present in both living and nonliving beings is the ordinary chemical and physical activity found everywhere in nature; a living being is simply a complicated chemical and physical system of material energy.

Observation and experiment, however, reveal a radical difference, both in structure and in function, between living and nonliving beings.

Every living being known to exist on earth (and we know of no other place in the universe where life is indubitably present) is an 'organism.' Biologically, an *organism* is an individual constituted to carry on the activities of life by means of parts and organs more or less separate in function but mutually dependent. There is more to an organism than the mere summation of all the parts present.

One of the most remarkable phenomena of the organism is its all-pervasive *unity of being*, manifested by the marvelous *co-adaptation of structure and activity*. The entire organism consists of *cells*. Each cell possesses an

intricately complicated structure. Every cell has functions which are the same as those of every other cell, namely, assimilation and dissimilation, growth and division. And yet, cells also possess individual and specific peculiarities, so that cells differ greatly among themselves. In multi-cellular organisms the cells group themselves into various kinds of *tissues and organs*; and these tissues and organs perform activities distinctively their own, over and above the general functions of the cells as the biological units of life. Again, cells, tissues, and organs group themselves into the higher unity of the organism as an *individual being functioning as a whole*.

The supreme law which governs the structure and functions of cells, tissues, and organs is the *need*, the exigency, of the type of organism of which they are the subsidiary parts. What kind of food material, for instance, shall be digested and assimilated depends entirely on the nature of the organism; the same kind of grass will be transformed into the flesh of a cow, a horse, a sheep, or an elephant, according to the needs of the animal that eats it. The entire body is built according to the requirements of the organism, all parts *being mutually dependent and harmoniously interrelated*.

Every organism manifests an unmistakable morphological and physiological *unity, individuality, and totality*. The organism is primary; the structures and functions are secondary the organism exists for itself; the structures and functions exist for the organism. The organism acts *as a whole*; the structures and functions are *subservient parts* of the whole.

If we now turn our attention to the manner of operation, we find that it is radically different in living and nonliving matter.

Action in inorganic substances is always *transient* (or transitive) in character. 'Transient' action is the action in virtue of which one being influences and changes another being. The energies of light, heat, electricity, magnetism, physical impact, gravity, etc., are such that the goal of their influence lies 'outside' their efficient causality; they tend to change other bodies. On the other hand, the inherent tendency of vital activity within an organism is the *organism's own development and perfection*. All vital action originates in the organism, remains in the organism, and has as its natural goal the well-being of the organism itself. Hence, organic action is rightly termed *immanent*. No matter how much the vegetative, sensory, and rational process may differ among themselves, they are characterized by 'immanence.' Immanence or spontaneity of vital action proceeds from the *inner constitution* of the organism which reacts as *a whole* to outside agencies. Life is essentially self-perfection through self-development.

Organisms, of course, consist ultimately of elements and compounds; but these elements and compounds now act no longer in a merely 'transient' fashion, as they do in the ordinary circumstances of nature, but partake of the 'immanence' of the organism. In the organism, atoms and molecules form *organic compounds* as the result of the *natural tendencies* operating within the organic body. The inorganic elements have no natural tendency within themselves to produce such compounds. Outside the

organism the elements combine according to the general laws of affinity, and as such they always tend to form rigid combinations with a stable equilibrium. The proteins and other organic compounds, however, are extremely complex and in an unstable colloidal state. That the *principle* operating in the formation of organic compounds is different from that operating in the formation of inorganic compounds, can be seen after the *death* of organisms. They decay, and the organic compounds dissolve, reverting again to the status of ordinary inorganic compounds and elements. If organisms and organic compounds were not the effects of some *higher principle utilizing them*, no sufficient reason can be assigned why they should not continue indefinitely in existence, even after 'death.'

Every organism is characterized by *inherent natural purposiveness*. This purposiveness follows a double course — the realization of the well-being of the individual and the preservation of the species.

That the realization of the *well-being of the individual* dominates the entire life history of an organism, should be evident. It manifests itself in the entire process of *metabolism* and *cell-division*. The purposiveness of the organism's *embryonic development* is particularly noteworthy. Here only one fact will be mentioned. If it should happen, as it occasionally does, that the first two embryonic cells are split apart, the two cells do not develop into two half-organisms, but each cell develops into a complete individual of that particular type; the entire structural plan is simply doubled and carried separately to completion. It is as if one were to cut a machine in half, and

each half-machine would then proceed to shape itself into an exact duplicate of the original machine. This 'prospective potentiality' of the germ cell is one of the most remarkable features of the embryonic organism.

The *preservation of the species* is another fundamental natural end or goal inherent in the organism. The method of reproduction varies with the different kinds of organic beings; but reproduction itself is universal and is eminently purposive. There is perhaps no greater marvel in the world, viewed from a purely organic standpoint, than the wonderful arrangement of structure and function for the purpose in view.

Action flows from a principle of action. Since the 'immanent' action of organisms is beyond the natural capabilities of ordinary inorganic matter and its physico-chemical forces, vital action must flow from a *vital principle*. Without a distinct vital principle, co-equal with matter, the phenomena of life cannot receive adequate explanation.

That vital activity is far superior to nonliving activity becomes increasingly evident in the higher forms of life. Animals and men manifest *consciousness* — the brute in sense-perception, and man in his sensory and rational activities.

Over and above the ordinary activities of cells, compounds, and atoms present in the animal body, the animal possesses *conscious perception*: it sees, hears, tastes, smells, feels, imagines, remembers, and desires. Such activities are far beyond the capabilities of inanimate beings and must therefore proceed from a totally different principle of activity. In man, the activities of forming

abstract ideas, judgments, and inferences, and the ability to strive after spiritual ideals, completely transcend the material reality of aggregations of elements and chemical compounds; they are *rational and spiritual* in nature and as such must of necessity proceed from a spiritual vital principle and essence.

Whatever we may think about the ultimate nature of living beings, this much is clear: the immanent activity of all living beings is radically and essentially *superior to the transient activity* of nonliving substances.

Abiogenesis

Since vital activity is far superior to non-vital activity, how do we explain the *origin of life*? A thoroughgoing materialist, of course, has no choice but to claim that all life has derived its origin from nonliving matter; his theory of the origin of life is 'abiogenesis.'

Abiogenesis means literally 'origin from non-life.' The term is used to designate the theory that living beings ultimately came into existence through a development on the part of the forces indigenous to nonliving matter. Another term for abiogenesis is *spontaneous generation*. What have science and philosophy to say about the fact or possibility of abiogenesis?

Up to the end of the seventeenth century even scientifically minded men believed that certain low types of animals were generated 'spontaneously,' i.e., abiogenetically. Worms were supposed to develop out of putrid flesh; frogs, it was thought, were produced from the

mud of pools through the action of the sun's rays; insects, and even rats and mice, were believed to originate without the generative action of living beings. At present, no scientist dares defend spontaneous generation on *scientific* grounds.

In 1668 Francesco Redi made a number of experiments and disproved the popular contention that maggots were produced spontaneously in meat. From that point on, one case of supposed abiogenesis after another fell before the investigations of determined scientists. The epoch-making experiments of *Louis Pasteur*, begun in 1860, exploded the theory of spontaneous generation beyond recovery. The genius of Pasteur, through a lifetime period of rigid and exact experimentation, established beyond the shadow of a doubt that germs can originate only from pre-existing germs. In 1905, John Butler Burke claimed that radioactive substances acting on gelatin media produced 'bacteria-like' cells, containing a nucleus, and that these cells grew and finally subdivided. But Sir William Ramsay, the famous investigator of radium, proved conclusively that the phenomenon was nothing more than a chemical, lifeless process. All observations and experiments of science show that *life derives its origin only from life*. Hence, so far as science is concerned, spontaneous generation (abiogenesis) never occurs.

The Origin of Life

While science, therefore, has disproved the fact of abiogenesis as occurring at the present time and under

conditions similar to the present, there still remains the problem of the *origin of life in general*. Must there be an 'origin' to life at all?

It is the unanimous verdict of geologists that living beings did not always exist on our globe. There were long ages in the early period of the development of the earth, when it was in a fiery-molten state. No organism, as we know it, could possibly have existed under such circumstances. Nor did it exist, as the rocks of the 'azoic' ('lifeless') period definitely show. Life appeared eventually. It had a beginning, an *origin*, in time. Since life did not always exist on the earth, how did it originate?

Helmholtz, Van Tiegham, Lord Kelvin, Arrhenius, and others sought to avoid the problem by advancing the theory that life might have originated on earth through life-germs carried by *meteorites* from some other stellar body; or, the germs might possibly have *floated across* the intervening space and landed on the earth. This arbitrary assumption merely defers the question without offering a genuine solution. How did life originate on these stars? They, too, were at one time in a fiery-molten state and as such incapable of sustaining organisms. Meteorites melt through friction on contact with the earth's atmosphere, and the heat would kill all germs. Nor could the germs float through interstellar space; the absence of heat and moisture in interstellar space would freeze the germs and desiccate them, so that they could not live. Becquerel placed germs in a vacuum with a temperature of liquid air, thus approximately reproducing the conditions of interstellar space, and exposed the germs to ultraviolet rays present so

abundantly in space. The result was the death of all germs. Scientists rightly concluded that all life-germs would have died in transit to the earth. This theory is hardly worthy of serious consideration, but it reveals the desperate extremity in which the defenders of abiogenesis had been placed.

When, therefore, certain scientists and philosophers maintain that the origin of life *must* have occurred by means of abiogenesis in the *bygone ages* of the earth, their assertion no longer rests on scientific grounds. Abiogenesis is then advanced as a *postulate* of science and philosophy.

From what has been discovered by science concerning the fact of abiogenesis, it is clear that abiogenesis is not a self-evident postulate; every bit of scientific evidence is against its actual occurrence. W. Branca¹ was fully aware of this when he wrote: "Whoever accepts spontaneous generation here on earth thereby believes that two diametrically opposed Laws of Nature have equal value. The first states: Life can originate only through Life. The second states: Life originates also or at least has originated in the past out of non-life. The first law is proved by billions of facts, and it is true without any doubt. The second, however, has until the present never been proved by a single fact. Both Laws of Nature contradict each other diametrically." These words of an eminent scientist show conclusively that abiogenesis is *not a scientific postulate*.

Science is based on observation and experiment. Since the origin of life in general lies beyond the scope of observation and experiment, the solution of the problem exceeds the competence of the scientist. The problem is

strictly a philosophical one. When, therefore, a scientist attempts a solution of this problem, he ceases to be a scientist and becomes a philosopher. Obviously, then, if abiogenesis is advanced as a 'postulate,' this can only mean that it is a *philosophical postulate*. In no case can abiogenesis be said to be a self-evident truth. It can be considered a 'philosophical postulate' if it is the only rational and logical explanation of the origin of life. Certainly, if a Supreme Being does not exist, life must have originated in virtue of the forces inherent in matter, because there would be no other way in which it could originate. Is the existence of a Supreme Being inconsistent with reason and logic? If not, then abiogenesis is *not the only* rational and logical explanation of the first origin of life in the universe. What do reason and logic say and demand?

God, the Ultimate Cause of Life

The Principles of Sufficient Reason and Causality are the indispensable foundation of all science and all philosophy. Reason and logic demand, according to the Principle of Sufficient Reason, that nothing can exist and be what it is except that there be an adequate reason which accounts for its existence and being; without such an adequate reason, either in itself or in another, it would simply be nothing. Reason and logic demand, if the reality in question has passed from non-existence to existence, that there be a cause for this passage and that there be *a proper proportion between cause and effect* to bring about this passage. The effect can never be actually greater than what

is contained in the cause; otherwise a part of the effect would be without an adequate cause and as such could never come into existence. It is against all reason and logic to suppose that the more perfect can receive its adequate explanation in the less perfect; a more perfect reality can produce a less perfect reality, but the reverse is a contradiction and therefore impossible.

Now, the activities and phenomena of organic life *exceed the inherent causality of inorganic substances*.

A living being, since its activity is 'immanent,' is superior to nonliving matter. It is true, of course, that organisms consist of material elements in their structure and utilize material forces in their vital functions. But that is only a part of the total picture of life. One cannot, by the wildest flight of fancy, conceive of sensory and intellectual *knowledge, consciousness, and appetitive behavior* as phenomena directly resulting from the actions and reactions of atom complexes considered strictly as such. Even the *colloidal state* of protoplasmic material and the formation of organic compounds cannot be adequately accounted for on the basis of ordinary chemical affinity between elements. The inherent natural *purposiveness* of organisms, as manifested in *metabolism, cell-division, and reproduction*, in virtue of which they plan and build for future use, is a qualitative factor far beyond the capabilities of mere atoms and their aggregates. Above all, the dynamic unity of the organism as a whole, with complete subordination and co-adaptation of all structures and functions for the well—*being of the individual* and the *preservation of the species*, is something so unique that it

cannot receive its ultimate explanation in the grouping of billions of inanimate and unintelligent atoms. The simplest forms of plant and animal life, bacteria and protozoa, are so superior to inorganic elements and compounds that even confirmed materialists admit that they belong to *different levels of being*.

Unless we wish to make the gratuitous assumption (contrary to all observed facts) that all matter without exception is 'living,' the arrival of the organism on earth and in the universe involves the appearance of something *totally new and superior*, namely, life in all its manifold forms and manifestations. Life, since it is intrinsically superior to matter and material forces, must be accounted for by some *cause outside the totality of matter and of the material universe*; and since the cause must be at least equal in perfection to the effect produced, it must itself be *endowed with life*: no being can give what it does not possess.

That the intricate structure and inherently purposive function of even the unicellular organism (not to mention the higher organic forms of plant, animal, and man) could be the result of *chance* and *without intelligent planning* would indeed be a miracle; chance is no cause of permanent order. Not only must the first organism have arisen through the chance concurrence of billions of unintelligent atoms; it must have arisen completely furnished with cytoplasm, nucleus, chromosomes, and genes, and with the *perfect mechanism of reproduction*. Unless this were so, no reproduction could have occurred in the first organism, and there would be no offspring, no

second generation; life would have become extinct immediately, and there would be no life today. Reproduction has a purpose for the *future*, but it is of no particular advantage to the reproducing organism itself. Such a purpose for the future necessitates the use of specific means for a specific end, and that implies *intelligence*. This intelligence, however, resides neither in the speck of protoplasm called 'organized matter' nor in the inorganic elements.

Besides, man is an organism and an integral part of the organic world, and any argument about the general origin of life must include the *rational life* of man. Man's psychic, rational life of intellect and will cannot be reduced to the material forces of inorganic nature. These activities are immaterial, simple, and spiritual and can proceed only from an immaterial, simple, and spiritual vital principle or 'soul.'² As such the soul of man is neither composed of matter nor intrinsically dependent on matter, while every other being in the universe is. The soul's very essence requires a spiritual cause to give it existence.

Life thus demands a *living, intelligent cause outside of matter and the material universe*. This living, intelligent, extra-mundane cause we call 'God.'

God, therefore, exists.

God and Evolution

Very many scientists, especially biologists, accept the theory of 'evolution.' The theory is even advocated by many who

are theists. What is to be said about the combination of *theism* and *evolution*?

Among the prevalent theories of evolution two deserve special consideration: 'organic' and 'emergent' evolution.

Organic evolution is the theory according to which the various species and types of animals and plants derive their origin, not through distinct and separate creative acts of God, but through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws. Organic evolution thus presupposes the existence of living beings, and it begins to operate only after organisms are already present on earth. Strictly speaking, therefore, the theory of organic evolution does not attempt to solve the problem of the 'origin' of organisms in general.

So far as the *scientific* side of organic evolution is concerned, it must be borne in mind that the theory revolves around the question whether the fact of evolution has occurred or not occurred. What may have occurred in the past ages is obviously beyond the ken of scientific observation and experiment. The evolutionary theory is at best only a conclusion, and this conclusion is usually the result of a doubtfully valid argumentation.

The evidence for organic evolution rests upon the facts, observed in the fossil remains found in the strata of the earth, that there has been a gradual change from simpler to more diversified forms in plants and animals in succeeding geologic periods and that all plants and animals are patterned according to a more or less similar plan of

structure. From these facts scientists conclude that all plants and animals are related to one another through *genetic descent*.

The general argument for evolution then runs somewhat as follows: 'If evolution occurred, we must find a gradual transition from the simpler to the more complicated structures of organisms in the fossils of the earth, together with a definite homological plan for all plants and animals; but that is precisely what we find in nature; therefore, evolution took place.' Cast into this form, the conditional syllogism lacks logical force, because it contains the *Fallacy of False Consequent*. 'Accepting the consequent' will always be a fallacious argument, unless the cause given in the antecedent is the only cause which could produce this particular effect. Here, the result contained in the consequent could be the effect of either one of two causes: creation or evolution. The argument as given does not eliminate creation. Hence, the mere fact that the consequent is true does not establish evolution as the cause; evolution *may* have occurred and be the cause, but it *need not* be, because everything could be the result of creation just as well.

If the conditional syllogism is reversed, the argument is even less cogent. The argument would then have to be formulated as follows: 'If we find a gradual transition from the simpler to the more complicated structures in the fossils of the earth, together with a definite homological plan for all plants and animals, then all this must have happened through evolution; but that is what we find; therefore, evolution is the cause.' Now the argument contains the

Fallacy of Begging the Question. The antecedent (condition) *presupposes* the very thing it is attempting to prove, namely, that 'evolution' is the *only* possible cause of the change. It omits 'creation' as a possible cause of the effect.

Even if one accepted evolution, and even if evolution were established as a fact, the *transition* from plants to animals cannot be adequately explained on the basis of natural powers alone. The *psychic* simply cannot be produced by the non-psychic, without violating the Principle of Sufficient Reason; and the *spiritual life of man* cannot derive its origin from the non-spiritual life of the animal, because these forms of life are entirely incommensurate and the higher would be produced by the lower. Without the *intervention of God* in some way, the organic processes cannot be conceived as passing from the less perfect to the more perfect, because that would entail the contradiction of an insufficient cause; and animal life is certainly of a higher order than plant life, and human life of a higher order than animal and plant life combined. We cannot sacrifice the principles of sound reason in science any more than we can deny the facts of science; both are the foundation of all our knowledge.

EMERGENT EVOLUTION, AS PROPOUNDED BY C. LLOYD MORGAN, S. Alexander, and others, is much broader in scope than organic evolution. In general, the theory maintains that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels

of reality in a continuously ascending process of development. *Nature as a whole* is thus conceived as having 'evolved' in the course of time. The new properties or 'novelties' (as Morgan terms them) are not the mere resultants obtained by addition or subtraction from among previously existing properties; rather, these 'novelties' have no counterpart in the lower levels: they simply *emerge* with specific characters not discoverable in the former (lower) levels of being. It is thus that *life* and later *mind* have had their first origin; Alexander even has 'deity' emerge as the product of evolution.

The 'stuff' out of which nature evolved was at first something homogeneous, undifferentiated, indeterminate. Alexander calls it *Space-Time*; it is pure space and pure time, without limit and without beginning, the stuff of substances and of all existents, because all things evolve or 'emerge' out of it in the course of the ages. Space-Time possesses a blind, aimlessly driving *nisus* or impetus (where this 'nisus' comes from, Alexander does not properly explain) which is responsible for the continued upward advance of evolution. And so all things 'emerge' — first matter, then the material universe, then life in plants, then mind in animals and man, and finally 'deity.'

Alexander's *deity* is in no sense a 'person' who, as the uncaused cause of reality, exists prior to the universe: on the contrary, his 'god' is a finite product of evolution. As he puts it:³ "When we think of God as that to which all things owe their existence, we are reversing the order of fact and are regarding the universe of Space-Time, which does create all things, in the light of its highest empirical quality,

which is not first but last in the order of generation.” Deity is thus a creature of Space-Time, the outcome of the pre-existing finites of the world, finite in perfection, a superior quality of the evolving universe, and as such simply one of the ‘emergents’ which develop in virtue of the ‘nisus’ present from the beginning. It will, in all probability, be eventually superseded by some higher quality. Alexander makes the remarkable statement⁴ that his so-called deity is both theistic and pantheistic, but “that if a choice must be made it is theistic.” This, of course, is nothing but a confusion of words; Alexander’s deity, as the context of his exposition clearly reveals, is merely a part of the universe and therefore pantheistic.

Only a few words need be said about this theory. No adequate explanation is given concerning the *origin* of this kind of universe. It is said to be ‘eternal,’ but that is a statement which cannot be accepted, because this universe is so weak in being that it cannot be conceived as having the sufficient reason for its existence in itself. From the start, this Space-Time universe is altogether *indeterminate and undifferentiated*; all determinateness of being and differentiation ‘emerges’ in the course of time under the impulse of the nisus present from the start. The presence of this ‘nisus’ is assumed; and such a *gratuitous assumption* may rightly be gratuitously denied, because no proof is or can be given for its supposed presence. Besides, the *emergence* of such new and unpredictable properties has no foundation except in theory; it involves a definite violation of the Principles of Sufficient Reason and Causality, and if we must renounce the principles of reason to make a

theory possible or plausible we do not need emergent evolution to 'explain' the rise of the new qualities. When 'novelties' occur as effects which are not pre-contained in the being of their causes, the plus-amount is unaccounted for and really proceeds from 'nothing' (and 'nothing' is no adequate explanation for anything) unless one accounts for the deficiency of the universe as a proper cause by an appeal to an adequate cause *outside the given universe*. That, of course, Alexander's theory does not do; it is, therefore, inadequate and must be rejected as irrational.

Morgan's 'emergent evolution' is of a different kind. He is a theist and expressly refers the efficacy of this evolution to God. He states:⁵

"In surveying the evolution of terrestrial life and mind there seems to have been advance through ascending modes of mentality to that highest example which is distinctive of man as rational and self-conscious. Now it is my belief that this evolutionary ascent of mind in living creatures is due to the Creative and Directive Power of God. But that does not imply that any such phrase as 'the ascent of mind' is applicable to God, as *Spiritus Creator*. The Divine Mind or Spirit is Eternal and nowise limited by the trammels of space and time... What I find in *evolution is one great scheme from bottom to top, from first to last*. What I also believe is that this advance throughout nature is a revelation of Divine Agency. And since mind at its best is the highest term in the course of evolutionary ascent, it may well be said that the evolution of mind

reveals the agency of Mind. But it is, as I believe, Mind or Spirit infinite and timeless. Spiritus Creator as eternal and omnipresent is not the outcome of evolution, but that of which evolution is the progressive revelation."

— C. LLOYD MORGAN

As will be noted, Morgan's concept of emergent evolution is very different from that of Alexander. He finds in evolution "one great scheme" which points to an eternal Mind and Creator who arranged the scheme. Whatever we may think of emergent evolution as a general scientific and philosophic explanation of 'life' and 'mind,' the theory, as envisioned by Morgan, is conceived as a 'purposive evolution.'

God and Purposive Evolution

Viewed from a purely *philosophic* standpoint (leaving Revelation out of consideration), one must say that *purposive evolution is possible*, at least in its general outlines.

Evolution itself, obviously, is not impossible; it must, however, be a 'purposive evolution,' if the Principles of Sufficient Reason and Causality are to be safeguarded. Since purposiveness implies an intelligent foresight into the future, and since intelligent foresight cannot be ascribed to the forces of nature, the only possible alternative is the assumption that *the Supreme Intelligence endowed nature*

with a purpose and with the necessary principles of action to realize this purpose through evolution. The required intelligence would reside not in nature itself but in the Author of Nature; and it would then make little difference whether evolution were gradual or emergent in character.

Life could not originate in the *first organism* through an absolute emergence, solely from matter and its indigenous forces, because vital activity and the vital principle (soul) are by their very nature *superior to matter and material forces*. In some manner, the causality of God was necessary for the production of the first organism. Nevertheless, a direct creation was not absolutely necessary. The vital principle of the plant and animal is essentially *material* in nature, being intrinsically dependent on matter in its being and existence. All that would strictly be required for the appearance of organic life is the original *fiat* of God ordering and disposing matter and material agencies in a purposive fashion, so that at a given time and place the first organic principle or soul, the conditions being favorable, would 'emerge' or *be educed* out of the hidden potentialities of matter. Life would thus 'emerge' spontaneously, but in virtue of an *inherent tendency* placed in bodies from the beginning by the Creator. God would be the primary cause of the origination of life, with the agency of bodies as a secondary and instrumental cause. We do not say that this is the actual way the origin of life occurred; but we do think that such an origin of organic life is *possible*.

Even man's body, speaking again from a purely philosophic standpoint, *could* have been prepared from an animal body through 'purposive evolution.' Man's *soul*,

however, is a *spiritual entity* endowed with a spiritual life and as such completely transcends matter and material conditions. Since matter and material energies do not possess spirituality in any form, because materiality and immateriality are contradictory, they cannot produce or give rise to a spiritual being. Plants and animals are organisms, material systems; plant and animal souls are material in essence, completely immersed in matter and intrinsically dependent on matter. Consequently, neither the matter nor the soul of plants and animals could give rise to the existence of the human soul. Therefore, whether we view the human soul as originating by means of an *absolute emergence* from lifeless matter directly, or through a *generative process* on the part of plants or animals, or through the *transmutation* of a plant or animal soul into a human soul, the effect, not being contained in the cause, would totally exceed the capabilities of such a cause. A spiritual being must be produced by a spiritual cause; any other supposition would violate the Principles of Sufficient Reason and Causality. Hence, the origin of the human soul, since it is spiritual, must be attributed to a cause existing outside the ensemble of the material universe. Emergent evolution, therefore, must be excluded in the case of the spiritual soul of man. *Only God can produce the spiritual human soul, and that directly.*

One may say, therefore, that ‘emergent evolution’ as a general theory is, absolutely speaking, a ‘possible’ explanation of the origin of life on the globe (a ‘working hypothesis’ in the scientific sense), provided one accepts the First Cause (God) as having placed a *purposive*

direction into the material beings and their activities. Without such a 'purposive direction' it is inconceivable how the unintelligent beings and blind forces of nature could conspire to form a universal, all-embracing scheme or plan; only chance would be left as an explanation, and chance can never account for the permanent orderliness of nature, especially in the organic world. In no case, however, can the origin of the spiritual soul of man receive an adequate explanation on the basis of emergent evolution, organic evolution, or any other form of evolution.

We will conclude this discussion with a quotation from Sir J. Arthur Thomson,⁶ the great naturalist:

"As we must agree with the Aristotelian dictum that in a continuous process there can be nothing in the end which was not also present in kind in the beginning, we are led from our own mind, and the story of its enfranchisement, back and back to the Supreme Mind 'without whom there was nothing made that was made.' Facing everyday things in the World of Life, around which our scientific fingers will not meet, what can we do but repeat what is carved on the lintel of the Biology Buildings of one of the youngest and strongest of American Universities: 'Open Thou mine eyes that I may behold wondrous things out of The Law.'"

— SIR J. ARTHUR THOMSON

Notion of Perfection

The discussion on life and evolution, with its emphasis on the unity found in the organic realm and in the universe at large, leads to the argument for God's existence based on the *grades of perfection or being* found everywhere in the world. Before proposing the argument, however, it will be necessary to explain the notion of 'perfection' as used in this context.

By *perfection* we mean any *reality* or *real entity* which is present in any kind of being. Perfection or reality may be *potential or actual*: it is 'actual' if it exists; it is 'potential' if it does not exist but is capable of being brought into existence. For example, since you exist, you are an 'actual' being or perfection while you exist; all human beings which could exist in the past and will exist in the future are 'potential' beings or perfections.

Perfection or reality, whether actual or potential, is either 'mixed' or 'simple.' A *mixed* perfection is one which in its very concept implies limitation and imperfection. Examples of mixed perfections are 'heat,' 'health,' 'plant,' 'brute,' 'man,' because each of these beings involves materiality and materiality implies some sort of limitation and imperfection. A *simple* perfection does not include in its concept a limitation or imperfection (though it does not exclude it either); for example, 'wisdom,' 'goodness,' 'being,' 'life,' because they could exist without limitation or imperfection in a spiritual being.

Some perfections (realities) are 'accidental' and others 'essential.' They are *essential*, if they refer to the essences

or natures of beings; for example, 'animal,' 'rational,' 'humanity,' 'being,' 'substance.' They are *accidental*, if they do not belong to the essence or nature as such, but are connected with the essence or nature as a superadded modification and determination; 'color,' 'weight,' 'age,' 'temperature,' 'activity' are accidental perfections or realities which modify and determine an essence, but they are not a part of the essence itself.

Again, perfections (realities) will be either 'predicamental' or transcendental.' They are *predicamental* when they represent generic concepts; for example, 'animal,' 'body,' 'plant.' They are *transcendental* when they are found in, or can be applied to, all beings; of this kind are 'one,' 'being,' 'good,' 'true,' since they 'transcend' all categories or special types of being.

Grades of Perfection

In scrutinizing the beings in the universe, we find considerable diversity. They possess being (reality, perfection); but this being (reality, perfection) is distributed among the classes and individuals in varying grades, so that one can rightly speak of a *gradation of perfection*.

True, there are no varying grades of being (reality, perfection) in the essence or nature of the individuals of a certain species: a plant is always a plant; an animal, an animal; and a man, a man. Essences or natures, taken by themselves, do not admit of a 'more' or 'less,' as if one plant were more of a plant than another, or one animal more of an animal than another, or one man more of a man than

another. But grades of being (reality, perfection) vary, when *one kind of being is compared to another*. Thus, in the *inanimate* world, an electron, proton, neutron, etc., possesses less perfection in isolation than when combined into an atom or chemical compound; in the atom or compound these subatomic particles possess their own individual perfection and also partake of the perfection of the atom or compound as a totality in combination. The *organic* world possesses a higher grade of reality than the inorganic world. because 'life' or 'immanent' activity is of a higher order of being than the 'transient' activity found in subatomic particles, atoms, and chemical compounds taken by themselves. Among organic beings the *animal* has a higher grade of being than the *plant*, because it possesses the vegetative life of the plant and sensory life characteristic of animal life. *Man* has a higher grade of being than the plant and animal, because in man we observe the rational life of a human being in addition to sensory and vegetative life.

Each individual nature in the world is the result of *composition*. Such a being is a composition of *essential* and *accidental* grades of being, because accidental modifications and determinations are found in all; such are, for example, the accidental perfections of age, weight, extension, magnitude, temperature, and activity of all kinds. The accidental perfections are real and actual; but they change continuously, while the essence or nature remains the same. Composition is present even in the *essences* or *natures* themselves; in organisms, for instance, there is a composition of matter and the life principle, and a similar

situation obtains in subatomic particles, atoms, and compounds. No being in the universe realizes its being completely at once, but does so in successive stages and in *partial actualizations*. The reason for this universal composition lies in the fact that all these beings are a combination of actuality and potentiality in many ways, and the two are really distinct. Man, for example, has the potentiality of learning, but this potentiality does not become actualized except in successive stages and then never completely. That is why there are various *degrees of perfection* (grades of being) in the same individual and among individuals relative to one another. As a consequence, the same individual may become more (less) learned, wise, good, strong, healthy, and so forth, in the course of time; and that applies also to different individuals and classes of being when compared with one another. As a further consequence, it is clear that all beings in the universe are 'perfectible,' and *perfectibility* is definitely a matter of 'more' and 'less,' of 'higher' and 'lower,' in degrees of reality and perfection; perfectibility is the direct result of the potentiality in all beings present in the universe.

Limitation of Perfection

It should be evident that the grades of being (reality, perfection), as a matter of observable fact, are limited. And *limitation implies imperfection*.

The very *number* of beings in the universe is limited. There is more matter in the stars than in interstellar space;

there could, then, be more perfection in the universe, even if the universe were considered to be endless in extent in all directions. For the same reason, the higher grades of being present in atoms and compounds could be greater than they actually are. The species and varieties of plants and brutes could be larger in number, and there could be more individuals in each species and variety. The number of human beings in the past, present, and future could be greater than it actually has been, is, or will be. Wherever we see beings, there could be more of them. Limitation in number involves limitation of perfection in an *absolute* sense.

The *relative perfection* of the grades of being is also limited. There exists, without doubt, a wonderful harmony in the gradation of beings in the universe, from subatomic particles to atoms to chemical compounds to plants to animals to men. None of these beings are unlimited in being (reality, perfection); the very fact of a 'gradation' presupposes limitation in the various types of beings forming this ascending scale. The *composition* existing in each type and individual is a sign of limitation of perfection. *Potentiality* and *perfectibility* are evidence of this limitation.

Where there is limitation there is *imperfection*. The reason is clear; limitation means that there could be 'more' and 'higher' perfection; but it is not present, it is lacking. This does not imply that things are not what they are supposed to be. Absolutely speaking, however, each individual being could possess more reality, essential and accidental, than it actually possesses, and that means that it is an *imperfect* being through and through. All beings in the

universe, by the mere fact that they are 'composite' beings, consist of two or more grades of being united together; and every composite being is a 'one-made-of-many.' That alone is an imperfection, because such a being would be more perfect in its entity if it consisted of 'one' grade of being possessing the perfections of the 'many.' Man, for instance, would be more perfect (and less imperfect) if his knowledge were complete at birth rather than acquired piecemeal in the course of the years.

Potentiality definitely involves imperfection of being. Potentiality means the power to do or acquire something. Such a power is a sign that the perfection of the actuality to be done or to be acquired is absent and as yet missing. Potentiality is possibility. In comparison with actuality, possibility is a very imperfect sort of being, because it is a relative nonentity capable of becoming an entity through the activity of some efficient cause giving it existence. Non-existence, however, is imperfect, relative to existence. Every form of potentiality, therefore, is an imperfection, and all beings in the universe possess a large number of such potentialities. The act of playing a musical instrument, for instance, is obviously more perfect in itself than the mere possibility of playing it; but no musician actually plays an instrument all the time. All activities are the actualization of some potentiality existing in a being. Such activities come and go, depending on the nature of the being in which they occur. Sometimes activities are present, sometimes they are absent; but a being in act is more perfect than a being not in act.

Wherever we look in nature, we observe a hierarchy of being with relative perfection and relative imperfection. Limitation of essential and accidental perfection is found everywhere. Nowhere do we see absolute perfection. All things possess being, but they possess it in imperfect degrees. Not to possess being in fullest measure implies *limitation* and consequent *imperfection*.

God and Perfection

The argument for God's existence, based on the *limited grades of perfection* found in the beings of the universe, is Somewhat abstruse and demands close attention.

First step. Whenever a large number of beings possess *perfection arranged in a graded scale*, these beings are not themselves the sufficient reason for these perfections. As a matter of plain fact, no being in the universe is the sufficient reason of its own being and its existence. Every being, of course, is what it is; hut that it is what it is, is not the result of its own doing or making. Each of us has simply *received* our being, and it was not up to us in any way to decide what we shall be or not be; that is true of man and of every other being. When, therefore, we observe a *gradation of reality* among the beings of the universe, starting from the subatomic particle and reaching from the inorganic world through the organic world up to the spiritual life of man, this gradation of reality (perfection) cannot be attributed to the individuals in the series nor to the series as such. Not to the individuals in the series. No single beings are responsible for what they are themselves; much

less for what the other beings are. The hydrogen atom on earth has nothing to do with the hydrogen atoms in the sun and other stars; the calcium in my body is not the sufficient reason for the existence of the calcium present in the gases of interstellar space. Each element and compound exists as an individual being, but it is not the reason or cause why the other elements and compounds also exist. Not to the *series as such*. By far the greatest portion of this graded series is devoid of intelligence and does not know that such a gradation of reality exists. And man, who alone knows of the existence of the series, certainly had nothing to do with bringing the realities into existence and with arranging them into a series of graded perfections. Since no single individual and no group of individual beings in the series is the sufficient reason for the series the entire series has not the sufficient reason for its existence and arrangement *in itself*. It could be different from what it actually is. Hence, the entire series and each individual in it must have the sufficient reason for this gradation *outside the series*. Now, this series of graded perfections comprises the entire universe. Hence, the sufficient reason for the gradation of reality must reside *outside the universe*.

Second step. Diverse perfections combined into a unity do not combine of their own accord; a causal agency is required to bring about their unification in a being. "Every composite is posterior to its component parts, and is dependent on them.... Every composite has a cause, for things in themselves different cannot unite unless something causes them to unite."⁷ The very fact that such perfections (realities) are 'diverse' implies that they are

multiple in character. Multiplicity, however, is the opposite of unity. Strictly speaking, therefore, diverse and multiple perfections should, of their very nature, never combine to form a unitary being. If they do so nevertheless, the sufficient reason for their union cannot lie in these realities themselves, because what is 'multiple' is of its own nature and being not 'one.' All creatures, however, are 'one' in their being, but they are also 'composite' — made up of a diversity and multiplicity of realities, namely, essential and accidental perfections of various kinds. One may object and say that there exists an *inherent tendency* in things which urges these diverse and multiple realities (perfections) to form a unified nature. That, of course, is true. But it is also true that this 'inherent tendency' must have a sufficient reason to account for its presence. Beings, however, are subject to this tendency and as such cannot themselves account for its presence. Since the entire universe consists of composite beings with diverse and multiple realities, it necessarily presupposes an efficient cause *outside itself* in order to explain how the 'many' become 'one.'

Third step. Limitation of perfection also demands an efficient cause outside the universe. The *number* of beings in the universe is not infinite, but limited; and that means that the amount of reality (perfection) in the universe is limited. Why is this amount as large as it is and yet definitely limited? Why are there just so many subatomic particles in the universe? Why are there just so many natural elements, not more and not less, although they could be more or less? Why are there more of one kind than of another? Why are some elements active and others

inert? Why are some naturally radioactive and not all? Why do certain elements tend to combine with others to form compounds, while others show no such tendency? Why the difference in freezing point and boiling point, ductility, heat conductivity, and all other qualities? Whence the limitation of plants to vegetative functions and of animals to vegetative and sensory functions, while man has these and rational functions? Whence the limitation of perfection in the structures of plants, animals, and men? Whence the limitation of perfection in their powers and capabilities? No being is altogether perfect in its nature; every one is limited and imperfect along many lines. It is manifest that every individual and every type of being is what it is and has what it has, not through its own choice and doing, but because it 'received' its being as limited and imperfect. This limitation demands a sufficient reason. The explanation does not lie in the things themselves. Consequently, the sufficient reason for the limited perfection (relative imperfection) of all beings in the universe *must be sought in some outside intelligence* planning their number and nature. In other words, *an efficient cause outside the universe*, immensely intelligent and powerful, gave all things in the universe their being and existence and decided how much perfection they shall receive and how many of all the possible beings of a certain class shall obtain existence. Any other explanation is illogical.

Last step. Transcendental perfections are simple perfections. Such are 'being,' 'one,' 'true,' 'good.' They apply to all things. Everything, whether material or spiritual, whether a substance or an accident, is a 'being.'

Everything is undivided in itself and distinct from other beings; it is 'one.' Everything, since it is a being, can be known by an intellect and is therefore 'true.' Everything has suitability and can be desired, because being is always desirable; hence, it is 'good.' These attributes 'transcend' ('go beyond') all categories and classes; that is why they are termed *transcendental*. In themselves these attributes are *simple*, because they can be found in pure spirits. The simple, transcendental attributes are present in all beings in *varying degrees*. That such attributes are present in creatures in varying degrees and not in their absolute perfection demands a sufficient reason and an adequate cause. Since, however, the simple, transcendental attributes are found in all beings in the universe and in the universe as a whole, there must be *one cause* responsible for them all. Similar things are related, and that means that eventually they have the *same cause*. All perfections (realities) found in the universe must, therefore, be present in this one same cause, either formally or eminently; otherwise they could not be given by this cause.

Conclusion. There must exist outside the universe a *cause possessing unlimited perfection (reality)*, responsible for all the limited perfection (reality) present in varying degrees in the beings of the universe. The perfection of this cause must be 'unlimited,' because limitation of perfection demands a cause for this limitation. Hence, if the cause of the universe were itself limited in perfection, another cause would be required. Since an infinite regress is impossible, we must ultimately arrive at an *uncaused cause possessing*

unlimited perfection. This uncaused cause possessing unlimited perfection we call 'God.'

Therefore, *God exists.*

The Argument of St. Thomas

St. Thomas made no argument for God's existence based on the *origin of life*. The reason for this omission is apparently very simple. Up to the time when Louis Pasteur startled the scientific and philosophic world with his revealing experiments on the origin of subvisible organisms, it was the common belief that spontaneous generation (abiogenesis) occurred among certain classes of lower animals and plants. Since biology, as an exact science, was unknown in his day, St. Thomas also entertained this common belief. In order to ascribe an adequate cause for the fact of spontaneous generation, he referred the origin of life in these instances to the action of the sun's rays and to the causality of the intelligences who moved the celestial spheres. We are better informed in these matters than St. Thomas could be expected to be in his time. Astronomy tells us that there are no 'celestial spheres,' and biology has proved that living beings do not derive their origin from nonliving matter. Had St. Thomas possessed the more accurate knowledge which we have, he undoubtedly would have used the 'origin of life' as a proof for God's existence.

He did, however, make an argument for God's existence by using the fact of the *grades of perfection* universally found in nature. Here is his formulation:⁸

“The fourth way is taken from the gradation to be found in things. Among beings there are some more and less good, true, noble, and the like. But ‘more’ or ‘less’ are predicated of different things, according as they resemble in their different ways something which is the maximum, as a thing is said to be hotter according as it more nearly resembles that which is hottest; so that there is something which is truest, something best, something noblest, and, consequently, something which is uttermost being; for those things that are greatest in truth are greatest in being, as it is written in *Metaph. II*. Now the maximum in any genus is the cause of all in that genus; as fire, which is the maximum of heat, is the cause of all hot things. Therefore there must also be something which is to all beings the cause of their being, goodness, and every other perfection; and this we call God.”

— ST. THOMAS AQUINAS

This proof, as given above, calls for some comment. As formulated by St. Thomas, the objection has been made that it is rather *Platonic* in trend and involves an *illicit transition* from the ideal to the real order. The brevity of the phrasing is probably responsible for this serious objection. St. Thomas was by no means so inept in philosophizing that he would have been guilty of such a flagrant error. However, in order to avoid this accusation, the presentation

of the argument in the preceding sections is based on the Principles of Sufficient Reason and Causality.

Furthermore, St. Thomas has been ridiculed for his 'bad physics' in stating that "fire, which is the maximum of heat, is the cause of all hot things." St. Thomas, of course, knew nothing of modern physics or chemistry. Everybody in his age followed Aristotle's division of the terrestrial elements into 'earth, water, air, and fire.' Among these four elements (we know now that none of these realities is an 'element' in the strict sense of the word) fire was considered to be the pure principle of heat; and *it* was only natural that St. Thomas would refer all hot things to this fire as to their real cause. The illustration he used here was unfortunate, in view of our more accurate information; but his error is certainly pardonable and does not affect the validity of his argument as a whole. All in all, his argument is basically sound, especially when linked up with the Principles of Sufficient Reason and Causality so as to keep it within the realm of the 'real order' of beings.

Inferences

Since God is the ultimate adequate cause of the origin of life in the world, *He must possess life*. And since the immaterial soul of man is endowed with spiritual life, God's life must also be *spiritual*.

Beings which possess a nature characterized by 'limitation' and 'composition' cannot have the sufficient reason for this limitation and composition in themselves. If they themselves had to impose limitation and composition

upon their nature, they would have to do this before they assumed their nature, and so they would exist before they actually existed. Hence, the sufficient reason for the limitation and composition of their nature must be found ultimately in God. God cannot have limitation and composition in His nature, otherwise another cause would have to impose limitation and composition upon His nature. There can, however, be no cause prior to the First Cause. Consequently, God must be without limitation and composition in His nature and perfection. As a result, God cannot be an organism; nor can He have materiality in His nature. For the same reason, His nature cannot have potentiality. God's being, therefore, must be pure actuality, *pure act*. Having no materiality in His nature, God must be a *pure spirit*. And since there can be no limitation to His perfection, He must be a spirit of unlimited perfection. It follows that God is *Pure Act and a Pure Spirit of unlimited perfection*.

Summarizing the results of the foregoing proofs for God's existence, we find that God is the unchangeable author of all change, the intelligent planner of the universe, the necessarily existing eternal being, the being which has the sufficient reason of existence in Himself (*ens a se*), the uncaused cause, spirit, unlimitedly perfect, pure act. He is in all truth the *Supreme Being*.

Summary of Chapter VII

Here we treat of the *origin of life* and of the *grades of perfection* as proofs for God's existence.

1. *The Problem of Life.* — Observation and experiment reveal a radical difference, both in *structure and function*, between living and nonliving beings. The organism acts as an individual being functioning as a 'whole.' Vital activity is 'immanent' action, while inorganic action is 'transient.' Every organism is characterized by 'inherent natural purposiveness,' striving for the well-being of the individual and the preservation of the species. In particular, sense-perception, consciousness, and the rational activities present in man are far superior to nonliving activity and require a vital principle or 'soul.'

2. *A biogenesis.* — Abiogenesis (spontaneous generation) is the theory that living beings ultimately came into existence through a development on the part of the forces indigenous to nonliving matter. Science has proved that *life derives its origin only from life*. Abiogenesis has never been observed and never occurs.

3. *The Origin of Life.* — Life originated in time and had a beginning. Abiogenesis can only be a 'postulate' of science (or, rather, of philosophy), if it is the only rational explanation of the origin of life. That would be the case if God does not exist.

4. *God, the Ultimate Cause of Life.* — Logic and reason demand that there be a proper proportion between cause and effect. Now, the activities of organic life *exceed the*

causality of inorganic substances. The arrival of the organism involves the appearance of something totally new and superior. Hence, it must be accounted for by some cause outside the totality of matter and of the material universe. This extra-mundane cause must possess *life*. And since man has a rational, spiritual life, the origin of life demands a *living, intelligent, extra-mundane* cause. This cause we call God.

5. *God and Evolution.* — Organic evolution is the theory which maintains that the types and species of all plants and animals derive their origin through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws. The argument for evolution is valid only if it can be proved to be the *only possible cause*; it leaves 'creation' out of consideration, but does not eliminate creation. *Without the intervention of God*, the organic processes cannot be conceived as passing from the less perfect to the more perfect (e.g., from plant to animal, and from animal to man), because that would entail the contradiction of an insufficient cause.

Emergent evolution maintains that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality in a continuously ascending process of development. It is thus that life and mind have had their first origin. Such an emergence demands a *nisus* or impetus toward more perfect levels of being; this *nisus*, however, cannot be

accounted for except on the supposition that a *cause outside the universe* has put it there. It would then be a 'purposive evolution.'

6. *God and Purposive Evolution.* — Evolution, if it ever occurred, must be *purposive*, if the Principles of Sufficient Reason and Causality are to be safeguarded. Since 'purpose' implies the use of specific means toward a specific end to be realized in the future, only the Supreme Intelligence could endow nature with such a purpose. Even then the *spiritual* soul of man, being intrinsically independent of matter, must have been produced by God directly.

7. *Notion of Perfection.* — By *perfection* here we mean any reality or real entity which is present in any kind of being, whether this being be 'actual' or 'potential.' Perfection may be either 'mixed' or 'simple,' 'essential' or 'accidental,' 'predicamental' or 'transcendental.'

8. *Grades of Perfection.* — The plant is superior to the inorganic being; the animal superior to the plant; man superior to the animal: there thus exists a *gradation of perfection* in the universe. Each individual nature is the result of composition between essential and accidental perfection, between actuality and potentiality, resulting in a more or 'less' of reality (perfection).

9. *Limitation of Perfection.* — As a matter of observable fact, the grades of being (reality, perfection) are all limited, and limitation implies *imperfection*. Potentiality and perfectibility are evidence of this limitation in all beings.

10. *God and Perfection.* — Perfections are arranged in a graded scale; the sufficient reason for this gradation

resides neither in the individuals nor in the series. Hence, it must be found in a reason or cause outside the series (the universe). Diverse perfections combined into a unity require a causal agency outside themselves to bring about their unification in a being. Limitation of being does not find its sufficient reason in the beings subject to limitation; it must be sought in some outside intelligence. Transcendental perfections are 'simple' perfections; their varying degrees demand an adequate cause outside the beings possessing them. Hence, there must exist outside the universe of graded perfections a *cause possessing unlimited perfection*. Its perfection must be 'unlimited,' because there can be no cause capable of limiting the perfection of the Uncaused Cause. This Uncaused Cause possessing unlimited perfection we call 'God.' Therefore, God exists.

11. *The Argument of St. Thomas.* — St. Thomas made no argument for God's existence based on the 'origin of life,' because he believed in spontaneous generation as a fact of nature. He did, however, make an argument proving God's existence from the fact of the 'grades of perfection.'

12. *Inferences.* — God must possess *life*; and since man has a spiritual life in his immaterial soul, God must also have *spiritual life*. Since limitation and composition of reality demand a cause, there can be no limitation and composition in God the Uncaused Cause. Hence, God cannot be an organism, nor can He have materiality in His nature; He must, therefore, be a *pure spirit*. For the same reason, there can be no potentiality in God's nature; He must be *pure act*. Since to be without limitation means to

be 'unlimited,' God must be a pure spirit or *act with unlimited reality* or perfection.

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1 *Der Stand unserer Kenntnisse vom irdischen Menschen* (1910), p. 91.

2 See the author's *The Whole Man* (Milwaukee: The Bruce Publishing Co., 1945), Chap. 20.

3 *Space, Time, and Deity* (New York: Macmillan, 1920), Vol. II, p. 399,

4 *Ibid.*, p. 394

5 Frances Mason, ed., "The Ascent of Mind," *The Great Design* (New York: Macmillan, 1933), pp. 115, 132.

6 "The Wonder of Life," *The Great Design*, op. cit., p.32

7 *Summa Theologica* (New York: Benziger Bros.), I, qu. 3, art. 7 (p.19)

8 *Summa Theologica* (New York: Benziger Bros.), I, qu. 2, art. 3.

Chapter 8

OPPOSING VIEWS

EXCEPT FOR THE ONTOLOGICAL ARGUMENT OF ST. ANSELM, medieval philosophers had no doubts about the general validity of the traditional proofs. Many moderns accuse them of being prejudiced through their Christian faith. That their faith influenced them may be admitted as undoubtedly true; but that they were prejudiced, in the sense that their faith led them into false reasoning, is an entirely different matter. It is up to the individual to judge whether the reasoning process proving God's existence is convincing or not. Accusation is not proof.

René Descartes is the one mostly responsible for the confusion which exists in modern thought. He revived St. Anselm's onto-logical argument, and the result was no happier in his hands than in the hands of St. Anselm. Mainly, however, Descartes was responsible for the excessive dualism of matter and mind in man, as found in much of modern philosophy, thereby opening the door to the empiricism of Hume. *Empiricism* still is strong in the English-speaking world, especially among a certain group of scientists. It gave rise to *agnosticism*, so prevalent in the past century. Nowadays neither philosophers nor scientists

of the secularistic type are quite so dogmatic in their assertions; but the empiricistic and agnostic trend still taints their thinking to a great extent. Much of their opposition to the traditional proofs for God's existence stems from the objections made by Kant.

It is well-nigh impossible to consider all the opposing views advanced in modern thought. The main ones will alone be considered.

Objections of Transcendentalism

Immanuel Kant (1724—1804), although he has lost a great deal of prestige as an infallible authority, still ranks highly among many modern philosophers. Most of these thinkers are acquainted with the arguments for God's existence only in the version given by Kant. Thus A. E. Taylor¹ remarks in typical fashion: "Kant's great achievement lies in having demonstrated that the whole force of the 'proofs' [for God's existence] depends upon the famous ontological argument, best known in modern philosophy in the form adopted by Descartes in the Fifth Meditation." We must, therefore, turn our attention to *Kant's objections*.

Kant apparently knew nothing about St. Thomas and the 'Five Ways,' because he admits of but three possible proofs. He says:²

"There are only three modes of proving the existence of a Deity, on the grounds of speculative reason. All the paths conducting to this end begin either from determinate experience and the peculiar constitution

of the world of sense, and rise, according to the law of causality, from it to the highest cause existing apart from the world — or from a purely indeterminate experience, that is, some empirical existence — or abstraction is made of all experience, and the existence of a supreme cause is concluded from *priori* conceptions alone. The first is the physico-theological argument, the second the *cosmological*, and the third the *ontological*. More there are not and more there cannot be.”

— IMMANUEL KANT

He then proceeds to show why these arguments are invalid.

As regards the *ontological* argument, Kant holds that it involves an illegitimate transition from possibility to existence. St. Thomas pointed out long before Kant that it is impossible to draw a valid conclusion from the ideal to the real order of things, and for this reason he rejected the ‘ontological argument’ of St. Anselm. It was the revival of this argument on the part of Descartes which prompted Kant to examine it anew. Kant’s rejection coincides with what most scholastic philosophers have always maintained, and so nothing further will be said about it.

AS REGARDS THE *COSMOLOGICAL* ARGUMENT (WE CALL IT THE ‘argument from contingency’), Kant³ states that it is framed as follows:

“If something exists, an absolutely necessary being must likewise exist. Now I, at least, exist. Consequently, there exists an absolutely necessary being. The minor contains an experience, the major reasons from a general experience to the existence of a necessary being. Thus this argument really begins at experience, and is not completely *priori*, or ontological... The proof proceeds thus: — A necessary being can be determined in only one way, that is, it can be determined by only one of all possible opposed predicates; consequently, it must be *completely* determined in and by its conception. But there is only a single conception of a thing possible, which completely determines the thing *priori*: that is, the conception of the *ens realissimum*. It follows that the conception of the *ens realissimum* is the only conception, by and in which we can cogitate a necessary being. Consequently a supreme being necessarily exists.”

— IMMANUEL KANT

It is in this manner that Kant formulates the argument from contingency or, as he calls it, the ‘cosmological argument.’

Kant advances *two main reasons* for the rejection of the argument from the contingent to the necessary.

The *first* reason is that the argument from contingency is ultimately nothing but the *ontological* argument in disguise. Kant⁴ proceeds to prove his claim. “That it may possess a

secure foundation, it bases its conclusion upon experience, and thus appears to be completely distinct from the ontological argument, which places its confidence entirely in pure *priori* conceptions. But this experience merely aids reason in making one step — to the existence of a necessary being. What the properties of this being are, cannot be learned from experience; and therefore reason abandons it altogether, and pursues its inquiry in the sphere of pure conceptions, for the purpose of discovering what the properties of an absolutely necessary being ought to be, that is, what among all possible things contain the conditions (*requisita*) of absolute necessity. Reason believes that it has discovered these requisites in the conception of an *ens realissimum* — and in it alone, and hence concludes: The *ens realissimum* is an absolutely necessary being. But it is evident that reason has here presupposed that the conception of an *ens realissimum* is perfectly adequate to the conception of a being of absolute necessity, that is, that we may infer the existence of the latter from the former — a proposition which formed the basis of the ontological argument, and which is now employed in the support of the cosmological argument, contrary to the wish and professions of its inventors. For the existence of an absolutely necessary being is given in conceptions alone. But if I say — the conception of the *ens realissimum* is a conception of this kind, and in fact the only conception which is adequate to our idea of a necessary being, I am obliged to admit that the latter may be inferred from the former. Thus it is properly the ontological argument which figures in the cosmological and constitutes the whole

strength of the latter; while the spurious basis of experience has been of no further use than to conduct us to the conception of absolute necessity, being utterly insufficient to demonstrate the presence of this attribute in any determinate existence or thing.” Put into simple words, Kant’s objection amounts to this: We go from the experience of existing and ‘contingent’ things to the idea of a ‘necessary being,’ and from this *idea* we argue to the *existence* of the necessary being; and that is the ontological argument.

Kant’s *second* reason consists in denying that the *Principle of Causality* is universally applicable to all finite realities. He maintains⁵ that the argument from contingency possesses a large number of unproved assumptions, one of which is “the transcendental principle, everything that is contingent must have a cause — a principle without significance, except in the sensuous world. For the purely intellectual conception of the contingent cannot produce any synthetical proposition, like that of causality, which is itself without significance or distinguishing characteristic except in the phenomenal world. But in the present case it is employed to help us beyond the limits of its sphere.” To understand Kant’s objection here, one must realize that ideas like ‘causality,’ ‘existence,’ ‘contingency,’ and ‘necessity’ are, according to his theory of knowledge, nothing more than *categories of the mind*, in the mind prior to all experience, *subjective forms or constructs* whose sole function it is to regulate the data of sense experience (the ‘phenomena’) in our thinking, and as such have *no objective value* in the world of realities

outside the self. Hence, the Principle of Causality cannot lead to God, because God is a 'thing-in-itself,' a 'noumenon,' which remains forever unknown and unknowable to man.

As regards the physico-theological argument (we term it the 'argument from order and design'), Kant respects it more than the other two, but he claims that it, too, is but the 'ontological' argument in disguise. He says⁶ this in the following quotation:

"After elevating ourselves to admiration of the magnitude of the power, wisdom, and other attributes of the author of the world, and finding we can advance no further, we leave the argument on empirical grounds, and proceed to infer the contingency of the world from the order and conformity to aims that are observable in it. From this contingency we infer, by the help of transcendental conceptions alone, the existence of something absolutely necessary; and, still advancing, proceed from the conception of the absolute necessity of the first cause to the completely determined or determining conception thereof — the conception of an all-embracing reality. Thus, the physico-theological, failing in its undertaking, recurs in its embarrassment to the cosmological argument; and, as this is merely the ontological argument in disguise, it executes its design solely by the aid of pure reason, although it at first professed to have no connection with this faculty, and to base its entire procedure upon experience alone."

Kant, of course, has much more to say about these arguments. The above, however, contains the gist of his thoughts.

Refutation of Transcendentalism

Kant was neither an atheist nor a pantheist. He defended the theistic position in his *Critique of the Practical Reason* while he repudiated the traditional arguments for God's existence in his *Critique of Pure Reason*. What prompted him to adopt this peculiar position? His attitude is explained by the trend of modern philosophy as inaugurated by Descartes and carried forward by Hume.

Both Hume and Kant accepted without question the (apparently evident) dictum of Descartes that *all knowledge originates solely in the mind*; knowledge is altogether a subjective product; the mind can know nothing but its own conscious states; the mind cannot go beyond itself and know what the objective world is 'in itself.' Hume, in accepting this basic tenet of Descartes, reduced all knowledge to sense-perception and the mind to a 'bundle of perceptions.' As a final result, Hume rejected the validity of reason and denied the necessary character of all rational and scientific principles; he ended as a *skeptic*.

Kant became alarmed at the outcome of Hume's philosophy and attempted to place science (and philosophy) upon a firm foundation. In seeking to do this, Kant made the *initial mistake* (fatal in the long run) of accepting

Descartes's and Hume's original assumption that all knowledge originates *solely in the mind* and that the mind can know only its own conscious states. He thought he could nevertheless avoid Hume's final conclusion of skepticism. He agreed with Hume that knowledge must be grounded in 'experience'; but, he maintained, the *necessary character of science* (and philosophy) must also be safeguarded. To do this he devised his own system of knowledge.

Kant made the distinction between the noumenon ('thing-in-itself') and the *phenomenon* ('appearance'). The 'noumenon' (for example, the external world as it actually is) is absolutely unknowable, because it is a reality which exists outside the mind. All man can perceive and know is the 'phenomenon' (for example, the 'appearances' of things as perceived by the mind), because the phenomenon is an elaboration of the mind. On the sense level, all phenomena appear in 'time' and 'space'; and this happens because 'time' and 'space' are not attributes of objective reality at all, but are purely subjective 'forms' into which all the intuitions of sense are cast. These *forms* are the conditions of knowledge and make knowledge possible. It is a postulate of Kant's system that nothing which is *necessary and universal can have its origin in experience*, because experience treats only of the particular, contingent, transitory. It follows, then, that such 'forms' must be present in the mind *prior to all experience* as subjective elements of the mind making knowledge possible; and since 'space' and 'time' are the necessary and universal attributes of all appearances (phenomena), 'space' and

'time' are *a priori forms* of sensibility. After the intuitions of sense are cast into the 'forms' of 'space' and 'time,' they are drawn under the influence of the pure understanding and cast into the *a priori* forms of the understanding, namely, the *categories*. These latter have the same relation to intellectual knowledge that 'space' and 'time' have to sense-knowledge: they are the 'conditions' which make intellectual knowledge possible; but they, like the sense forms of space' and 'time,' are purely subjective elements and tell us nothing of what the reality of the 'things-in-themselves' (noumena) is like. Since the 'categories,' of which there are twelve, possess the character of universality and necessity, they are not the result of experience but are *a priori* and present in the mind prior to all experience. These twelve 'categories' are: unity, plurality, totality; reality, negation, limitation: subsistence and inherence, causality and dependence, reciprocity (active and passive); possibility and impossibility, existence and non-existence, necessity and contingency. Every judgment, therefore, which is based on any of these relations contains the *a posteriori* element of experience and the *a priori* element of a 'category'; the multiplicity of sense intuitions is thus unified in intellectual judgments by means of the 'categories.' It is in this manner that scientific judgments are formed and obtain a necessary and universal value. Finally, in the field of reasoning, we encounter three *a priori* 'forms,' namely, the *ideas*. These are: the psychological 'idea' of the soul, the cosmological 'idea' of matter (the totality of phenomena), and the theological 'idea' of God. These 'ideas,' like the 'categories' and 'space'

and 'time,' are subjective elements of the mind, and their sole function is to regulate our thinking and to bring greater unity into the manifold of intellectual experience. As such, therefore, these 'ideas' *do not refer to any objects existing outside the mind*, because they exist in the mind as mere 'forms' and must be present prior to all experience: they make reasoning possible, but they do not lead to extra-mental reality.

We now see why Kant insisted that the 'cosmological' and physico-theological' arguments for God's existence involve the fallacy of the 'ontological' argument. They assuredly do — *according to Kant's system of knowledge*. None of the 'forms' apply to the 'things-in-themselves.' Neither the twelve 'categories' nor the three 'ideas' have any value beyond the world of sense, the 'phenomena.' If we attempt to use them in an endeavor to prove that the 'world' or 'God' actually exists *outside the mind*, we are guilty of the fallacy of an illegitimate transition from the ideal to the real order, and that is fundamentally what the 'ontological' argument attempted to do.

The question then arises: *Is Kant's system of knowledge true?*

Today practically nobody accepts Kant's system in its entirety. It is too *arbitrary* and *subjective*. If Kant's system were true, all our knowledge is nothing but a grand *illusion*: we think we know something of the world and the things in it, but actually we do not; it is a subjective construct, elaborately executed, but without any reference to objective reality. We live in a dream-world. The mind is imprisoned in a cell of its own making, from which there is

no possibility of escape. Of what value is such a knowledge? Since we *cannot help* but think that our knowledge tells us something of the things outside the mind, this knowledge is *essentially false*. The outcome is the very *skepticism* which Kant attempted to avoid, because we must naturally mistrust a power which irresistibly leads to error and misunderstanding. But in that case — of what use is Kant's system? His system is certainly not the result of 'experience'; it is the result of 'reasoning,' and all reasoning, according to Kant, is based on *a priori* forms which have subjective value only. Kant's system may satisfy Kant, but that would be no guarantee that it is true in itself; it is essentially a noumenon of which we could know nothing.

Kant's system is inconsistent with the *principles of reason*. In repudiating the arguments for God's existence, Kant criticizes the use of the Principle of Causality as applied to contingency and order. It is illegitimate, he says, to apply this principle to anything but "the sensuous world," i.e., to phenomena, because phenomena are all man can experience. Since 'contingency,' 'causality,' and 'existence' are mere empty *a priori forms, or categories* innately present in the mind, according to Kant's theory of knowledge, one can understand how he could make such a remarkable statement. Kant, however, overlooked the fact that man, besides having sensuous powers, also has *rational* powers. Man is a 'rational animal,' and his rational knowledge has as much validity as his sensory knowledge. Now, rational knowledge is acquired through the application of *reason and rational principles* to the data

acquired through sense-knowledge. To deny this is to deny the validity of intellectual knowledge. In that case, however, the foundation of Kant's own system is invalid, because it is essentially a system of intellectual knowledge which he proposes. To deny the validity of intellectual knowledge always leads to *skepticism*. Furthermore, the *Principle of Causality* is but an extension of the Principle of Sufficient Reason, as the latter is an extension of the Principle of Contradiction (see Chap. 2). If the sufficient reason of a thing cannot be found in the thing itself, it must be found in another; and if the sufficient reason for the existence of a thing cannot be found in the thing itself, then this thing is 'contingent,' and the sufficient reason for its existence must eventually be found in a being which is not contingent but 'necessary.' That, however, is equivalent to saying that its existence is 'caused' by this other; otherwise it would both exist (for that is the supposition) and not exist (because there is no sufficient reason for its existence). Hence, the Principle of Causality, like the Principles of Contradiction and Sufficient Reason, must have *universal application* both in the realm of thought and of being, or man's rational knowledge is intrinsically illusory.

Even from the standpoint of Kant's own transcendentalism, there must be a sufficient reason to explain the existence in man's mind of all the 'forms' which he claims are present there prior to all experience. Man himself certainly is not responsible for the presence of these 'forms'; they are there without his doing. Man's mind, however, did not always exist, neither individually nor collectively. Therefore, man's mind and its entire apparatus

of knowledge is 'contingent' and must have been *brought from non-existence to existence*, or there would be no sufficient reason why they exist in this particular manner or why they exist at all. The Principle of Sufficient Reason thus demands that *some other being* gave them existence, i.e., is their *cause*. And since the entire question here hinges on the existence of 'intellectual life' in man, this efficient cause must be a being possessing intellectual life, otherwise the sufficient reason for the existence of man's intellectual life would be lacking, and then man's intellectual life could not exist at all. Consequently, since nothing can be in an 'effect' which is not in its cause,' the cause of man's intellectual life must also be endowed with intellectual life. This cause we call 'God.'

The same criticism applies to Kant's objection to the argument from *order and design*. As in the argument from 'contingency,' Kant claims that the 'school' (scholastic philosophers) argues from the world of phenomena to the 'pure conception' or 'idea' of God and then *deduces* the existence of God From this 'pure conception' or 'idea'; in this manner, he says, scholastics are guilty of a surreptitious 'ontological' inference. To put it mildly, Kant labors under a misapprehension. Neither St. Thomas nor the scholastics in general argue in this fashion. All anyone has to do is to examine the arguments for God's existence as formulated by them. It is to their everlasting credit that St. Anselm's ontological argument has always been repudiated as an illegitimate transition from the ideal to the real order of things. Certainly, they conclude from the existence and properties of the visible universe to an extra-mundane God;

but they do this by applying the rational Principles of Sufficient Reason and Causality to the *data furnished by the visible universe*. If this procedure is illogical, well and good; but that is something very different from Kant's accusation of introducing an 'ontological' line of reasoning into their arguments, as was done by St. Anselm, Descartes, Leibnitz, and others. That a 'transcendent inference' from phenomena to noumena is permissible, can be seen by Kant's own system (although, from the standpoint of his own premises, Kant was guilty of gross inconsistency), because Kant concludes to a *world of noumena* as existing beyond and outside his own mind. He accepts this 'world of noumena' on the basis of the Principles of Sufficient Reason and Causality, because otherwise he could not account for the 'sensations' which give rise to empirical knowledge; and yet he claims that the 'noumena' are unknown and unknowable. But if Kant can argue to the existence of an unperceived and unperceivable 'world,' why should it be illogical to argue to the existence of a Being beyond the world, if the rational principles employed demand such a conclusion?

All in all, Kant's transcendentalism and the resultant objections to the arguments for the existence of God are unfounded in fact and illogical in principle.

Objections of Materialism

Kant's transcendentalism, since it reduced everything to a form of knowledge, was at bottom idealistic. He thus followed the mental side of Descartes's excessive dualism of

mind and body in man. Others followed the bodily side of Descartes's dualism and reduced everything to matter. Materialism was the result.

Materialism is the philosophic system of thought which considers *matter to be the only reality* and attempts to explain everything in the universe as the result of the *conditions and activities of matter*. As a consequence, materialists deny the existence of every kind of spiritual or even truly psychical reality, including God. To be consistent, materialists are, or at least should be, atheists. If they speak of 'God' at all (and some do), they interpret the word in the sense of 'world-force' or 'world-energy.'

Materialism, as a philosophy, is as old as Greek thought. The first efforts toward philosophic explanation were more or less materialistic; one must not overlook the fact, however, that the polytheistic religion of ancient Greece was not of a kind to appeal to earnest thinkers. *Systematic materialism* began with *Democritus*, who taught that everything results from the combination and division of atoms which are infinite in number and separated by empty spaces. *Epicurus* was a thoroughgoing materialist. Bodies alone exist, and they are ultimately composed of unchangeable atoms falling downward through space. Since space is infinite, an infinite number of atoms also exists. Some deviate from their original direction of motion, and so collisions occur and combinations are made. Atoms themselves are not qualitatively different; their difference consists merely in size, weight, and shape. Man's soul is simply a kind of vapor diffused through the body. *Lucretius* gave poetic expression to materialism. While Epicurus

sought to explain the origin and order of the present world through chance, Lucretius was somewhat more philosophical; he maintained that the world is nothing more than one of the infinitely numerous possibilities in atomic arrangement, and the present arrangement was as possible as any other. Soul and mind are material in nature, consisting of the smallest, roundest, and most mobile types of atoms. The materialism of these earlier philosophers was, as will be noted, rather crude.

The victory of Christianity over paganism put an end to ancient materialism. The reign of Christian thought lasted through sixteen centuries. The rise of the Renaissance, together with the general waning of faith in Europe, gradually developed into a materialistic attitude in some intellectual quarters. Descartes's splitting up of the human person into a thinking mind (soul) and quantitative extension (body), both practically independent of each other, led many thinkers either to idealism or to materialism.

The *Age of Materialism* began in France with Julian O. de la Mettrie (1709—1751), Baron Paul H. d'Holbach (1723—1789), and Pi  rre J. G. Cabanis (1757—1808). The latter not only identified man's mind with his nervous system but frankly asserted that thought is only a secretion of the brain. In Germany Karl Vogt (1817—1895), Jakob Moleschott (1822—1893), Ludwig B  chner (1824-1899), and Ernest Haeckel (1834-1919) were ardent defenders of materialism. English materialism stemmed from the empiricism of John Locke (1632—1704) and David Hume (1711—1776); the chief advocates were John Tyndall (1820

—1893), Thomas H. Huxley (1825—1895), and Herbert Spencer (1820–1903). Spencer, the most important philosopher of this group, claimed to be a mere agnostic; in reality, however, he was a materialist. There were, of course, many lesser lights in all countries who followed the tenets of materialism.

The marvelous success of the *natural sciences* provided the materialists with a great opportunity to defend their thesis that every event in nature receives its full and adequate explanation in the configurations of matter and its activities. Nature, according to the general teaching of scientists, is a ‘closed system of causation’; each natural phenomenon is based on another as its cause, and the chain of natural causes is a determined series complete in itself. The materialists seized upon this idea. Since this chain is a series of ‘material’ causes, there is no place in it for a free-will and a spiritual soul, because they would break the chain of ‘natural events.’ By postulating the *eternity of matter*, materialists obviated the necessity of a ‘beginning’ in the world and its causal events, and so the idea of God was eliminated. When R. Mayer (1814—1878), J. P. Joule (1818—1889), and Herman L. F. von Helmholtz (1821—1894) formulated the scientific *Law of the Conservation of Energy*, materialists were convinced that they now possessed a definite proof of the nonexistence of a spiritual soul. The law, they argued, proves that energy can neither be created nor destroyed. Kinetic energy may be transformed into potential energy, and potential energy into kinetic; but the sum-total remains always the same, because the world is a ‘closed system.’ If a spiritual soul existed, it

would produce energy and pour it into the events, thus increasing the sum of energy present in the closed system; and every external stimulus influencing the soul would produce sensations which are not a form of energy in a physical sense, and thereby the sum of energy in the closed system of the world would be decreased. However, the Law of the Conservation of Energy precludes any increase or decrease in the sum-total of energy present in the universe. Therefore, they concluded, the soul of man as a spiritual entity does not exist. It is material, or it does not exist at all. In this manner materialists utilized the findings of the natural sciences to support their theory.

The upsurge of *evolutionism* in consequence of Charles R. Darwin's (1809—1882) epoch-making *Origin of Species* gave a new impetus to materialism. The question of teleology (purposiveness) in nature, especially in the plant and animal kingdoms, had always been an awkward problem for materialists. Darwin's theory of organic evolution, however, disposed of 'design' completely; everything was the result of 'fortuitous variations' effected in the course of natural events, so that a 'Designer' was superfluous. Natural evolution accounted for everything through pure mechanism. The theory pleased the materialists immensely. It was a simple matter to expand the evolutionary concept to embrace the entire universe. Given an infinity of time to work in, the mechanical operations of the atoms could make every conceivable combination, including the present form of the universe in all its complexity. Hence, an extra-mundane God was no longer required in order to explain the origin and

development of the world. Science thus accounts for inanimate and animate nature, and nature is a completely *material system*. The materialists, without question, had achieved a very advantageous position and boldly proclaimed their doctrine.

That materialism in our times has many adherents among the educated and uneducated, is an obvious fact. However, a reaction has set in, especially among the scientists themselves. Having examined the foundations of the sciences more closely, scientists and philosophers have become increasingly aware that materialism does not contain the full solution for the problems which agitate man's mind.

Refutation of Materialism

Materialism is the very opposite of idealism. Idealism attempts to reduce all material reality to the knowledge state of the conscious subject. Materialism does the reverse. It attempts to reduce everything that is 'psychical' to the 'physical.' Both views are extremes and are wrong.

Materialism is an *oversimplification*. It is right, of course, in stressing the material realities present in nature. It is wrong in *denying the psychical realities*. In man, for instance, we observe both the physical and the psychical. The body of man is physical in its composition, composed as it is of the ordinary chemical elements found everywhere in nature. Materialists claim that 'nothing but' chemical elements and their material activities are present in the human body. It is in this 'nothing-but' that materialists are

guilty of the *Fallacy of False Exclusion*. Organic compounds are the result of natural activities in man's body (and also in plants and brutes), but nowhere in nature do the ordinary elements form such compounds when left to themselves. These compounds conspire to develop various tissues and organs in the organic structure of the body, some thing they never do otherwise. There is a unity of structure and function in the body which transcends the capabilities of the atoms and elements in their ordinary status. In other words, *life* is an *immanent* activity totally different from that of the atoms as the physicist and chemist know them. Life, too, is an integral part of nature and must be explained; and this explanation is not forthcoming on the basis of an out-and-out materialistic interpretation of nature.

Then, there is the *psychic* factor which materialism simply denies. A mere denial is easy; but it does not prove the nonexistence of the psychical. Even the materialist cannot deny the fact of *sensation*. He tries to explain it as a complicated form of atomic motion of some kind. That atomic motion is present in sensation, is true enough. Such motion, however, by no means explains the fact of conscious perception. *Conscious perception* is something 'over and above' the motion of atomic and subatomic particles accompanying the act of sensation. Here again we encounter the 'nothing-but' fallacy. Certainly, every act of sensation is a bodily function involving movements of parts consisting of elements, atoms, and sub-atomic particles; but that is only a part of the phenomenon. While these movements occur, man actually 'sees,' 'hears,' 'smells,' 'tastes,' and 'feels' objects; and he is 'conscious' of

perceiving these objects. Perception and consciousness, however, though they are accompanied by material movement, cannot be said to be 'nothing but' material movements. They represent a 'psychical factor' of life distinct from the merely material. This fact becomes evident when a living body is compared with a dead body; both possess the same organs and material components, yet the former is capable of perception and the latter is not.

The same observations must be made concerning the *intellectual activity* of man. To deny that intellectual activity exists is both futile and foolish. It is experienced by each one of us. We all use 'ideas,' 'judgments,' and 'inferences.' But they are in no sense 'material' like electrons, atoms, elements, and their respective activities. Every material reality can be measured quantitatively. What quantitative measure of length and weight can be applied to an 'idea' or a 'judgment' or a 'process of reasoning'? They have no size, color, or temperature. They are realities, assuredly, and as such their existence and presence as a part of the universe cannot be denied; but if material standards used in chemistry and physics fail to apply to them. Similarly, man's mind is capable of thinking about things that have *no material existence as yet*. Our ideas, in the view of materialists, are 'nothing but' refined sense-images.

Sense-images, however, are the product of stimuli which proceed from objects at a specified time from a specified place. The *future* is thus barred to the senses, because future events cannot send stimuli to the sense organs existing in the present; otherwise a non-existent cause would produce an actual effect. Nevertheless, we have

ideas of the future, and the scientists predict future happenings in many instances.

G. T. Ladd,⁷ recognizing these facts, did not hesitate to write:

“With no mere figure of speech we are compelled to say, every mind thus *transcends* completely, not only the powers of the cerebral mechanism by springing into another order of phenomena, but also the very existence, as it were, of that mechanism by passing into regions of space, time, causality, and ideality, of various kinds, where the terms that apply to the existence and activity of the cerebral centers have absolutely no meaning whatever. For example, the human mind anticipates the future and predicts, on a basis of experience in the past, the occurrences which *will* be but are not now. Into this future, which is itself the product of its own imagining and thinking, it projects its own continued and yet characteristically altered existence, as well as the continued similar existence of things. But the existence of the brain, and of its particular forms of nerve commotion, is never other than a purely here-and-now existence. This physical existence is, therefore, transcended in an absolute way by every such activity of the mind.”

— G. T. LADD

Man is without doubt a material organism. However, besides the physical component of his nature there is also a

psychical component. Both are real. For materialists to accept only the 'physical' and to deny the very existence of the psychical,' is an unpardonable error.

Materialists have referred to the *Law of the Conservation of Energy* as a positive proof of the non-existence of spiritual reality, such as the human soul and God. However, even this law has been dethroned; it no longer holds absolute sway over the domain of matter. Modern physicists are convinced that matter can be, and actually is, transformed into energy, and energy into matter. The law has therefore been altered to read The Law of the Conservation of Energy and Matter. It may be disputed whether the theory of the transformation of matter and energy is a correct interpretation of the facts in the case. This much, however, is clear; the law is empirical and subject to change. Consequently, when the materialists appealed to it as a proof of the non-existence of the human soul and of God, they appealed to a law which had only 'provisional value' and was not as sound as they imagined it was. Besides, it is very questionable whether *thinking* (accepting 'thinking' in the strict sense of an activity of the spiritual soul) is accompanied by any expenditure of physical energy. That ordinary vital activities, such as occur in the human body, involve energy, can be admitted; this energy would come from the elements and atoms composing the bodily tissues and organs. The activities of the spiritual soul, however, should neither increase nor decrease the sum-total of energy, because the soul is not material. All experiments made show that 'thinking'

apparently does not involve the expenditure of energy. Consider the words of Alexis Carrel:⁸

“Intellectual work, strange to say, does not increase metabolism. It seems to require no energy, or to consume a quantity of it too small to be detected by our present techniques. It is, indeed, an astonishing fact that human thought, which has transformed the surface of the earth, destroyed and built nations, discovered new universes in the immensity of siderial spaces, is elaborated without demanding a measurable amount of energy. The highest efforts of our intelligence have incomparably less effect on metabolism than the contraction of the biceps when this muscle lifts a weight a few grams. The ambition of Caesar, the meditation of Newton, the inspiration of Beethoven, the passionate contemplation of Pasteur, did not modify the chemical exchanges of these great men as much as a few bacteria or a slight stimulation of the thyroid gland would easily have done.”

— ALEXIS CARREL

Provided these scientific findings are substantiated, they show that thinking, precisely as such, is not a material process but an immaterial operation. Whatever minute metabolic changes might occur, could be attributed to the cerebral activity which normally accompanies all acts of thinking. It is thus seen that the Law of the Conservation of

Energy does not militate in any way against the existence of the soul or of God.

The materialist's appeal to the universe as a *closed system of causation* fares no better. No scientist has ever proved through observation and experiment that the entire universe is such a 'closed system.' The inductive method of science does not reach that far. This claim is a *conclusion*, but it is not subject to an actual proof. At best, the claim has merely 'empirical value' and is 'provisional' in its very nature. The principle of the 'closed system' is true in a limited and well-defined sphere; but to extend it to the universe at large goes far beyond the premises of scientific induction. Even if admitted to be valid for the whole world, it would apply only to *material causes*, riot to spiritual causes, such as the soul and especially God.

Materialists postulate the *eternity of matter* and the *infinity of time* in their theory. Neither the eternity of matter nor the infinity of time-moments is in accord with the findings of science. Einstein's 'curved space' and the theory of an 'expanding universe' imply a limited space, and a limited space implies limited number of particles; hence, there can be no such thing as an infinite number of possible combinations for the particles of matter to form the universe. It is fairly well established, too, that the present world, as we know it, has existed for only a *limited time*, not from eternity. The calculations differ, as is to be expected, but practically all scientists agree that the indications point to the fact that the duration of the universe can be measured in a number of billions of years.⁹ Billions of years are, of course, a long period of time, but such a period is

definitely limited. When materialists, therefore, set up the postulate that matter is eternal, they do so for the sake of their theory, because they wish to eliminate God as the author of the universe; in doing so, however, they run counter to the findings of science and the principles of philosophy, and that is fatal to any theory.

Scientists begin their research with the universe as given. The *origin of the universe* lies beyond the scope of scientific investigation. Very properly, then, scientists may omit God from their discussions. When, therefore, they refer to God, they no longer speak as scientists but as philosophers and lose their status as experts in a particular field of science. This should always be borne in mind.

The better scientists, as a class, are not in sympathy with materialism. To them the world is an *intelligible and rational universe*, with an order and harmony that can be expressed in precise mathematical formulae. No wonder, then, that most of them are *theists*.

Neither idealistic transcendentalism nor mechanistic materialism can satisfy the inquiring mind anxious on discovering the truth. Both are extremes, and extremes are always a one-sided distortion of truth. Honest thinking invariably leads to God.

Summary of Chapter VIII

Kant's *transcendentalism* and the teachings of *materialism* are, in the main, the views which oppose the traditional proofs for God's existence.

1. *Objections of Transcendentalism.* — Kant says that there are only three proofs for God's existence, and all three are invalid; the ontological, physico-theological, and cosmological.

He rejects the *ontological* proof as an illegitimate transition from the ideal to the real order. We do the same.

He rejects the *cosmological* proof, because in it we go from the experience of existing and contingent things to the 'idea' of a necessary being, and from this 'idea' we argue to the existence of the necessary being; and this is the ontological argument in disguise. The Principle of Causality is valid in the world of 'phenomena,' not in the world of noumenal reality.

He rejects the *physico-theological* proof (order and design), because we pass from the empirical order, with the help of transcendental conceptions alone, to the existence of something absolutely necessary, and from this 'idea' deduce God's existence; this, too, he says, is nothing but the ontological argument.

2. *Refutation of Transcendentalism.* — Kant made the initial mistake of accepting Descartes's and Hume's assumption that all knowledge originates solely in the mind and that the mind can know only its own conscious states. To safeguard the necessary character of science, he made

the distinction between phenomena (which are known through experience) and *noumena* (which cannot be known). All phenomena are necessarily clothed in 'space' and 'time' and these are *a priori forms* of sensibility. On the intellectual level there are twelve such 'forms,' called *categories*. On the level of reasoning there are three 'forms' or *ideas*, namely, the soul, the world, and God. Since these 'forms' make knowledge 'necessary,' they exist prior to all experience and are, therefore, not the result of experience; they are subjective and make necessary knowledge possible. It follows, then, that all arguments for God's existence are deduced from the 'idea' of God, and such arguments are therefore 'ontological.'

Kant's theory is *arbitrary* and *subjective*. Since we cannot help but think that our knowledge tells us something of the things outside the mind, our knowledge would be *essentially false* and end in skepticism. It is contrary to the *principles of reason*, because one cannot deny the objective validity of the Principles of Sufficient Reason and Causality without destroying the validity and trustworthiness of reason itself.

3. *Objections of Materialism.* — Materialism is the philosophic system of thought which considers matter to be the only reality and attempts to explain everything in the universe as the result of the conditions and activities of matter.

Modern materialism bases its contention on the findings of the *natural sciences* and especially on *evolution*. It postulates the eternity of matter.

4. *Refutation of Materialism.* — It is an *oversimplification*. By denying the existence of psychical realities, it is guilty of the Fallacy of False Exclusion. Conscious perception and intellectual activities are as real as physical bodies, but are *psychical* in nature and transcend the capabilities of matter and material activity. The *laws of science* are empirical and provisional, not absolute. The materialistic *postulate* of the eternity of matter and the infinity of time is not in accord with modern science; science is reasonably certain that the universe is limited in extent and had a definite *origin in time*.

Neither idealistic transcendentalism nor mechanistic materialism, therefore, disprove the arguments for the existence of God.

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¹ *Elements of Metaphysics*, 5 ed. (London: Methuen, 1920), p. 400.

² *Critique of Pure Reason*, tr. J. M. D. Meiklejohn (New York: Macmillan, 1900), p. 331.

³ *Ibid.*, pp. 338—339.

⁴ *Ibid.*, pp. 339—340.

⁵ *Ibid.*, p. 341.

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8 *Man, the Unknown*, 27 ed. (New York: Harper and Bros., 1935), p. 81. See also T. V. Moore, *Cognitive Psychology* (Philadelphia: Lippincott, 1939), pP 540, 541.

9 Sir Edmund Whittaker, *Space and Spirit* (Hinsdale, Ill.: Henry Regnery Co., 1948), p. 112ff.

PART II

THE NATURE OF GOD

Chapter 9

GOD'S ESSENCE

SECTION I: ABSOLUTE ATTRIBUTES

THE PROOFS FOR GOD'S EXISTENCE REST ON A TWOFOLD foundation: experience and reason. Experience provides the data taken from the universe as supplied by common sense and scientific research. Reason provides the First Principles and applies them to the data of experience. In this way the mind is led inevitably to the conclusion that a personal Supreme Being, or God, exists.

One cannot refuse to accept the data of experience without denying the validity of common sense and science; and one cannot refuse to accept the First Principles without denying the validity of reason. Such a refusal means the denial of the fundamental sources of all human knowledge and, when consistently followed, must end in skepticism, the bankruptcy of the mind.

The individual proofs for God's existence must not be taken in isolation. Since all are derived from an analysis of the *selfsame, one universe*, they refer to the *selfsame, one cause*. This selfsame, one cause is the First Cause, absolutely uncaused, changeless, self-sufficient, self-existent, a spirit of unlimited perfection, pure act without potentiality and composition of any kind. This being we call God.

Having proved God's existence, it will now be necessary for us to investigate God's *essence* and *attributes* more in detail. Some attributes of God are 'absolute,' in the sense that they pertain to His essence as such; some are 'relative,' in the sense that they have a relation to things other than God. Both kinds of attributes must be considered, because

they reveal to us the perfections of God and thus increase our knowledge of 'what God is.'

Man's Knowledge of God

We have no intuitive knowledge of God, because we cannot perceive Him directly. The proper object of man's intellect is the 'sensible,' namely, material beings. Material beings stimulate man's senses in various ways and give rise to sense-images, which represent material beings in a concrete manner. From these images man's intellect forms (not by means of a 'conversion' of any sort, but through a process of 'abstraction') its 'ideas' of the material things. Once such ideas are formed, the intellect proceeds to build up a system of knowledge, partly by analysis and partly by discursive reasoning. Ultimately, of course, all human knowledge is based on the data of the senses, according to the axiom: 'nothing is in the intellect which was not beforehand somehow in the senses.'

Because of the fact that all man's knowledge has its beginning in sense-perceptions, agnostics contend that man cannot know the nature of God in any way. At most, they say, man can arrive at the judgment that there exists some kind of *ultimate ground for the reality of the universe*, but that is as far as man's mind can go; the ultimate ground itself ('God,' if we wish to call it that) is absolutely unknowable, because man's mind simply cannot transcend the material world. Oddly enough, in making this statement, agnostics do the very thing they say cannot be done: they transcend material reality, because they make a statement

the content of which is not found in material reality. Agnostics overlook the fact that man is not only an 'animal' but is also 'rational.' It is man's rationality which enables him to apply rational principles to the data of sense and by their help to draw *conclusions to non-sensible reality*. The agnostics do this continuously, as anyone reading their articles and books can see for himself.

Much of the knowledge acquired through the *physical sciences* is the result of discursive reasoning, not of direct observation. No physicist has ever seen, for instance, an atom, an electron, a proton, a neutron, or a chain reaction; yet he does not on that account doubt their existence and nature. No chemist has ever observed the actual process of electrolysis or, for that matter, of chemical combinations in general; nevertheless he is firmly convinced that they occur. No biologist has ever perceived with his senses the growth and metabolism of plants and animals; but he accepts them as established facts. Why are scientists certain of these things? Because they form the only conclusion consonant with observed facts. Reason, not observation, certifies their existence and nature. Without the validity of man's reasoning power, science would be nothing but guesswork.

The same principle guarantees the validity of man's conclusion as to the existence of God and His nature. True, our knowledge of God is only *indirect* and *discursive*; but indirect, discursive knowledge is valid and genuine, so long as it is logical. Science has no privileged position in this matter. If indirect, discursive knowledge is valid and genuine for science, it is also valid and genuine for philosophy. Hence, if the scientist can draw valid

conclusions concerning the nature of physical realities, the philosopher can also draw valid conclusions concerning the nature of spiritual realities, provided the facts demand such conclusions.

The scientific and philosophic principle underlying all such conclusions is the *Principle of Causality*. No effect can possess any reality except in so far as it receives this reality from its cause, and no cause can give to its effect any reality which it does not itself possess. From the nature of the effect, therefore, we can legitimately draw a valid conclusion as to the nature of the producing cause: as the effect, so the cause; and the cause, so the effect. To deny the validity of this line of reasoning is to deny the validity of all common sense and science and philosophy.

The application of the principles of reason to the data of the material world leads the mind to the existence of a Supreme Being behind and beyond the world. And it does much more than this. It reveals at the same time a great deal about what this Supreme Being is. *That a reality is*, refers to its existence; *what it is*, refers to its essence or nature. The proofs given in the first part of the book not only tell us that God exists; they also tell us very much about His essence. The reason is clear: the nature of the effect reveals something about the nature of the cause. Since God is the cause of the universe, the nature of the universe must declare, to some extent, the nature of God.

Ways of Knowing God

The 'sensible' is the proper object of man's knowledge. As a consequence, the 'sensible' alone can be known by man directly and intuitively. Any reality that is immaterial can only be known indirectly and discursively. God is an immaterial being. It follows that man cannot attain to a knowledge of God except by leaning upon knowledge of material reality. This fact is the result of the constitution of man, because man is not a pure spirit but a 'rational animal.' Since man is limited and relatively imperfect (when compared to a 'pure spirit'), his knowledge of God is necessarily also limited and relatively imperfect. How, then, does man arrive at a true knowledge of God?

Man acquires and also expresses his knowledge of God *in three ways*.

First, the *way of affirmation*. There are many perfections which are styled 'pure perfections,' namely, such as contain no imperfection in their concept and reality; for example, 'being,' 'good,' 'life,' 'person,' 'substance,' 'intelligence.' Although these perfections are also found in creatures, they need not be restricted to creatures. To be an 'organism' or 'body,' for instance, is a perfection, but it is restricted to a material being and cannot be applied to a pure spirit; such a perfection is termed a 'mixed perfection.' God is not a material being, and therefore any perfection based strictly on materiality cannot be attributed to Him. 'Pure perfections,' however, not being based strictly on materiality are found in all their purity in spiritual beings. Hence, *pure perfections can be affirmatively predicated of God*. Nevertheless, such 'pure perfections,' when predicated of God, must be affirmed of Him in such a way

that all creatural imperfection is definitely excluded. The 'way of affirmation' must therefore be combined with the 'way of negation.'

SECOND, THE *WAY OF NEGATION*. ST. THOMAS CALLS THIS 'THE WAY of removal — *via remotionis*.' Joseph Rickaby renders St. Thomas' expression into English by the term 'negative differentiation.' The meaning is the same. The 'way of negation' consists in denying of God every sort of imperfection and in attributing to Him the corresponding perfections in such a manner that they apply to Him alone. Even 'pure perfections' are found in creatures, but they are always limited. This limitation must be removed, when such a perfection is affirmed of God; otherwise there would be no essential difference between God and creature. Thus, all creatural being, whether material or spiritual substances, are by their very nature 'limited' in perfection; they are substances of limited perfection. There can be, however, no limitation in the perfection of God's substance; and so we must remove ('negate') this limitation of perfection by saying that 'God is a substance of unlimited (or infinite) perfection.'

Strictly speaking, the 'way of negation' expresses what God *is not* rather than what He *is*. As St. Thomas¹ puts it: "Now in treating of the divine essence the principal method to be followed is that of remotion. For the divine essence by its immensity surpasses every form to which our intellect reaches; and thus we cannot apprehend it by knowing what it is. But we have some knowledge thereof by knowing *what*

it is not: and we shall approach all the nearer to a knowledge thereof according as we shall be enabled to remove by our intellect a greater number of things there from. For the more completely we see how a thing differs from others, the more perfectly we know it: since each thing has in itself its own being distinct from all other things. Wherefore when we know the definition of a thing, first we place it in a genus, whereby we know in general what it is, and afterwards we add differences, so as to mark its distinction from other things: and thus we arrive at the complete knowledge of a thing's essence.

“Since, however, we are unable in treating of the divine essence to take what as a genus, nor can we express its distinction from other things by affirmative differences, we must needs express it by negative differences. Now just as in affirmative differences one restricts another, and brings us the nearer to a complete description of the thing, according as it makes it to differ from more things, so one negative difference is restricted by another that marks a distinction from more things. Thus, if we say that God is not an accident, we thereby distinguish Him from all accidents; then if we add that He is not a body, we shall distinguish Him also from certain substances, and thus in gradation He will be differentiated by suchlike negations from all beside Himself: and then when He is known as distinct from all things, we shall arrive at a proper consideration of Him. It will not, however, be perfect, because we shall not know *what* He is in Himself.”

We observe the ‘way of negation’ in many expressions used to designate the perfections peculiar to God alone; for

instance, in expressions like 'unchangeable,' 'uncaused,' '*infinite*,' 'immense,' 'unlimited,' 'ineffable.' Perfections expressed in this negative manner plainly show their creatural origin. The original notions are derived from the sensible world, with all the limited perfection characteristic of this world. Obviously, a 'limited perfection,' when viewed from the standpoint of God, is a relative 'imperfection.' This 'imperfection' must be removed when applied to God, and this is done by the 'way of negation.

THIRD, THE *WAY OF EMINENCE*. JUST AS ALL IMPERFECTIONS MUST be denied of God, so all pure perfections must be ascribed to God in a superlative degree, without any kind of limitation. In other words, all pure perfections in God, as we shall see later, are without limit, infinite. This is usually done by ascribing to God a pure perfection and then raising the perfection to the highest degree conceivable by 'way of eminence.' It is thus that we speak of God as being 'infinitely good,' 'infinitely wise,' 'omniscient,' 'omnipresent,' and so forth. God is really good in Himself, but so are creatures; in order, then, to distinguish the goodness of God from the goodness of creatures, we say that God is 'infinitely good,' 'good without limit,' because that is what God's goodness is and that applies to God alone. Similarly, knowledge is found both in God and in creatures; but knowledge in creatures is essentially limited, while in God it is essentially unlimited, and so we say that God is omniscient' and thereby distinguish His positive

perfection of knowledge from the positive perfection of the knowledge present in creatures.

Analogical Knowledge of God

Many perfections are, in a sense, *common* to God and to creatures; for instance, the perfections of 'substantiality' and 'intelligence' are present in God and man. Evidently, however, such perfections differ in manner and in degree when attributed to God and man (and to creatures in general).

A term may be applied to a number of things either in a univocal, equivocal, or analogical sense. It will be applied *univocally*, when the sense of the term is identical in all the realities to which it is applied; the term 'man,' since the meaning is identical in all human beings, is used univocally of all men. An *equivocal* term is applied to a number of realities in entirely different meanings; such is the use of the term 'coach' as applied to a vehicle and to an athletic director. An *analogous* term applies to unlike, but related, things, so that it is used in a meaning that is partly the same and partly different. There is always some relation between such things, entitling the mind to designate them by the same term; hence, the term is not equivocal. Due to the partial unlikeness in the things, however, the term is not used in a strictly univocal sense; hence, the term is not univocal either. An analogous term designates related things in such a manner that it applies primarily to one thing and secondarily to other things.

In what sense do we use the terms signifying perfections *common to God and creatures*, when they are applied to God and creatures? In a univocal sense? equivocal sense? analogical sense? Practically all Christian philosophers claim that such terms are used in an *analogical* sense, and we subscribe to this thesis.

For one thing, pure perfections common to God and creatures are *not* ascribed to them in an *equivocal* sense. For example, the term 'existing being' is applied to God and to every being in the universe; each one is said to be an 'existing being.' Is this term ('existing being') applied to God and to the creatures in the universe in entirely different meanings, as the term 'coach' is used of a vehicle and of an athletic director or the term 'pitcher' is used of a vessel and of a person throwing a ball at a batter? Evidently not. What is meant by an 'existing being'? Anything which is not 'nothing,' not a 'non-being.' God is assuredly not 'nothing'; and He is assuredly not a 'non-being.' God actually exists, and the creatures in the universe actually exist. God and the creatures in the universe must, therefore, be 'existing beings' in the true sense of the word. Consequently, the term 'existing being' does not apply to God and the creatures in the universe in an equivocal sense, as if the term had entirely different meanings in its application to them.

Nevertheless, terms which apply to creatures are *not* applied to God in an absolutely univocal sense, as if there were no real difference in their meanings. In God all perfections are un-derived, uncaused, and unlimited; while in creatures all perfections are derived, caused, and

limited. God is the source and origin of all perfections found in creatures; creatures, however, are in no sense the source and origin of God's perfections. God 'gives' perfections to creatures as their 'cause'; creatures 'receive' these perfections from God, and their whole being is an 'effect' produced by God. God's perfections are identical with His essence and are therefore essentially infinite (as will be shown later); the perfections of creatures are not identical with their essence and are essentially finite. As a consequence, the terms designating the perfections of God and the creatures are not absolutely identical in meaning and are not, therefore, absolutely 'univocal.' When we, for instance, say that 'God is wise' and that 'man is wise,' the term 'wisdom,' though not equivocal in its use, is not absolutely univocal; God's wisdom is essentially infinite and eternal, while man's wisdom is essentially finite and temporal.

The conclusion is evident. Since the terms referring to the perfections common to God and creatures are neither absolutely identical nor absolutely equivocal in meaning, but are used in a sense which is partly the same and partly different, they are rightly said to be *analogous* terms. The use of these terms is not purely 'metaphorical.' The analogy underlying the application of the same terms to God and creatures is an *analogy of intrinsic attribution based on the fact of causality* (or, as many prefer to call it, an analogy of 'proper proportionality'). As such, therefore, all pure perfections are present in God 'primarily,' because He is the essential source of these perfections in Himself and in creatures; they are present in creatures 'secondarily,'

because ultimately they have their essential source in God who gave them to the creatures. Hence, pure perfections are attributed to God in a 'primary meaning' and to creatures in a 'secondary meaning,' because all creatural perfections are utterly dependent in their being and existence on the causality of God.

It is thus seen that the terms used to designate pure perfections common to God and creatures have a meaning which is partly the same and partly different; that is to say, they are analogous terms — not univocal and not equivocal.

So far as man's knowledge of God is concerned, it is *neither intuitive nor comprehensive*. Man in his natural life never knows God as He is in Himself, for the simple reason that He cannot see God directly. Intuitionists and ontologists have put forth the claim that man has a direct knowledge of God through intuition; that their view is erroneous is evidenced by the fact that all man's terms of God show an unmistakable derivation from creatural conditions. Man's knowledge of God, being indirect and analogical while he lives here on earth, will always be incomplete and fragmentary; as such, it can never be comprehensive. God exists 'in light inaccessible.' For man, therefore, as a creatural being limited in mental power, God must always be *incomprehensible and ineffable*. All man's concepts of God contain a core of impenetrable darkness, and this darkness can never be completely dispelled.

The indirect, discursive, and analogical character of man's knowledge of God and His perfections must always be borne in mind in the subsequent discussions of His essence and attributes.

Notion of Essence and Attribute

Essence in general is defined as *that through which a being is just what it is (id quo res est id quod est)*. What for instance, is the essence of man? That which makes him to be simply and positively a 'man,' and not a brute or a plant or an inanimate object or anything else. 'Animality' and 'rationality' are found in every individual 'man' and distinguish him from every other being. 'Rational animal,' therefore, is the essence of man.

Every being present in the natural order of the universe consists of essentials and nonessentials; altogether, the concrete realities existing in a being form a complex whole. And for all this complex whole of reality or entity there must be a common source and fountainhead of being and operation. This source or ultimate principle in the thing, from which it derives whatever it possesses in the line of 'being' in any form, is appropriately designated the thing's *essence* (Lat., *esse*, to be; *essentia*, being).

The 'essence' of a thing is sometimes called *nature*. Out of the essence as out of a matrix all being of a thing is, so to say, born (Lat., *nasci*, to be born; *natus*, born; *natura*, nature, that which is given by birth); the elements of a thing, which constitute its being, have existence only in so far as they flow (are born) from the essence. Specifically, 'nature' is an essence considered as the ultimate principle of operation in a being. 'Essence' is more static, and 'nature' more dynamic, in its meaning; in reality, of course, both mean fundamentally the same thing, viewed from different standpoints.

A distinction is made between 'physical' essence and 'metaphysical' essence. The distinction is important.

A *physical essence* is an essence in so far as it is, or can be, something in the order of reality, independent of the consideration of the mind contemplating it. The term 'physical,' as used here, must not be interpreted in the sense of 'material,' although that is the sense in which the term is frequently used. 'Physical' here means the same as 'natural,' 'pertaining to the nature of a thing' (Gr., *φυσικός*, natural; from *φύσις*, nature, constitution of a thing); as such, therefore, a 'physical essence' may be either material or spiritual. Thus, when 'man' is defined as 'an organism composed of a (material) body and a (spiritual) soul,' the definition gives the 'physical essence' of man, because that is what makes man to be man in the order of reality; 'body' and 'soul' are the actual, physical constituents which exist as such in man, independent of the mind that thinks of man. The 'physical essence' of an angel is its simple substantial entity, excluding all accidental reality modifying the substance. As it will be noted, the 'physical essence' of a thing is understood to be the complex of all the fundamental elements without which this thing cannot exist.

A metaphysical essence is an essence consisting of all those elements which are necessary for the concept of the thing and without which this thing cannot be conceived. The 'metaphysical essence' of a being consists of two elements, distinct in concept (meaning), one of which is conceived as being 'common' and the other as 'differentiative.' Because of the 'common element,' the

thing in question agrees with two or more other beings; and because of the 'differentiative (differentiating) element,' it differs from all beings which are not itself. The definition of 'man' as 'a rational animal' expresses his metaphysical essence: 'animal' expresses the constitutive element which man has in common with other sentient organisms (for instance, with dogs, cats, horses, and so on), while 'rational' expresses the constitutive element which distinguishes man from every other type of animal (for he alone possesses 'rationality'). Hence, a 'metaphysical essence' is the sum of the various grades of being which constitute a thing in the concept of the mind; we do not consider an object as it exists concretely in the world of reality, but according to the manner in which it is conceived by the mind in its thinking.²

While, therefore, the 'physical essence' of a thing is the complex of all the fundamental elements without which this thing cannot *exist*, its 'metaphysical essence' is the sum-total of the various grades of being without which it cannot be *thought*.

AN *ATTRIBUTE* IS DEFINED AS *THAT WHICH FOLLOWS BY NATURAL necessity upon a fully constituted essence*. Given the essence, the attribute is also given. The attribute always characterizes the essence, since it flows necessarily from the essence. Another term for 'attribute,' practically synonymous with it, is property. As the word indicates (Lat., *proprium*, one's own), a 'property' belongs to an essence in such a manner that it is 'proper to this essence. Thus, the

‘power of speech’ is an attribute or property of man as a rational animal: only an ‘animal’ can have organs capable of emitting articulated sounds; and only a ‘rational’ being has ideas which can be communicated to others by means of speech.

Attributes reveal the underlying essence. They lie closer to the surface of things than does the essence. Hence, man in his knowledge recognizes the attributes sooner than he does the essence. Since the attributes flow necessarily from the fully constituted essence, there exists an intrinsic connection between the attributes and the essence, and so the mind of man naturally goes from a knowledge of the attributes to a knowledge of the essence itself. Oftentimes man is incapable of defining an essence by means of proximate genus and specific difference; in that case a descriptive definition by means of attributes is the only way of arriving at a knowledge of the essence. Such a form of knowledge will be *imperfect*, but it will be *true*.

When speaking of God, we understand by the *divine attributes* all those perfections which flow necessarily from the divine essence and which are found in no other being but God. First, though, we must try to discover the metaphysical and physical essence of God, before making a detailed investigation of God’s attributes. Ordinarily, this procedure should be reversed; inasmuch, however, as the proofs for God’s existence have revealed many of His attributes, this procedure is logical.

God’s Metaphysical Essence

By the *metaphysical essence of God* we understand God's essence, not as it 'exists' objectively in itself, but as it is *known by the human mind*, namely, God's essence in so far as man's mind can signify it by a definition or quasi-definition which embraces the element (or elements) common to it and to all other beings and the element differentiating it from all other beings. A strict definition, of course, would be by proximate genus and specific difference; God, however, does not properly belong to any genus, and therefore a strict definition of God is impossible. A *quasi-definition*, however, is possible, for a description, containing a common and a differentiating element, can be made.

It is not a question here of giving a quasi-definition of the essence of God as it exists objectively in itself; that would be a definition of the 'physical essence' of God rather than of his 'metaphysical essence.' It is a question of what *man in his way of thinking must consider to be the most fundamental element in God's being*, the one from which all other elements and attributes are ultimately derived. It is, therefore, that reality in God's being which, for man's thought, must be considered to be the root-principle of all the realities which can be predicated of God; or, in other words, the primary and foremost characteristic by which man recognizes God as God. Some one perfection of God's being must, to man's mind and his way of thinking, be regarded as primary among His perfections, so that it is the root that gives rise to all His other perfections and distinguishes Him from any and every type of being which is not God. Because of the imperfection of his intellect, and

because his concepts of God are acquired through various considerations of creatural things, man has many different concepts pertaining to God; among these concepts, some refer to perfections which are absolute and some to perfections which are derivative. That *perfection which is conceived by man as being the most basic* to an understanding of God is what is meant by the 'metaphysical essence' of God. Even if man disavows any division in God, he cannot avoid making mental distinctions in the concepts about God. Hence, the need of discovering which of these concepts represents God's 'metaphysical essence.'

All authors agree that in God's metaphysical essence the element or item which is *common* to Him and creatures is 'being'; and by the term 'being' is here meant 'existing being,' not being which is merely possible. There is, however, considerable dispute about the element or item which *differentiates* God from every other being.

A number of *theories* have been advanced regarding this differentiating element in God's metaphysical essence.

Duns Scotus and many *scotists* maintain that the primary differentiating element in God's essence is *infinity*. Infinity may be either extensive or intensive. 'Extensive' infinity means the possession of all possible perfections, viewed from a quantitative standpoint. 'Intensive' infinity means the possession of divine perfections in an infinite degree. Some scotists, and also Palmieri and others, claim that 'radical infinity' constitutes God's metaphysical essence, and by 'radical infinity' they understand the exigency of God's being for both extensive and intensive infinity. Very recently, A. Antweiler has come out in defense

of 'infinity' as the metaphysical essence of God. Other defenders are: Van de Woestyne, Belmond, and Minges.

Ockham and the *nominalists*, and also Descartes and Leibnitz, claimed that the divine essence is but the *sum of all His perfections*: hence, no single fundamental perfection can be mentioned which would logically explain the rest.

Another theory has been advocated by *some thomists*, among whom are John of St. Thomas, Gonet, and Billuart. According to their view, the primary difference which distinguishes God from all other beings lies in *intelligence* or in the subsistent act of divine *intellection*. These authors feel that the metaphysical essence of God must be sought and found in His highest attribute; but this is the divine intellection, not radical but actual, viewed from the standpoint of supreme actuality which is *per se* subsistent. Some, however, defend the 'exigency' for knowledge, rather than actual intelligence, as the fundamental differentiating note of the divine essence.

Relatively few authors have favored the view that the primary distinguishing mark of God's essence is divine *love* and *life*: God is love, and God is life.

Some modern *voluntarists*, such as Secrétan, Lequier, and Boutroux, look upon God's *absolute liberty* as the most characteristic item which differentiates God from all other beings. God, being a pure spirit of the highest order, consists only in what He does; and for that 'absolute liberty' is necessary.

Many modern scholastics defend the thesis that the primary differentiating element in the metaphysical essence of God is His *aseity* (*aseitas*), namely, that God is *a se*, the

being who exists of and by Himself, the self-existent being. This is the thesis of J. Hontheim, B. Boedder, J. Donat, and others.

F. Suarez and most modern scholastic philosophers place the primary characteristic of God's metaphysical essence in His *self-subsistence*. Among prominent thomists who hold this view are Gapreolus, Bañez, Gotti, Contenson, Ledesma, Del Prado, and Garrigou-Lagrange. Among nonthomists, besides Suarez, authors like Molina, Vasquez, Torres, G. H. Joyce, J. Hellin deserve mention. God is 'subsistent being,' and by that term is understood 'being subsisting independently of any potentiality, absolute reality, reality excluding all non-actuality.' A being is said to be 'subsistent' when it is an existing substance, complete and autonomous; it is said to be 'self-subsistent' when it owes its subsistence to its own self and its own constitution, and not to any kind of supporting cause. Creatural substances possess subsistence, but their subsistence is derived ultimately from the causality of God. God's subsistence is underived, unconditional, absolute, necessary, uncaused; and for this reason God *is* self-subsistent being, while all other beings can only be said to *have* subsistence. 'Self-subsistent being,' these thinkers contend, constitutes God's metaphysical essence.

Evaluation of Theories

As was stated at the beginning of the last section, by the 'metaphysical essence of God' is understood God's essence in so far as it can be expressed in a definition or quasi-

definition which embraces the element (or elements) *common* to it and to all other beings and the element *differentiating* it from all beings which are not God. The element which is 'common' to God and all things is 'existent being'; about this there is practically universal agreement among scholastics. The difficulty arises in determining the 'differentiating element' and the problem of determining it has led to the formation of a number of divergent theories. These theories must now be evaluated.

The first theory to be examined is the scotistic theory of infinity. If the term 'infinity' is taken primarily in its literal meaning of 'without limits,' then the term has a negative connotation. The negative, however, always presupposes something positive. God's being is absolute and supreme actuality. Hence, negative infinity, in God, presupposes positive infinity; and so negative infinity cannot be the primary and constitutive element which differentiates God's essence from all other beings: this differentiating element must be something positive. If the term 'infinity' is taken in a positive sense, it can mean either the aggregate of all perfections ('extensive' infinity) or the supreme degree of God's perfections ('intensive' infinity) or the exigency of God's being for both extensive and intensive infinity ('radical' infinity). Now, none of these three possibilities is satisfactory as the primary differentiating element. Taken as 'extensive infinity,' the term signifies the sum-total of God's perfections as they exist in reality, and in this sense the term means what is commonly understood to be God's 'physical' essence; the problem would still be unsolved as to which of these divine perfections is the root-perfection

which, for man's mind, explains all the other divine perfections. Taken as 'intensive infinity,' the term signifies primarily the 'degree' of perfection, and as such expresses the 'mode' in which these perfections exist in God's essence; all divine perfections have the 'mode' of infinity, and therefore this 'mode' offers no explanation to man's mind of how the various perfections are derived from the essence. Taken as 'radical infinity,' the term still characterizes the 'mode' or 'way' in which God's essence exists rather than the essence itself. According to man's thinking, man conceives God's essence *to be* before he conceives it to be *infinite*. 'Infinity,' whether extensive or intensive or radical, is conceived as being more in the nature of a 'property' of the divine essence and its perfections than a characterization of the essence itself. If 'radical infinity' is interpreted as meaning 'being through essence' or 'subsistent being,' then there is only a verbal distinction between this view and the Suaresian view.

The *nominalist theory* must be rejected. The metaphysical essence of God must be expressed in a manner that gives the differentiating element which distinguishes God from all other beings and at the same time gives the root of all the perfections existing in God. The nominalist theory fails to do this. The *sum-total of God's perfections* is merely a confused expression of all the reality which exists in God, but it does not express the root of all perfections existing in God. 'Omni-perfection' expresses God's being as it exists objectively in the order of things; and thus the nominalist conception expresses God's physical essence, not His metaphysical essence.

The theory which places God's metaphysical essence in *intellectuality* or *actual intellection* must also be adjudged inadmissible. If this term is used in the sense of 'actual' comprehension and understanding, it should be obvious that it is not the metaphysical essence of God. 'Actual intellection' is conceived as an operation,' and an operation always presupposes a person who performs the operation; hence, 'actual intellection' flows from the essence, but only as something secondary to it, just as the exercise of a power is secondary to the power itself. If this term is used in the sense of 'radical' comprehension and understanding, it signifies the intellect of God; but the intellect itself is conceived as a vital power resulting from the spirituality of the essence, and as such is not primary but secondary. In no case can intelligence be considered to be the root and foundation of all the perfections existing in God: what is itself conceived as derived from something else cannot be conceived to be the root-perfection from which all other divine perfections are ultimately derived. There must be something in God more ultimate than intelligence, whether actual or radical.

For a similar reason, the theory must be rejected that *life or love* is the metaphysical essence from which all other perfections in God are deducible. True, God is life, and God is love. But 'life' and 'love' are not conceived as being the ultimate perfections of God's nature. 'Love' is definitely conceived as an act of the divine will, and the will is dependent on the intellect for the object which it loves; hence, 'love' is not conceived as the primary source of divine perfections and as the distinguishing characteristic

of the divine essence. Even 'life' is not conceived as primary. In the case of God's 'life,' it is a manifestation of God's spiritual substance; hence, spirituality and substantiality would be more ultimate, from the standpoint of man's knowledge, than 'life.' We must therefore conclude that 'life' and 'love' are not the metaphysical essence of God.

Neither is *liberty* the characteristic feature which is the distinguishing mark of the divine essence. 'Liberty' is a mode of the will's action and presupposes the will itself; it also presupposes spirituality and substantiality in God's nature. How, then, can it be conceived by man as being the source, the root-perfection from which all divine perfections are logically deduced? In the logical order of thought, the intellect is prior to liberty, because we cannot think of liberty except as following the judgment of the intellect; liberty without consciousness is inconceivable, and consciousness in God is conceived by man as being a function of the divine intellect. Consequently, the theory of the voluntarists that God's metaphysical essence consists in God's will and its absolute liberty is totally inadequate.

The view that *aseity* constitutes the metaphysical essence of God is held by many prominent philosophers. According to this theory, the fact that God is *ens a se, self-existent being*, is the fundamental perfection of God's essence from which all other perfections are deduced and the ultimate characteristic differentiating His essence from all beings which are not God. Because of the prominence of the philosophers who support this theory, their view deserves careful consideration.

The term 'aseity' may be taken negatively or positively. If taken *negatively*, the term implies that God does not owe His existence 'to another' as the contingent creatural beings do; and this negative sense of *ens a se*, or self-existent being, we can hardly accept as an expression of the metaphysical essence of God. A negative element is always grounded in some positive element, and so we would be forced to seek this positive reality in God by asking the further question: 'What is the reality in the divine essence which precludes the possibility of God being from another and necessarily being an *ens a se*?'

As George Hayward Joyce³ rightly observes:

"The objection to regarding this attribute as God's metaphysical essence is that it does not really express what we conceive as an internal constitutive principle of the Divine nature. The real significance of the notion *Ens a se* is to deny that God is, like creatures, caused by another. He is conceived as self-existent in the sense of 'un-originated.' Undoubtedly this is the first aspect under which we conceive God, as we reason from the existence of contingent things to that of a necessary Being. But it still remains for us to ask what is the internal constitutive, in virtue of which He is un-originated and needs no cause. And to reply to this question we must fall back on our concept of Him as subsistent existence — as *the Being whose existence is His nature.*"

— GEORGE HAYWARD JOYCE

If the term 'aseity' is taken in its *positive* meaning, the meaning seems to be identical with *self-subsistence*. The words are different but the meaning is the same. This being the case (as a close examination of the arguments advanced by these authors reveals), we feel that the metaphysical essence of God lies in 'self-subsistence.'

God, the Self-Subsistent Being

The metaphysical essence of God must be expressed in a definition or quasi-definition which contains the element common to other beings and also the primary differentiating element which distinguishes Him from all other beings. This is what is understood by 'metaphysical essence,' in so far as man's knowledge of God is concerned. Now, the expression 'self-subsistent being' contains both this 'commons element and this 'primary differentiating' element; as such, therefore, the expression 'self-subsistent being' is a definition, or rather a quasi-definition, of God's metaphysical essence.

That the expression contains the element which is *common* to God and all other creatures, is clear from the fact that both God and creatures are 'beings'; the term 'being' applies to all possible and actually existing things, and it also applies to God. That God is conceived as the 'self-subsistent' being, certainly differentiates Him from all other beings, whether they be possible or actually existing. And this *differentiating* element is undoubtedly 'primary.' This latter point will now have to be proved.

In order that the 'differentiating' element in a metaphysical essence be truly *primary* the following conditions must be fulfilled: the primary differentiating element must be something real and positive; it must be characteristic; it must be a reality which is not derived from a prior intrinsic perfection; and it must be a reality from which all other necessary attributes (realities, perfections) are deducible and receive their logical explanation. Each of the conditions will have to be shown to be required, in order that the differentiating element can be said be 'primary.'

The primary differentiating element of a metaphysical essence must be *real*; when it is a question of realities, as is the case here, only something that is 'real' can bring about a 'real' differentiation. It must be something *positive*; if it were 'negative it would ultimately have to be grounded in something 'positive,' and then this positive reality would have to be conceived as prior to this differentiating element. It must be something *intrinsic*; otherwise it would not characterize the essence itself, but something else. It must be *necessary*; God is a necessary being, and anything belonging to His essence must also be necessary. It must be *characteristic*; if it were not something 'exclusive' and 'proper,' it would not distinguish God's essence from that of every other being and would thus fail in its 'differentiating' function. It must be a reality which is *not derived* from a *prior* intrinsic perfection; if it were so derived, it would be secondary, not primary, and this other prior intrinsic perfection would be the primary differentiating element. It must be a reality from which all other attributes (realities,

perfections) are *deducible* and receive their *logical explanation*; it would not be the characteristic mark of the divine essence, distinguishing God from all other beings, if it were not the 'primary' attribute from which all other attributes are deducible and thus were not the radical principle explaining the presence in God of His other perfections.

The term '*self-subsistent being*' fulfills these conditions adequately, so far as man can know God's essence at all. A 'self-subsistent being,' as was stated before, means a being which exists as a complete, autonomous substance and owes its existence to no other reality but to its own essence; to be 'self-subsistent,' therefore, is equivalent in meaning 'to exist in virtue of the being's own essence,' so that 'essence' and 'existence' are identical.

That the *conditions* required for the 'primary differentiating element' are verified in the 'self-subsistent being,' can be shown as follows: The 'self-subsistent being' is evidently something *real*, some thing *positive*, and something *intrinsic* to the nature of God. It is, furthermore, a reality which is a necessary constituent of God's essence, because it is God's essence or nature itself; if God were not a reality 'self-subsistent in virtue of His essence,' He would have received His existence from some other being and would not be an *ens a se*. 'Self-subsistence' is also a characteristic, or exclusive and proper mark, of God; no other being can be said to possess the perfection of 'self-subsistence,' because all other beings are contingent and as such have received existence from God. The 'self-subsistence' of God's essence *is not derived* from any other

prior intrinsic perfection, because no such perfection can be found; the only other perfections, which could come into consideration, would be 'aseity' or 'infinity,' and these perfections really have their foundation in the self-subsistence of God, since the only intrinsic reason why God can be said to be 'of Himself' and 'infinite' is the fact that He subsists in virtue of His essence (as will be shown later in detail). That the other divine perfections have their *ultimate foundation* in the self-subsistence of the divine essence, will become increasingly clear as we proceed in the discussion of the attributes of God; let it suffice to repeat the remark of St. Thomas:⁴ "Although existence does not include life and wisdom, because that which participates in existence need not participate in every mode of existence; nevertheless God's existence includes in itself life and wisdom, because nothing of the perfection of being can be wanting to Him who is subsisting being itself."

It is for these reasons that very many scholastic philosophers prefer the view that the 'primary differentiating element' in God's metaphysical essence is His *self-subsistence*. In this they follow in the footsteps of the greatest of all Christian philosophers, St. Thomas,⁵ who says:

"The fact that the being of God is self-subsisting, not received in any other, and is thus called infinite, shows Him to be distinguished from all other beings, and all others to be apart from Him."

— ST. THOMAS AQUINAS

In the Book of Exodus (3.13, 14) it is related that, when the Lord told Moses to lead the Israelites out of Egypt, Moses asked Him, "If they should say to me, 'What is his name?' What shall I say to them?" And the Lord answered him: "Thus shalt thou say to them, 'He Who Is,' hath sent me to you." St. Thomas⁶ gives three reasons why he considered '*He Who Is*' as most properly applied to God:

"First, because of its signification. For it does not signify form, but simply existence itself. Hence since the existence of God is His essence itself, which can be said of no other (qu. 3, art. 4), it is clear that among other names this one specially denominates God, for everything is denominated by its essence.

"Secondly, on account of its universality. For all other names are either less universal, or, if convertible with it, add something above it at least in idea; hence in a certain way they inform and determine it. Now our intellect cannot know the essence of God itself in this life, as it is in itself, but whatever mode it applies in determining what it understands about God, it falls short of the mode of what God is in Himself. Therefore the less determinate the names are, and the more universal and absolute they are, the more properly are they applied to... Now by any other name some mode of substance is determined, whereas this name '*He Who Is*' determines no mode of being, but is indeterminate to all; and therefore it denominates the *infinite ocean of substance*.

"Thirdly, from its consignification, for it signifies present existence; and this above all properly applies to God, whose existence knows not past or future."

— ST. THOMAS AQUINAS

The name '*He Who is*' can hardly mean anything else but the *self-subsistent being*, and St. Thomas considers it to be the one name most properly applicable to God.

All things considered, therefore, we think we are justified in favoring the theory that 'self-subsistent being' is the quasi definition which best expresses the metaphysical essence of God as conceived by man. Our next choice would be *ens a se* or *radical infinity*. However, if these terms are interpreted in a positive manner, they signify practically the same thing as what is expressed by the term 'self-subsistent being.' Hence, the latter term seems preferable, because it contains the element common to God and creatures and the differentiating element which is most fundamental in God's essence and which distinguishes Him primarily from every other being; and that is precisely what the 'metaphysical essence of God,' viewed from the standpoint of man's imperfect and limited knowledge, is supposed to do.

God's Physical Essence

The *physical essence* of a thing is defined as the essence of a thing in so far as it exists in the actual order, independent of all mental consideration and distinction. Taken concretely, the physical essence of a thing is its *total reality*,

not including accidents and properties. 'Accidents' ('accidental realities') are excluded because they are superadded to the essence and are not a part of the essence itself. 'Properties' are excluded because, although they flow necessarily from the essence as fully constituted, they are not constitutive of the essence itself.

As applied to God, His physical essence consists in His *omni-perfection*, namely, in the sum-total of all His perfections. The proof is simple.

In the concrete, the 'physical essence' of a thing is its total reality, taking this reality as distinct from all its accidents and properties (in the sense given above); that is what is understood by the term 'physical essence,' and that is its definition. Now, in God there are no 'accidents' and no 'properties' (in the sense given above); otherwise there would be a composition in God between His essence and these accidents and properties. Composition, however, is impossible in the being which is pure actuality (as was shown in the proofs for God's existence), because composition would presuppose a being prior in existence to God, so as to bring together the composing realities; but there can be no being prior in existence to God who is the First Being. Hence, since there are no accidents and properties in God's essence, the absolute omni-perfection of God is His total reality. Consequently, *God's absolute omni-perfection is His physical essence.*

THE *DIFFERENCE* BETWEEN GOD'S PHYSICAL AND METAPHYSICAL essence should be evident. His 'physical essence' is His

reality as it exists in the objective order of things, irrespective of man's mode of thinking. His 'metaphysical essence' is, from the standpoint of man's mode of thinking, the quasi-definition which enables him to grasp intellectually and then express God's essence in such a way that this quasi-definition contains the element 'common' to God and all other beings and also the element which 'primarily differentiates' God from all other beings. Man's knowledge of God is derived from creatural reality and as such is only indirect and analogous; yet this knowledge is true and genuine, even though it is incomplete and fragmentary. This fact is, naturally, reflected in the attempt to determine God's physical and metaphysical essence.

It was stated that God's physical essence consists in omni-perfection.' Just what are God's perfections or attributes? The following chapters should give an answer to this question.

Summary of Chapter IX

This chapter treats of man's way of knowing God and of God's *metaphysical and physical essence*.

1. *Man's Knowledge of God*. — Much of the knowledge acquired through the *physical sciences* is the result of discursive reasoning, not of direct observation. In a similar manner, man applies rational principles to the data of experience and draws conclusions as to the nature of God.

2. *Ways of Knowing God*. — Man acquires and expresses his knowledge of God in three ways: the way of *affirmation*, the Way of *negation*, and the way of *eminence*.

3. *Analogical Knowledge of God*. — The terms man uses to express his knowledge of God are neither univocal nor equivocal, but *analogous*.

4. *Notion of Essence and Attribute*. — 'Essence' in general is that through which a being is just what it is. Essence, considered as the ultimate principle of operation in a being, is called 'nature.' *Physical* essence is an essence in so far as it is, or can be, something in the order of reality, independent of the consideration of the mind contemplating it. *Metaphysical* essence is an essence consisting of all those elements necessary for the concept of the thing; its definition or quasi-definition contains a common' and a 'differentiative' element. An *attribute* is that which follows by natural necessity upon a fully constituted essence. The *divine attributes* are all those perfections of God which flow necessarily from the divine essence.

5. *God's Metaphysical Essence.* — By this we understand God's essence in so far as man's mind can signify it by a definition or quasi-definition which contains the element (or elements) 'common' to it and to all other beings and the element 'differentiating' it from all other beings; it is that perfection which is conceived by man as being the most basic.

The element *common* to God and to other things is 'being.' A number of theories have been advanced regarding the element *differentiating* God from all other beings:

Some authors have considered this differentiating element to be *infinity* (either extensive or intensive or radical). Others, *the sum of all perfections* in God. Others, divine *intelligence* (radical or actual). Others, God's *love and life*.

Others, absolute *liberty*. Others, *aseity*. Suarez and very many modern scholastics place the primary characteristic of God's metaphysical essence in His *self-subsistence*.

6. *Evaluation of Theories.* — 'Infinity' is a mode of the divine perfections rather than of the essence itself. The 'sum-total of all perfections' represents God's physical essence, not His metaphysical essence. 'Intelligence' is not primary, because it presupposes the substance of God. 'Love' presupposes will; and 'life' presupposes spirituality and substantiality. 'Liberty' presupposes will and intellect. 'Aseity,' taken negatively, presupposes some positive perfection in which it is grounded; taken positively, it seems to be identical in meaning with 'self-subsistence.' We

consider 'self-subsistence' to be the differentiating element in God's metaphysical essence.

7. *God, the Self-Subsistent Being.* — When we say that 'God is the self-subsistent being,' we give a quasi- definition which contains an element *common* to Him and to all things ('being') and an element which *differentiates* Him from all other things ('self-subsistent'). In order that the differentiating element be the truly distinguishing mark in God's metaphysical essence, it must fulfill certain *conditions*: it must be something real, positive, intrinsic, necessary, characteristic, not derived from a prior intrinsic perfection, and a perfection from which all other perfections are deducible. 'Self-subsistence' verifies all these conditions. Consequently, 'self-subsistent being' represents God's metaphysical essence.

8. *God's Physical Essence.* — Taken concretely, the *physical* essence of a thing is its total reality, not including accidents and properties. In God, the physical essence is His *omni-perfection*, namely, the sum-total of all His perfections in an absolute sense.

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2 See also the author's *Science of Correct Thinking*, rev. ed. (Milwaukee: The Bruce Publishing Co., 1950), pp.83-86.

3 *Principles of Natural Theology*, p. 297

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6 *Ibid.*, qu. 13, art 11.

Chapter 10

SIMPLICITY, INFINITY, UNICITY

MAN KNOWS GOD PIECEMEAL. THE PROCESS IS SIMILAR TO photographing an object from different angles: each photograph represents the same object in a particular aspect, though none represents the object in its entirety; and all the photographs must be assembled and viewed together, in order to obtain a fairly complete view of the object. It is thus that man speaks of the various *attributes* and *perfections* of God: they are man's way of conceiving God's reality, although this reality, as will be seen, is fundamentally one and not multiple. Hence, we really know God Himself, but in our characteristically human manner — by means of diverse concepts.

Some attributes of God pertain to His being or *essence*, and some pertain to His operations. These attributes are *absolute*, in the sense that they are present in God irrespective of any creatural beings. Other attributes are *relative*, in the sense that they have reference to the existence of beings other than God Himself.

First, then, we must treat of the *absolute* or *essential* attributes of God. And among the various essential

attributes, the ones first to receive attention are *simplicity, infinity, and unicity*.

Notion of Simplicity

A thing is said to be 'simple' when it is not a 'compound,' that is to say, when it is devoid of composition. A 'compound' is a unit made up of a number of parts; in other words, a 'compound' is one and undivided in such a manner that it can be resolved into a number of components called its parts. Hence, a 'compound' is actually undivided (and therefore a unit) but divisible. On the other hand, a thing is said to be 'simple' when it is neither divided nor divisible.

Simplicity is thus the opposite of 'composition,' and it is defined as *the absence of composition in the reality of a being*. This definition is negative in form but positive in content. The reason for this negative form of the definition lies in the derivation of the concept of 'simplicity.' All the things man perceives in this world are affected by composition in some way. Hence, man arrives at the notion of 'simplicity' by denying composition. Since, however, it is some 'reality' which is said to be devoid of composition, the definition is positive in content. Composition may be of various kinds; and simplicity, correspondingly, may also be of various *kinds*.

Where there is composition, there are components or parts united into some sort of totality. And where there are components or parts, a distinction can be made between them. There will, then, be as many kinds of distinction as

there are kinds of composition. What are these different kinds of distinction?

The *two main kinds of distinction* are 'real' and 'logical,' inasmuch as they signify the absence of a real or logical identity between things or concepts.

Real distinction is the absence of sameness between *things different in their reality*, independent of the consideration of the mind. The entity of the one is not the entity of the other, even though they be components or parts of the same totality. Thus, the leaves and branches and fruits of a tree are 'really distinct' among themselves, although they are parts of the same tree; and the foundation and walls and fixtures are 'really distinct' with respect to each other, even though they belong to the house as a whole.

Besides a real distinction, we have also a 'logical' distinction. Our experience shows us that the universe consists of a multitude of beings. They are different entities, and as such they are distinct in thought and thing; there is a real distinction between them. It is equally true, however, that we often have different concepts of things that are really one in nature; they differ in thought, but not in the thing.

Such a distinction is called a *logical* or *mental distinction*, and it is defined as the *absence of sameness between concepts of the same reality*. In making this distinction between concepts of the same thing, there is either a reason in the thing itself for making it, or the reason for making it is only in the mind. Correspondingly, we have a 'virtual' or a 'purely mental' distinction.

A purely mental distinction (*distinctio rationis ratiocinantis*) is the distinction we make between concepts of one and the same reality, *without a foundation in the object itself* (*ratio ratiocinans*). The content of the different concepts is identical, and so the meaning is the same; the difference between them lies merely in the difference of the manner of their representation or expression. Such a distinction exists between terms and ideas which are 'synonymous' in meaning; for example, 'lance' and 'spear,' 'water' and 'H₂O,' 'twelve' and 'dozen,' 'century' and 'one hundred years.' It also exists between a definition and the thing defined; for example, 'man' and 'rational animal,' 'brute' and 'sentient organism,' 'clock' and 'mechanism for measuring time.'

A virtual distinction (*distinctio virtualis, distinctio rationis ratiocinatae, distinctio rationis cum fundamento in re*) is the distinction which exists between concepts of one and the same reality, with a foundation in the object itself for making the distinction. The mind is induced to make the distinction because of the nature of the object itself. The object is by nature complex, and the limited power of the human mind is incapable of expressing the entire reality of the object in one adequate concept and so expresses it in a number of concepts, each of which expresses a phase or aspect of the one reality. The concepts are, therefore, not identical in meaning, when compared to one another, but they all refer to the one same reality taken as it is in itself. This distinction will become clearer when we consider the two kinds of virtual distinctions, based upon the two kinds of 'foundations' which are possible: they are the virtual

distinction with a 'perfect' foundation and the virtual distinction with an 'imperfect' foundation in the thing.

The foundation of the virtual distinction is *perfect*, when the concepts are so distinct in comparison to each other (although they apply to the same reality) that they are *objectively different in content*; each has a definition objectively different from that of the other. When the mind forms objectively different concepts of the same reality, and these concepts have as their foundation the fact that they can be separately realized in different kinds of being (though in this individual kind of being under consideration they stand for one and the same reality only), then the distinction between such concepts is a 'virtual' distinction with a 'perfect foundation' in the nature of the thing itself. A case in point is the distinction made between the concepts of the soul in man, when we speak of it as a 'vegetant' soul, a 'sentient' soul, and a 'rational' soul. A plant demands a vegetant soul for its vegetant functions; a brute demands a sentient soul for its sensory functions; man demands a rational soul for his rational functions. Since man has the triple vital functions of vegetancy, sentiency, and rationality, we are justified in speaking of a vegetant and sentient and rational soul in man. As a matter of fact, however, there are not three souls in man but only one soul performing these three kinds of functions. Since, though, we have the foundation or reason in the nature of the human soul itself for making this threefold distinction, the distinction between a vegetant, sentient, and rational soul in man is a 'virtual distinction with a perfect foundation.'

A *virtual* distinction with an *imperfect foundation* in the thing is one in which the different concepts of the one reality are distinct in such a manner that they are not mutually exclusive but rather *include each other implicitly*. Because each includes the other implicitly, they can never be realized separately in different kinds of beings. The reason for the distinction between such concepts lies in the object itself, and thus there is a 'foundation in the thing'; but it is not as adequate a foundation as that of the virtual distinction with a perfect foundation. Consider the concept of 'being' and its inferiors. In man, for instance, there is no complete and perfect difference between the concepts of 'being' and 'substance,' 'being' and 'body,' 'being' and 'life,' 'being' and 'sentiency,' 'being' and 'rationality.' The concept 'being' means everything that is 'not nothing'; consequently, 'being' includes within itself implicitly also 'substance,' 'body,' 'life,' 'sentiency,' and 'rationality.' Similarly, each of these various concepts includes within itself implicitly the concept of 'being,' because their reality is but a form of being. Hence, the distinction between the concept of 'being' and the concept of any particular kind of being is a virtual distinction with an 'imperfect foundation in the thing.'

Since distinctions presuppose a plurality of things or concepts, it must be obvious that 'composition' also implies distinctions. Everything will depend upon the type of composition; but every type of composition consists in some manner of a plurality of things or concepts united into a whole, a totality. The very fact that a compound consists of components or parts shows that it is made up of a plurality

of *things or concepts which are distinct among themselves*. Hence, composition follows distinction very closely.

FOLLOWING THE LINES OF DISTINCTIONS IN SO FAR AS THEY AFFECT compounds, *composition* may be either *real* or *logical (mental)*, *substantial* or *accidental*.

Simplicity being the absence of composition, the denial of composition in a being implies the affirmation of simplicity in that being. Since a simple being is undivided in itself and indivisible (in the order in which it is said to be 'simple'), the two main kinds of 'simplicity' are 'absolute' and 'relative.'

Simplicity is *absolute*, when the being *excludes all parts* of whatever nature, be they real or conceptual. An absolutely simple being, therefore, is not only actually undivided but also potentially indivisible. A 'composite being' is actually undivided, because it is a unit, a whole, a totality; but it is potentially divisible, because it consists of (real or conceptual) parts which make it to be a compound and into which it can be divided. An 'absolutely simple being,' because it is devoid of all parts, is incapable of being divided.

Simplicity is *relative*, when the being excludes parts of one kind but has parts of another kind. Hence, the 'relatively simple being' is indivisible in one respect but divisible in another. The fewer parts such a being has, the more simplicity it possesses. Man, for instance, has a composite nature, consisting of body (matter) and soul (form). Man's body is a compound, because the substance

of the body is made up of a number of different integral parts (head, trunk, arms, legs, etc.); man's soul, however, is simple, because it does not consist of substantially different parts. However, a composition exists between man's substantially simple soul and many types of accidents (acts of thinking and willing). Similarly, besides this 'physical' composition, there also exists a 'metaphysical' composition in man between his essence and existence, his genus (animality) and specific difference (rationality), his nature and individuality, and his nature and personality. Man thus possesses 'relative simplicity' in the simple substance of his spiritual soul; but in many other respects he is a 'composite being.' In no case, however, can he or any other creatural being be said to be 'absolutely simple.'

After this general exposition of the notion of 'simplicity' and allied concepts, we are now in a better position to understand the problem of God's simplicity.

The Problem of God's Simplicity

The question of God's simplicity presents the following problem for solution: Is God's being composite or simple? If 'composite,' what sort of composition exists in His being? If 'simple,' is His simplicity absolute or only relative?

Where there is composition, there must be *parts* distinct from one another. Parts which are 'really' distinct effect a physical composition in a being; parts which are 'virtually' distinct with a 'perfect foundation in the thing' effect a metaphysical composition in a being; parts which are 'virtually' distinct with an 'imperfect foundation in the

thing' are not parts in the strict sense of the term, and their union effects a logical composition (a composition improperly so called). Hence, if God is a composite being, He must consist of parts which are either really distinct or virtually distinct with a perfect foundation.

Reversely, if God is a simple being, He must be either 'absolutely' or 'relatively' simple. If only 'relatively' simple, He would be simple in some aspect of His being but composite in some way or other. If 'absolutely' simple, His Being would be devoid of all parts, so that composition in the proper sense of the term would be totally absent.

WE CLAIM THAT *GOD IS ABSOLUTELY SIMPLE*.

The *opponents* to the doctrine of the absolute simplicity of God's being naturally teach that some form of composition exists in God, so that He consists of parts which are distinct. Among these opponents the following may be mentioned:

The *stoics* maintained that God is something *material*, because the material alone is real. The stoics had a number of appellations for the Deity, such as '*fire*,' '*ether*,' '*air*'; they even called the Deity '*soul*,' '*mind*,' '*reason*,' '*providence*,' '*destiny*.' Their fundamental doctrine, however, was materialistic and pantheistic.

The *spinozists* (followers of Spinoza) held that there exists but a single substance, God. But this single substance consists of many attributes, of which two are known to us, namely, '*extension*' and '*thought*.' Spinozism is pantheistic; God has evolved into the physical world ('*extension*') and

the conscious world of man's mind ('thought'). God is identified with the corporeal and spiritual worlds, and thus God is a composite being.

Most pagan religions are *polytheistic* and *anthropomorphistic*. Their gods and goddesses are at best beings which possess a human nature with superhuman powers and affections.

Modern *pantheists* either identify God with the visible world as such or consider Him to be the 'soul' of the universe. He may be looked upon as spiritual in nature or only as a world force. Many modern pantheists consider the beginning of things to have been the Absolute, which then evolved into the present world; this Absolute (as with Hegel, Fichte, etc.) is nothing more than 'being-in-general,' or 'indeterminate being.' The idealistic philosophy of the Absolute is now no longer in vogue. Its place has been taken by the secularistic philosophy of *evolutionism* and *finitism*. God is a man-made deity, fashioned in the image of man, the result of evolution and finite in all respects. This 'finite, evolving' God is replete with potentialities, continuously being perfected; composition is definitely a characteristic of His essence, if He is judged to exist at all. For many of these moderns 'God' is nothing more than an ideal, the personification of the human desire for assistance in time of trouble and distress, not an objective Supreme Being existing independent of man's mind. That such views are hardly more than a veiled atheism, is evident.

We are not interested in a sublimated human god, manmade as a friend or protector to satisfy some human need and emotion, but the God of Reason whose existence

as an extra-mundane Supreme Being has been proved by the application of incontrovertible rational principles to the data of our experience of the physical world. These objective proofs not only establish God's existence but also show that He is *absolutely simple*.

Proof of God's Absolute Simplicity

As was pointed out in Chapter 7, every composite being consists of parts which are distinct. The union of these parts into a whole forms the un-dividedness of a composite being. Hence, the parts are *potential* to the whole; the composite being becomes *actualized* into the whole or unit only through the unification of the parts, so that the existence of the composite being is *contingent* upon this unification.

The composite being is posterior to its component parts and thus, by its very nature, was originally merely *in potentiality* to their union; as such, it cannot have passed from this state of 'potentiality' to the state of 'actuality' except under the influence of another being already in act. In other words, parts, in themselves distinct and different, cannot of their own accord unite to form a composite being; they necessarily demand a *pre-existing cause* to bring them together and make them unite into a whole.

Now, God exists, and He is first, necessary, and uncaused. It is contradictory to suppose that something should exist *prior* to the first being. It is contradictory to suppose that the necessary being should be contingent upon the action of a prior being bringing the component parts of His being together. It is contradictory to suppose

that the uncaused being should require a *cause*. But all this would be necessary under the supposition that God is a composite being consisting of parts. Hence, God is not, and cannot be, a composite being consisting of parts. Consequently, there are *no parts of any kind in God*, since the argument applies to any and all parts.

A being, however, which is devoid of any and all parts is absolutely simple. *God, therefore, is absolutely simple*. The proof just given applies to any kind of composition in God's being. A number of *corollaries* follow as a necessary consequence.

GOD IS A *SUBSTANCE*.

Ever since Hume attempted to show that the notion of 'substance' is but a chimera of the human mind, it has become customary for many modern philosophers and scientists of the empiricistic school to deny the existence of anything like a 'substance.' Notwithstanding the prevalence of this view, it is easy to show that the notion of 'substance' is valid. Everything that exists must be either something which exists in itself and does not exist in another as in a subject of inhesion or something which does not exist in itself but exists in another as in a subject of inhesion; in the first case it is called a 'substance,' and in the second case an 'accident.' Everything must be either the one or the other, because there is no middle ground between contradictory ideas. Therefore, everything will be either a substance or an accident. Not everything, however, can be an 'accident,' because every accident demands a subject

(substance) in which it exists. It is impossible for an 'accident' to exist without a subject of inhesion; an accident without a 'substance' to inhere in would be like motion without a moving body. If nothing existed but 'accidents,' they would exist without a subject in which they inhere, and thus, by definition, all accidents would in the very nature of things become automatically 'substances.' Hence, substance there must be. And a substance, by the very fact that it is the subject in which the accidents inhere, must be *prior in nature* (in the order of dependence) to the accident (or accidents) it supports.

Now God exists in and for Himself, because He is the first and uncaused being. Therefore, God does not exist in another as in a subject in which He must inhere. God, therefore, is a *substance*.

God is a spiritual substance, a *spirit*. His essence contains *no matter* of any kind. If matter were a part or component of God's substance, 'composition' would be necessary. A material substance always consists of physical and extended parts, of which one is not the other. Hence, though actually undivided, such a material reality is potentially divisible. An absolutely simple being, however, is not only actually undivided but potentially indivisible; hence, it cannot consist of matter. Now, a substance which does not contain matter in its nature is a spiritual substance, a spirit. God, therefore, being devoid of all parts and composition, is a spirit. As a result, He is neither a purely material being, such as an inanimate metal, nor a being which is partly spirit and partly matter, such as man. As a further result, since matter is no part of His nature, He

cannot be dependent on matter in His existence and operations. But a substance which is neither composed of matter nor dependent in its existence and operations on matter is a 'pure spirit.' Consequently, God is a *pure spirit*.

THERE CAN BE *NO ACCIDENTS* IN GOD'S SPIRITUAL NATURE.

Accidents are determinations and modifications of the substance in which they inhere; as such they are actualizations of the potentialities of the supporting substance as the subject in which they inhere. The combination of substance and accidents in a being always presupposes *potentiality*, because the existing substance is in potency toward the reality which the accidents confer upon it. Whenever, therefore, there is a combination of accidents with a substance, there is a resultant *composition*. In God's essence, however, all composition and potentiality must be excluded, since He is the first, uncaused, and necessary being. Hence, His spiritual substance cannot be perfected by accidents supervening upon His essence; whatever reality the accidents could possibly confer must be present in God's substance from the very beginning. Consequently, God is a pure spirit without accidents, absolute spiritual substantiality.

Just as there can be no 'physical' composition in God, so *metaphysical composition* must be absent. Instances of metaphysical composition in existing beings are: the union of essence and existence, of genus and specific difference, of nature and individuality, of nature and personality. In order that a creature exist in the actual order of things,

such a union is required. In every instance mentioned, the first of the dual members is in potentiality toward the determination or perfection contained in the second: the essence is determined by existence; the genus is determined by the specific difference; a nature is determined by individuality; a (rational) nature is determined by personality. Where there is a union of metaphysical parts, there is metaphysical composition; and where there is composition, another being is required to bring them together. Since God is the first, uncaused, and necessary being, no other being can be conceived as being prior to Him. Hence, in God there can be no metaphysical composition, because he cannot be dependent on anything or anybody. All perfection, determination, and actualization which would or could result from a metaphysical composition must be His always without such a composition.

Since God is 'absolutely simple,' whatever is in God is *absolutely one reality*. Hence, God *is* His existence, His essence; God is mercy, justice, knowledge, love, and so forth.

Notion of Infinite Perfection

Before discussing whether or not 'infinite perfection' should be predicated of God, we will have to know the meaning of 'perfect' and 'infinite.'

In general, *perfection* means reality or actuality. A thing possesses perfection in so far as it possesses reality or actuality. In particular, a being is said to be 'perfect' when it possesses all the reality (actuality) it is supposed to have in

order to be *the kind of thing* it should be. A being would be 'imperfect' if, and in so far as, it lacks something required by its respective type of being. As such, 'perfection' is independent of the place a thing occupies in the general scale of being, so that a rose can be as perfect in its own line of being as a horse is in its line of being.

However, because of the *types of being* in the general scale of being among themselves, the amount of reality present in these various types forms a graduated series, so that one type of being possesses more reality (perfection) than another. Thus, a rose is more perfect than gold, a horse more perfect than a rose or gold, and man more perfect than a horse or a rose or gold. Perfection, therefore, differs.

Perfection is either 'relative' or 'absolute.' Perfection is said to be *relative* when it pertains to a certain *type of being*. The perfection pertaining to gold or a rose or a horse or a man or any particular type of being is thus seen to be 'relative,' namely, relative to the type or nature of the being in question. Perfection is absolute when it pertains, not to a certain type of being, but *to every line of being without restriction*. 'Relative' perfection, since its concept is restricted to a particular type of being, is always 'limited' in its meaning and application. Does 'absolute' perfection, then, involve the further concept of 'infinite'? Just what is the meaning of 'infinite' and 'infinity'?

Infinite, as the word indicates (Lat., *in*, not, non-; *finis*, end, limit, boundary), is that which is without limits or bounds. The form of the term is negative, but the content is positive; it means a reality or actuality which is limitless or

boundless. Originally, the term had a quantitative signification, inasmuch as it was applied to extension or magnitude. Gradually, however, the term was also applied to qualities and perfection (reality) in general. *Finiteness* means being with limitation.

Infinity is either 'potential' or 'actual.' A being is said to be *potentially infinite*, or to possess *potential infinity*, if its reality can be increased without limit. Such a being, therefore, is always actually finite and always in potency to a further increase of reality, without ever reaching the ultimate limit of an increase in its reality. It would be more accurate to call such a being 'indefinite' rather than 'infinite.' A being is *actually infinite*, or possesses *actual infinity*, if its reality exists without limitation. Actual infinity will be either 'relative' or 'absolute.' A thing possesses relative actual infinity if it is actually infinite in a certain line of being only; for instance, in the line of substance or quantity or quality or some other reality, but not in them all. It possesses *absolute* actual infinity if it is actually unlimited (infinite) in every line of being. A being, therefore, which possesses absolute actual infinity is so unlimited in its being or reality that a greater or better being cannot exist nor be conceived in thought; it is an existing being possessing an absolute *plenitude of reality*.

When the concepts of 'perfection' and 'infinity' are combined, *infinity of perfection* is perfection which is actually and absolutely without limit. Infinity of perfection is either 'extensive' or 'intensive' or 'radical.' It is *extensive* when an essence possesses all perfections possible. It is *intensive* when an essence has the supreme degree of all

perfections possible. It is *radical* when an essence is intrinsically determined in such a manner that the essence demands both extensive and intensive infinity of perfection.

The Problem of God's Infinity

'Absolute perfection' in an existing being means the same thing as 'actual infinity of perfection.' An absolutely or infinitely perfect being is a being that possesses a *limitless plenitude of reality* in every conceivable manner, and that without imperfection of any kind.

It is clear that the 'infinite' cannot be the result of a summation of finite realities. Finite reality, by the very fact that it is 'finite,' implies limitation, and a mere summation does not remove this limitation in the single realities. No matter how large the number may be, each and every one of these realities is and remains limited; and since the total sum consists of the single units which comprise the sum, the total sum must always be and remain limited in its perfection. Such a sum would always be merely 'potentially infinite' by its very nature, because another unit could always be added to it. The 'potentially infinite,' however, since it is 'actually finite,' can never equate the 'actually infinite.' If God, then, is infinitely perfect, His essence cannot be a summative totality of finite perfections.

In making the claim that God is infinitely perfect, we must prove that He contains within His essence the *plenitude of reality without limitation*. It must, therefore, be inexhaustible. If His perfections could be exhausted by continued subtraction, it would evidently be limited and

finite. It would not be actually infinite extensively and intensively.

Opponents are the pantheists, who believe that the world is an evolution of God (such as B. Spinoza, G. Hegel, J. Fichte, F. Schelling, and their followers); the *materialists*, who deny the existence of anything spiritual (such as T. Hobbes, J. Moleschott, L. Büchner, E. Haeckel, and others); the *positivists*, who claim that man's knowledge cannot reach beyond the phenomenal (such as J. Stuart Mill, H. Spencer, and a host of scientists); the *finitists*, who maintain that God is always in a process of 'becoming' (such as F. C. S. Schiller, W. James, H. G. Wells, H. A. Overstreet, A. C. McGiffert, M. Calkins, and many moderns).

Proof of God's Infinity

We claim that God is *infinitely perfect* and that this truth can be known and demonstrated to the satisfaction of an unprejudiced and truth-seeking mind.

THE FIRST ARGUMENT IS *INDIRECT*.

No finite being can be an *ens a se*, so that it is a self-subsistent being. An *ens a se* has its existence in virtue of its essence, since it has no 'cause' for its existence. Hence, if a finite being could be an *ens a se*, a self-subsistent being, it would also have its existence in virtue of its essence. But then all the *possible* beings of the same class would also have to have their existence in virtue of their essence and consequently also *actually exist*: a *like essence* would then

entail a *like existence*. But this is evidently not a fact, since there are many more beings of a particular class which are merely possible than those which actually exist. For example, many more human beings 'could' exist than actually 'do' exist; and this is true of all classes of beings. Consequently, no finite being can be an *ens a se*, a self-subsistent being. God, however, as was shown in the arguments for His existence, is truly an *ens a se*, a self-subsistent being. Therefore, no finite being can be God, and God cannot be a finite being.

An actually existing being that is not a 'finite' being is of necessity an 'infinite' being: 'finite' and 'infinite' are contradictory concepts, with no middle ground between them, and every being must be one or the other. Hence, since God is not finite, He is the Infinite Being and as such must possess all reality and perfection (for 'reality' and 'perfection' are identical) infinitely.

THE SECOND ARGUMENT IS *DIRECT*.

'Being' is everything that is not nothing; it therefore includes *all* reality and perfection without restriction, limitation, curtailment. Nothing can be thought of that would be a perfection and would not be contained in 'being': there can be no more reality, and no reality could be added. Absolutely everything without exception is included in the concept of 'being' as such. Essence, existence, beauty, power, goodness, mercy, justice, wisdom, individuality, personality, substance, and so forth, are simply so many forms of 'being,' because they are forms of reality

or perfection. Not only this or that reality, or this or that degree of reality, belongs to 'being'; absolutely every conceivable kind of reality and every conceivable degree of reality are included in the concept of 'being,' and that both extensively and intensively. Since, therefore, the concept of 'being' includes every conceivable kind and degree of reality (perfection) both extensively and intensively, 'infinite perfection' is *intrinsically possible of realization*, so long as the perfection itself is not limited for some reason.

A limitation of perfection exists (1) either because the reality itself as such is a limited perfection (e.g., 'whiteness,' 'materiality'); or (2) because the subject of the reality has only a limited passive capacity for receiving it (e.g., man's capacity for receiving knowledge is limited, since the intellect itself is limited); or (3) because the one giving the reality cannot, or does not want to, give more than a limited amount (e.g., everything man does and gives is limited in perfection). So far as the first source of limitation is concerned, it would not apply to God's essence and perfection; in His case it is only a question of 'pure' perfections, not 'mixed' perfections, because He is, as was shown, absolutely simple.

The second and third source of limitation can be taken together, because in both sources a limited amount of perfection is received. In this case God either limited Himself or another being limited Him in the reception of reality. Neither alternative is possible. God cannot have received a limited (finite) amount of reality from another. Under that supposition He would have received essence and existence from a being other than Himself; God,

however, since He is *ens a se* and consequently self-subsistent, did not receive His reality from another being. Neither could the limitation come from Himself. If God imposed a limitation of perfection upon Himself, this would mean that He either had infinite perfection first and limited it later, or that He was at first in potency toward an infinite and finite amount and then (voluntarily or involuntarily) gave Himself only a finite amount. The first of these two alternatives is impossible; because, if He had infinite perfection first, He had to have the perfection of 'necessity' in His being and so could not discard any amount of reality (perfection). The second of these alternatives is also impossible; because potency is excluded in the 'absolutely simple being' and, if He were first in potency toward a finite or infinite amount, He could never have passed from potency to actuality except through the agency of another being (and that cannot Occur in the being who is first, uncaused, and necessary). It follows then, that a *limitation of perfection is excluded* in God's essence and existence.

Consequently, since the concept of 'being' as such includes infinite perfection in God, the Supreme Being, and since no cause can be assigned for any limitation of being (perfection, reality) in God, God must be infinitely perfect.

HENCE, GOD IS *INFINITELY PERFECT*.

A formidable *objection* has been raised against the 'infinite perfection' of God. It runs somewhat as follows: Besides the essence of God there exist many other essences and beings, namely, the *physical world* and everything in it.

These essences and beings, and therefore also their perfections, are not present in God. Consequently, their perfections are missing in the essence and being of God, and He is not infinitely perfect.

The *answer* to this objection is not difficult. The infinite being must certainly possess all the perfections found in the beings present in the universe. However, it is not necessary for Him to possess them according to their individual existence; it suffices, if He possesses these perfections according to their worth or value virtually and eminently. These things do not and cannot possess any perfection greater than His nor independent of Him; whatever they possess in the line of reality and perfection, they have *received* from Him. So long as God does *not lose* any perfection of His own thereby, one cannot say that these things possess perfections which He does not possess. Their existence merely multiplies the number of beings possessing perfection, but the *perfection itself* does not thereby become any greater. A teacher imparting knowledge to his pupils does not lose his own knowledge, nor do the pupils have a more perfect knowledge than the teacher, nor does the addition of the knowledge of all the pupils to that of the teacher make the knowledge as a whole greater or more perfect. The knowledge has the same amount of perfection, whether communicated or not; the number of knowing individuals has been increased, but not the perfection of the knowledge itself. The objection is thus seen to be invalid.

A somewhat *similar objection*, though different in form, is also made against God's infinity. The beings in this world

possess a certain amount of real perfection. Let us suppose that God's perfection is infinite. Then the addition of the perfections of the creatures to the perfection of God gives an amount of perfection which is *greater than infinite*. But that is impossible. Now, one cannot deny the existence of creatural perfections. One must, therefore, deny the infinity of God's perfection.

The answer to this objection is about the same as that to the foregoing objection. By adding the perfections of creatures to the perfection of God one does not increase 'perfection as such,' since perfections are predicated of God and creatures only in an analogical sense; one merely increases the number of those possessing perfection. The number of creatures is only *finite*, though it is potentially infinite; adding God as another number to the number of creatures does not increase this number to such an extent that its magnitude would be 'actually infinite.'

God is a substance, absolutely simple, possessing infinite perfection (reality), devoid of all potentiality and composition. God, in other words, is *pure act (actuality)*.

The Unicity of God

Unicity is singleness or uniqueness, the absence of plurality. The phrase 'unicity of God,' therefore, is equivalent to the assertion that there is and can be *only one God*.

Unicity may be 'imperfect' and 'perfect.' Unicity is *imperfect* when no one other being of the same kind actually exists, but another being of the same kind is

possible. Thus, when the first human being came into existence, he at that time possessed 'unicity,' because he was the only human being in actual existence; this unicity, however, was 'imperfect,' since other human beings were possible. Unicity is *perfect* when no other being of the same kind actually exists, and another being of the same kind is impossible; such a being is truly 'unique.'

Of *God* we assert that He possesses *perfect unicity*, so that no other God is even possible. There is, and can be, but one God.

Opponents to the doctrine of the unicity of God are the *polytheists*, who admit a plurality of gods, and the *Manichaeans*, who assumed the existence of two supreme principles, one good and one evil.

THAT THERE IS *ONLY ONE GOD* FOLLOWS NATURALLY AND necessarily from the *infinity* of God's essence.

If a plurality of Divine Beings existed (or, for that matter, *could* exist), they would either be alike or not alike. If they are *not alike*, they are different; if different, then one must have some perfection which the other does not possess. In that case, however, the latter lacks some perfection and by that very fact would not be infinitely perfect; the former alone would have supreme perfection and be God. If they are *alike*, there can be no difference between them. In order to simplify the argument, let us assume that there are two infinite beings in existence. Both are infinitely perfect, according to the supposition. However, the one's infinite perfection is exclusively His own, because He is a self-

subsistent being, an *ens a se*; as a result, His perfections are not present in the second infinite being, and the second lacks the perfection of the first and is not infinitely perfect at all. But the same situation applies to the second infinitely perfect being. The second's infinite perfections are also exclusively His own and are not present in the first; therefore, the first lacks the perfections of the second and is not infinitely perfect either. Hence, if both are alike, they would be infinitely and not infinitely perfect at the same time under the same respect. That, however, would be impossible because *contradictory*. Consequently, a plurality (or even duality) of infinitely perfect Supreme Beings is impossible.

Again. If two infinitely perfect Beings could exist at the same time, either they would be mutually dependent upon each other; or one would be dependent, while the other is independent; or both would be independent of each other. They cannot be *mutually dependent* upon each other; because under that supposition neither would be infinitely perfect, since both would lack the perfection of being 'independent' of the other. One cannot be *dependent* on the other, while the other is independent; because under that supposition the 'dependent' being would not be infinitely perfect, since such a being is obviously less perfect than an 'independent' being. They cannot be *mutually independent* of each other; because under that supposition neither would be infinitely perfect, since each would lack the perfection of having the other dependent on himself. These two supposedly infinite beings must exist, if they exist at all, in one of these three ways. But all three ways destroy the

infinity of perfection either in both or in one of the two. The only way in which the infinitely perfect Being can exist is to be independent of every other being and have every other being *dependent*; in that case, however, the independent Being alone is infinitely perfect. Hence, no two infinitely perfect beings can exist at the same time. But God exists and is infinitely perfect. Therefore, there can be no other infinitely perfect being besides God; He alone is and can be God. Consequently, a duality or plurality of deities is impossible.

Unicity, therefore, is an *attribute of God*.

Distinctions in God

The absolute simplicity and infinite perfection of God preclude 'composition' in His Being. Where composition does not exist, division is impossible; division presupposes parts of some sort, and in the absolutely simple Being there can be no parts.

Then what about *distinctions* in God? Are they also precluded? Or are they admissible? If these distinctions are based on 'actual' composition, they are manifestly inadmissible in God, because in the absolutely simple and infinitely perfect being there can be no actual composition. The question therefore arises: Does every distinction involve actual composition? If so, all distinctions are inadmissible; if not, those which involve no actual composition should be admissible. Are there distinctions of this latter kind?

There can be no question about the fact that man's concepts of God *differ*. Man's concept of God's essence is different from that of His goodness or power and so forth, so that man makes a distinction between God's essence and His *perfections*. Man's concept of God's mercy is different from that of His justice, of God's power is different from that of His wisdom, and so on, so that he makes a distinction between the *attributes or perfections among themselves*. What is the nature of such distinctions?

Gilbert de la Porrée (died 1154) maintained that the distinction between God and His divinity (essence) and between God's essence and attributes is a *real distinction*, based on a difference of realities in God. This doctrine must be *rejected*, because God is absolutely simple and infinitely perfect. A real distinction implies real composition, which is excluded in God's being.

Eunomius the Arian and the nominalists of the Middle Ages (Gregory of Rimini, Gabriel Biel, and William of Ockham, as many claim) asserted that all the names and attributes ascribed by man to God are *synonymous*, so that the distinctions man makes between God's essence and attributes are 'purely logical and mental,' without any sort of foundation in God's being. This view must also be *rejected* as inadequate. When we speak of God's mercy and justice, intellect and will, power and wisdom, and so forth, we do not use synonymous terms. These terms do not represent the same objective concept; each term has a different thought-content, and for that reason each has a different definition. We admit that the *objective reality meant* by these different concepts and terms is identically

the same reality in the divine substance, because of God's absolute simplicity. But we contend (and an analysis of the concepts and terms shows this to be true) that each concept *explicitly* signifies something different from that signified by the other concepts, although each one *implicitly* contains the other. Hence, these terms and their corresponding concepts are *not synonymous* like 'lance' and 'spear,' or 'twelve' and 'a dozen.'

The distinction between essence and attributes and between the attributes themselves thus is neither a real distinction nor purely logical (mental) distinction. By way of elimination, then, the distinction must be a *virtual distinction* (*distinctio ratio nis ratiocinatae*), with a foundation in God Himself for the distinctions.

The foundation in God's being for the distinctions *cannot be a perfect foundation*. If the foundation were 'perfect,' the essence and attributes could be *realized separately* in other beings, even though in God they are only one reality. That, however, is impossible. The essence and attributes of God are 'infinite perfections,' and infinite perfections can never be realized separately in other beings; they are realizable solely in God, because God alone is infinite. Whenever the foundation for distinction is 'perfect,' so that the items in question are 'realizable separately,' they are combined by means of a 'metaphysical composition' in the being possessing them. In God, however, metaphysical composition is also excluded, due to His absolute simplicity. Consequently, the distinction man makes in God cannot be a 'virtual distinction with a *perfect* foundation.'

But a *foundation is present* in God. It consists in the infinite wealth of reality in God's being. Man's finite intellect is incapable of exhausting and expressing this infinite wealth of reality in a single concept. As a result, man is compelled to form *successively* a number of *varying attributive notions* of God; in this manner the limited intellect of man seeks to express God's infinite being. And so the foundation for man's distinct concepts of God and His perfections lies in *God's infinite perfection itself*.

This foundation in God, however, is not perfect. On the contrary, it is necessarily an *imperfect foundation*, because the divine attributes are not distinct parts in God but an inseparable identity. So far as their reality is concerned, God's essence and attributes are all identical with each other: God is one reality, absolutely simple and infinitely perfect. That is why the distinction man makes in God between His essence and attributes and between the attributes themselves can only be a virtual distinction with an imperfect foundation.'

It follows, therefore, that the distinctions formed by man about the Divinity are *virtual distinctions with an imperfect foundation in the thing*. Such distinctions are valid and alone admissible.

It is evident, of course, that a knowledge of God, expressed in distinct concepts and terms, is very inadequate. The inadequacy, however, results from the constitutional limitation of man's intellect, which must grasp piecemeal what it cannot grasp all at once. No finite intellect can fully grasp the plenitude of the Infinite.

To sum up: God is an absolutely simple, spiritual substance, devoid of all composition and potentiality; God is infinitely perfect in every respect; God is unique so that a duality or plurality of divine beings is impossible. The distinct concepts and forms of God's being are 'virtually distinct, based on an imperfect foundation,' and they introduce no composition in God's nature and perfections.

Summary of Chapter X

God's *simplicity, infinite perfection, and unicity* are the attributes treated in this chapter.

1. *Notion of Simplicity.* — Simplicity is the opposite of composition, the absence of composition in the reality of a being. Composition is either real or logical, depending on the distinction between the components or parts. *Real* distinction is the absence of sameness between things different in their reality. *Logical* or *mental* distinction is the absence of sameness between concepts of the same reality; it is either 'purely mental' or 'virtual,' and the virtual distinction has either a 'perfect' or 'imperfect' foundation in the thing.

Composition may be either 'real' or 'logical (mental),' 'substantial' or 'accidental.' *Simplicity* is either 'absolute' or 'relative.'

2. *The Problem of God's Simplicity.* — We claim that God is *absolutely simple*, so that composition in the proper sense of the term is totally absent from His Being.

3. *Proof of God's Absolute Simplicity.* — Every composite being consists of parts which are distinct. The parts are 'potential' to the whole; the composite being becomes 'actualized' into a whole through the unification of the parts. Parts of themselves distinct and different cannot unite of their own accord to form a composite being, but demand a *pre-existing cause* to make them unite. Now, God exists, and He is first, necessary, and uncaused. Hence, if He consisted of parts united to form His being, a being

prior in existence to Himself would be required to bring the parts together and lead Him from potentiality to actuality. Since God is the first, necessary, and uncaused being, this is impossible. Hence, there can be no parts in God. God, therefore, is *absolutely simple* in His being. Corollaries: God is a substance, a pure spirit; in God there are no accidents; God is absolutely one reality.

4. *Notion of Infinite Perfection.* — In general, *perfection* means reality or actuality; in particular, it means the reality a being should have in order to be the kind of being it is supposed to be. Perfection is 'relative' when it pertains to a certain type of reality; 'absolute,' when it pertains to every line of reality without restriction.

Infinite is defined as being without bounds or limit; it means boundless, endless, limitless. Infinity is said to be 'potential' if the reality is always finite and in potency to a further increase of reality; it is 'actual' if the reality exists without any limitation. Actual infinity is 'relative' if the reality is actually infinite in a certain line of being only; it is 'absolute' if unlimited in every line of being.

Infinite perfection is perfection which is actually and absolutely without limit; and it is either 'extensive' or 'intensive' or 'radical' infinity of perfection.

5. *The Problem of God's Infinity.* — God is infinitely perfect; He contains within His essence the plenitude of reality without limitation and imperfection.

6. *Proof of God's Infinity.* — In direct argument. No finite being is an *ens a se*; God is an *ens a se*; therefore, God is no finite being. But, if a being is not finite, it must be infinite

(because 'finite' and infinite' are contradictory ideas); now, God is not finite; therefore, God is infinite.

Direct argument. 'Being' is everything that is not nothing; it therefore includes all reality without limitation. 'Infinite perfection' is, consequently, intrinsically possible, so long as the perfection is not limited for some reason. A *limitation* of perfection, however, can exist only for a threefold reason: (1) either because the perfection as such is a limited perfection; or (2) because the subject has only a limited capacity for receiving it; or (3) because the one giving the reality cannot, or does not want to, give more than a limited amount. None of these alternatives apply in the case of God, because He is the first, necessary, and uncaused being. Therefore, God is *infinitely perfect*.

7. *Unicity of God.* — Unicity means 'singleness' or 'uniqueness. God possesses perfect unicity, so that no other God is even possible.

If a duality (or plurality) of Divine Beings existed or could exist, they would either be alike or not alike. If *not* alike, one would lack a perfection which the other possessed, and so would not be infinitely perfect. If *alike*, the perfections of each, being exclusively his own, would not be present in the other; hence, neither would be really infinitely perfect. Yet God is infinitely perfect. Therefore, plurality (or even duality) of Supreme Beings is impossible.

Again. 'Independence' is a perfection; 'dependence,' an imperfection. If two (or more) infinitely perfect Beings could exist simultaneously, either they would be mutually dependent; or one would be independent and the other dependent; or both would be mutually independent. If both

are *mutually dependent*, neither is infinitely perfect. If one is *independent* and the other *dependent*, only the first would be infinitely perfect; the dependent would be limited and finite. If both are *mutually independent*, neither is infinitely perfect, because it would be more perfect to be independent and have the other one dependent. But God exists and is infinitely perfect. Therefore, there can be no infinitely perfect being besides God. Consequently, a duality or plurality of Gods is impossible. *Unicity*, therefore, is an *attribute of God*.

8. *Distinctions in God*. — Man has distinct concepts concerning the essence and attributes of God. A *real* distinction cannot be admitted, because they presuppose a real composition. A *purely logical (mental)* distinction cannot be admitted, because man's concepts of God are not synonymous. A *virtual* distinction with a *perfect* foundation cannot be admitted, because such a distinction implies a metaphysical composition. The distinction, therefore, is a 'virtual distinction with an *imperfect foundation*.' The concepts are 'explicitly' distinct, but each 'implicitly' includes the reality contained in the others, because God is one absolutely simple reality and man can grasp God's plenitude of reality only piecemeal and in distinct concepts.

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Chapter 11

IMMUTABILITY, ETERNITY, IMMENSITY

WHEN SPEAKING OF MAN'S KNOWLEDGE OF GOD, ST. THOMAS Aquinas seems to be inconsistent. In one place¹ he says: "Because we cannot know what God is, but rather what He is not, we have no means for considering how God is, but rather how He is not." Soon after that, however, he² states: "Hitherto we have considered God as He is in Himself." It is hardly conceivable that so acute a thinker would contradict himself in such a short space. Then how reconcile the two statements?

When St. Thomas remarked that "we cannot know what God is, but rather what He is not," he meant to say that man in this life has no 'intuitive' knowledge of God as He exists in Himself. Man derives his knowledge of God from creatural beings, and their imperfections and limitations must be denied of the essence of God; hence, man's knowledge of God is acquired by 'way of negation,' rather than 'directly.' Since man does not know God infinitely, he does not really 'comprehend' God as He is in Himself. Nevertheless, man can reach God through his knowledge, even though only indirectly. Negation always presupposes and implies affirmation. By denying composition and

potentiality in God, man affirms His simplicity; by denying limitation in God, man affirms His infinity; by denying multiplicity in God, man affirms His unicity. We consider God as He is in Himself," even though our knowledge is imperfect and inadequate. Thus, the inconsistency in St. Thomas is more apparent than real.

Man's knowledge of God's *immutability, eternity, and immensity* is of a similar character. These attributes will now be discussed. The falsity of *pantheism* will then become clear.

Notion of Immutability

As the word indicates, 'immutability' is the negation of 'mutability.' In order, then, to understand the meaning of 'immutability,' we must begin with the concept of 'mutability.'

Mutability means capability of change (mutation). A thing is said to 'change' when it passes from one state into another state. Every change involves two things: a subject which acquires or loses something, and a reality which is acquired or lost by the subject. Change is 'extrinsic' or 'intrinsic.' Change is *extrinsic* when it is the result of an extrinsic denomination. An illustration will clarify this rather abstruse definition. I see, for example, a tree, and then I walk away and no longer see the tree; the tree has changed from a 'seen' tree to a tree 'no longer seen.' The tree has obviously not undergone a real change in its own being by passing from the state of an 'unseen' tree to the state of a 'seen' tree and then from the state of a 'seen' tree

to that of a tree 'no longer seen.' Whatever real change occurred took place in me and not in the tree, because the act of sight affected my being but not the tree; I acquired and lost some reality (the 'act of sight'), but nothing happened to the being of the tree thereby. Since no reality was acquired or lost by the being of the tree in its change of status ('seen' and 'no longer seen'), such a change is termed 'extrinsic'; the knowledge relation affects the knower in a real fashion, but not the object known. Change is *intrinsic* when some reality is either acquired or lost in the passage of the subject from one state to another. Intrinsic change is either a change 'properly so called' or 'improperly so called.' When the change is of such a nature that the entire being of the subject either passes from non-existence to existence (creation) or from existence to non-existence (annihilation), the change is *improperly so called*, because the subject undergoing this change does not remain throughout the change. In 'creation' the subject was not in existence before it was created, and in 'annihilation' the subject ceases to exist after it is annihilated. When, however, an existing subject undergoes change, so that it acquires or loses some reality while remaining in existence, the change is an intrinsic change *properly so called*. Thus, when a piece of iron changes from hot to cold or from cold to hot, such a change is 'intrinsic' and it is 'properly so called,' because the piece of iron has actually acquired or lost the quality of heat. A change 'properly so called' is also styled an intrinsic change in the 'strict sense' of the term, while a change 'improperly so called' is styled an intrinsic change in a 'wider sense.

An intrinsic change in the strict sense of the term (or an 'intrinsic change properly so called') may be either 'physical' or 'moral' or 'intellectual' in nature. A *physical* intrinsic change in the strict sense consists in the acquisition or loss of a substantial or accidental reality. When, for example, nonliving matter is converted into living matter by a plant, animal, or man, its substance is changed, and such a change is a *substantial* physical change; but when a piece of iron is heated, it undergoes an *accidental* physical change, because the substance of iron remains the same in the (accidental, qualitative) change. A change is *moral*, when there is a passage from one resolution of the will to another. It is *intellectual*, when there is a change from one judgment to another.

When these notions are applied to God, it is obvious that an 'extrinsic' change occurs in relation to Him: He is known and not known, loved and hated, and so forth; but in all such cases, the change really occurs in the creatures, not in God Himself. Intrinsic change in the 'wider sense' of creation or annihilation, does not apply to God; as the 'first being' He cannot be created, and as the 'necessary being' He cannot be annihilated. The question here is that of *intrinsic change in the strict sense*, namely, of a 'physical' or 'moral' or 'intellectual' change in the true meaning of the terms.

Proof of God's Immutability

The opponents of the immutability of God are the polytheists and the pantheists.

As *theists* we maintain that God is in no way changeable. *God is immutable*. Not only does He not change as a matter of fact, but He is incapable of intrinsic change.

FIRST, A *GENERAL* PROOF OF GOD'S IMMUTABILITY.

An *intrinsic* change is the passage of a subject from one state to another state, the subject thereby acquiring or losing some reality. If a reality is 'acquired,' the subject does not already possess it; if the subject possessed it already, it could not 'acquire' it by means of the passage from one state to another. It follows, therefore, that the changing subject does not possess it already and 'acquires' the absent and missing reality by means of the change. Hence, if God could 'acquire' some reality, He would, of necessity, have to receive it, either *from Himself or from some other being*. Now, He could not receive it from Himself, because in that case He would already possess it, since no one can give what he does not have; but if He already possesses the reality in question, He cannot 'acquire' it, not even from Himself. Neither can He receive it from some other being. This follows from the fact that God is the first being, as was shown in the proof of His existence, and the first being is the necessary being, because He exists in virtue of His essence. Hence, whatever God is, He is necessarily whatever He is. If, then, God would not have a certain reality, He would 'necessarily' lack this reality and could never 'acquire' it from another being. God, therefore, cannot 'acquire' any reality through passing from one state into another state.

Nor can God 'lose' reality. When reality is lost, the subject possesses it already and then loses it in the change. Now, if God could lose reality, this loss of reality would have to be due either *to His own action* or *to the action of some other being*. Neither case is admissible. God is the necessary being; He is necessarily whatever He is. But if He could lose some reality He possesses, whether through His own action or the action of some other being, He would not be 'necessarily' what He is. God, therefore, cannot lose reality by passing from one state to another state.

The same consequence follows from the *infinite perfection* of God. If He could 'acquire' reality by means of change, He would not be infinitely perfect *before* the change; He would certainly be more perfect if He did not acquire it but possessed it already. And for the same reason He cannot 'lose' reality in any manner. All reality being a form of perfection, God would be less perfect *after* giving up some reality than He was when He possessed it. Besides, to be capable of acquiring or losing reality involves passivity and potentiality; a being, however, with passivity and potentiality is not infinitely perfect.

Again, the *absolute simplicity* of God's essence makes it impossible for Him to 'acquire' or 'lose' reality through change. Because of this absolute simplicity, everything in God's essence is one single reality; composition of any and every kind is excluded. However, if any reality could be acquired by God through change, there would be an addition to His being, and that would entail a composition between His absolutely simple being and the new reality; but composition is excluded in an absolutely simple being.

Similarly, God cannot lose any reality through change. Since His being is an absolutely simple essence, the loss of any reality at all would mean the loss of His entire essence, and that would be equivalent to annihilation; God, however, cannot lose His essence and cease to exist, because the necessary being cannot cease to exist.

It is evident, therefore, that change is impossible in God, and He must, consequently, be *immutable*.

SECOND, A *SPECIFIC* PROOF OF GOD'S IMMUTABILITY, IN SO FAR AS the single types of intrinsic change are impossible.

God is *physically* unchangeable. Whatever is capable of change cannot be infinite in perfection, because it can be augmented in its being by the acquisition of some new reality or be decreased in its being by the loss of some reality it possesses. God, however, is absolutely infinite in His being. Therefore, He cannot change by passing from one state to another through the acquisition or loss of physical reality. Besides, every changeable being has potentiality, since it is capable of receiving what it does not possess and of losing what it possesses. God, however, is pure actuality and, therefore, without potentiality.

God is *morally* unchangeable. If God ever changed morally, so that He would begin to will something He did not will before, we would have to conclude that He either made no decision before regarding this matter and then began to exercise His will regarding it or that He changed the decision made before. Neither alternative, however, is possible. In either case God would acquire the reality of a

decision, and this reality would be something new in God's being, since it was not there before. God, however, since He is infinitely perfect, cannot acquire such a reality, because every reality is a perfection for the one possessing it.

God is *intellectually* unchangeable. God could undergo intellectual change in one of two ways, either by acquiring knowledge of something He did not know before, or by losing knowledge already possessed. In the first case He would pass from a state of ignorance into a state of knowledge, and in the second case from a state of knowledge into a state of ignorance. Ignorance, however, is an imperfection, and God would be more effect if He had this knowledge and retained it always. Now God is infinitely perfect. Hence, ignorance, whether antecedent or subsequent, must be excluded from Him. God, therefore, can neither acquire nor lose knowledge, and intellectual change is thus impossible in God.

It follows that God is *immutable* in every respect.

Not only is God immutable; *He alone is immutable*. Every creatural being is subject to change. All creatures, as a matter of observable fact, undergo change in one form or another. All are contingent and potential. All are composites of substance and accidental determinations, and they realize their being successively through passage from potentiality to actuality. The entire world is in a continuous process of 'becoming,' so that some form of reality is always being acquired and lost through change; this is true of all inanimate and animate beings, of all material and spiritual beings. Consequently, since all beings outside of God

undergo change or are at least capable of undergoing change, God alone is immutable.

Extrinsic change does not involve mutability in God Himself, in the sense that there is *real* change in Him. He is more the 'object' of the change, rather than the 'subject' which undergoes real change. Creatures like men, for instance, at first do not know God and then know Him. God, of course, can be said to change from 'not being known' to 'being known.' The subject undergoing the 'real' change in this process of acquiring knowledge is, obviously, the creature; the creature really acquires the act of knowledge and thus passes from the state of ignorance to a state of knowledge. In the creature, therefore, a 'real' change takes place, because he actually receives a new reality when he knows God. God, however, since He is merely the 'object' of this knowledge and not the 'subject,' does not undergo real change by passing from 'not being known' to 'being known'; He is merely the 'term of extrinsic denomination,' as philosophers call it, because the real change, while 'intrinsic' in the knowing subject, is altogether 'extrinsic' in the object known. God's being is not affected in any way by the real change which takes place in the creatural mind. While, then, the word 'extrinsic change' is applied to God in such a case, it must be understood to mean that God does not undergo a real change in His being. Hence, notwithstanding this extrinsic change, God remains absolutely what He was before. It is clear, therefore, that an 'extrinsic change' does not imply mutability in God's being.

Notion of Eternity

Eternity is duration in existence which is essentially without beginning and end and which is essentially without real succession and intrinsic change. As such, therefore, eternity is a type of duration and must be viewed in the light of the meaning of duration. Duration is the permanence of a being in its existence. Existence, as was noted before, is the actuality of a being in so far as the being is outside any causes it may have; in other words, a being is existent when it is neither 'nothing' nor merely 'possible.'

Duration is either 'divine' or 'creatural.' Divine duration is proper to God and is necessarily infinite and immutable, because God Himself is infinite and immutable in every respect. Divine duration goes under the special name of 'eternity,' and its definition has been given in the preceding paragraph. Creatural duration is proper to all beings outside God; it is the type of duration characteristic of creatural beings. Such beings are 'capable' of having a beginning and (or) end in their actual existence, even though, as a matter of fact, they have been produced from eternity and would last forever.

Creatural duration is either 'successive' or 'permanent.' It is successive when one part of the duration continuously follows the other; the being having successive duration is in a continuous process of change, whether this change be local motion or qualitative alteration or quantitative increase or decrease. Thus, the flow of an electric current (not the electrons as such) is successive in nature. Creatural duration is permanent when the being remains

constant and intact in its existence. For instance, the electrons, even though in a continuous state of agitation, are practically the same at all times, considered as entities. Permanent creatural duration is mainly of two types, depending on whether a being is by nature corruptible or incorruptible. Being which is by nature 'corruptible' can be dissolved into its component parts at some time or other, although it is endowed with a relatively permanent existence as a composite being; its duration is by nature not everlasting but temporal. For example, a plant or animal or man is a composite being possessing a relatively permanent duration in existence as a plant or animal or man, but this duration is 'temporal' in character; its existence began in time and will end in time, so that its duration is not everlasting. On the other hand, a being which is by nature 'incorruptible' does not consist of component parts, so that it cannot be dissolved into component parts; as a result it possesses a permanent duration which is by nature everlasting. Beings which are 'simple (now composite)' in their constitution are by nature incorruptible; in other words, this type of duration is proper to spirits or spiritual entities. The only kind of spiritual being known to man here on earth is man's immaterial soul; angels, too, are spirits, but they are outside the purview of man's natural knowledge. This kind of everlasting duration is termed *eviternity*, and it is defined as the everlasting duration of a naturally incorruptible being in its existence. Such a being is said to be 'eviternal.'

The difference between God's eternity and all other types of duration is clear. It differs from creatural duration:

creatural duration can have a beginning and an end; God's eternity, on the other hand, is an absolutely necessary existence, incapable of having a beginning or end. It differs from eviternity: such a duration, though permanent and by nature everlasting, is in itself capable of having a beginning and, absolutely speaking, an end, and it is also capable of intrinsic change in its accidental determinations. All this is impossible in the duration of God's existence, due to His immutability and infinity. It differs from the temporal permanence of corruptible composite being, because God is incorruptible in His being and so is His eternal duration. It differs from the successive duration of time: such a duration changes from moment to moment, so that there results a past, a present, and a future; God's existence, however, is always a 'present' without past and future, without succession and change, everlastingly immutable.

The definition which Boethius (480-525) gave of eternity has been famous through the centuries. It reads: *Aeternitas est interminabilis vitae tota simul et perfecta possessio*: **Eternity is the simultaneously complete and perfect possession of interminable life.** Eternity is 'life'; the eternal Being must be a living being, and 'life' designates both being and operation, so that the eternal Being possesses vital being and operation. Eternity is the 'possession' of life; the term expresses the full and absolute enjoyment of life on the part of God. Eternity is the possession of 'interminable' life; the eternal duration of God's existence excludes the possibility of a beginning or end in His life. Eternity is the possession of interminable life, and this possession is 'simultaneously complete'; this

means that God's life is without succession or change in its being and operation. Eternity is the 'perfect' possession of interminable life; this expression signifies that the eternal Being possesses life so as to include absolute perfection and exclude every imperfection. A comparison between the definition given by Boethius and the one given at the head of this section will show that both are identical in meaning.

Proof of God's Eternity

Eternity is understood to be a duration in existence which is essentially without beginning and end and which is essentially without real succession and intrinsic change. This statement represents the definition of 'eternity.' The question now is whether the definition applies to God. It does. God exists. His existence is absolutely necessary like His essence, since God's existence is in reality identical with His essence; and God's essence is absolutely necessary. To say that the absolutely necessary essence could 'not exist,' is a contradiction. Hence, God's duration in existence must be without beginning and end, and that in virtue of His essence; in other words, God's existence is essentially without beginning and end, because He is the 'necessary being.'

That God's duration in existence is essentially without real succession and intrinsic change, follows from His absolute immutability. Where there is 'real succession' and 'intrinsic change,' there can be no immutability.

Hence, God is essentially *eternal*.

GOD ALONE IS ETERNAL.

Every creatural being is contingent in its essence and existence; not a single one can be said to be a strictly 'necessary' being. As such, it is dependent in its essence and existence on God, the necessary being. Even though a creatural being had received its existence from eternity, it would have been possible for the being to have received existence in time and it is also possible for its existence to end. In any case, its existence had a beginning, even under the supposition that God created it from eternity. A necessary being, however, is absolutely incapable of having a beginning and (or) end in its existence. Furthermore, every creatural being is subject to change either in its substance or in the accidental determination of its substance, because every creatural being possesses potentiality in some form or other. Hence, no creatural being can be essentially eternal. God, however, is essentially eternal.

Therefore, *God alone is eternal.*

From the fact that God alone is essentially eternal, it is manifest in what manner we make statements of God which *imply temporality*. Strictly speaking, there can be no 'past' or 'future' in God's duration. *Past* and *future* are terms which imply the succession peculiar to time, where one moment follows after the other. Creatural beings exist in time; and 'past' and 'future' apply to their essence and existence, but not to God. God's existence is absolutely eternal, so that He lives in an absolute present; His duration is an *eternal 'now'* without 'past' or 'future,' and He co-exists eternally with the successive and continuously

changing duration of creatural beings. It is plain, then, that any expressions involving temporality can be used of God and His activity only in a *metaphorical* sense or, as the technical language of philosophy puts it, by means of an *extrinsic denomination* derived from the creatural beings existing in time. Thus, we say that God 'has created' the world (as if it were a past act) and 'will reward' the just (as if it were a future act); such acts, however, are really one with His immutable essence and exist from all eternity in an everlasting present.

Notion of Immensity

Immensity is taken here as that intrinsic attribute of God in virtue of which He is necessarily present wherever any being exists which is not God.

This attribute is *eternal*, because it is really identical with God's eternal essence and is independent of whether creatural things exist or do not exist. Even if no creatural beings existed, the attribute of God's immensity would be intrinsic to Him and would require that He be present to all creatural beings as soon as they began to exist. This attribute is *infinite*, and as such it is not delimited or measured by place and space. It demands that God be present to all beings in place and space, if and as long as these beings exist, even if they could be infinite in number and space itself could be infinite in extent; if their number is increased indefinitely, God would be present to them without any intrinsic change on His part. This attribute is *intrinsic* to God, not a mere extrinsic denomination derived

from existing creatural beings. It is a character of the wine essence, so that He would be immense in His essence, irrespective of the actual existence of beings other than Himself. The necessity of His presence is not to be conceived as a 'potentiality' of some sort, but as the fullness of the divine being requiring His presence in every being. This attribute is *absolute*, because it is unconditioned by creatural existence or non-existence. On the part of God the existence of creatural beings does not introduce a 'real relation,' but only a 'logical relation,' between God and such beings; nothing is added to God's being by the fact of creatural existence, because He is essentially immutable and infinitely perfect.

Some authors have tried to construe the nature of God's immensity' as *its reference to absolute space*, in the sense that immensity is the presence of God in absolute space. 'Absolute space' is taken here in contradistinction to 'real' or 'filled space'; absolute space is considered to be infinite in extent, whether it be empty or filled. For those who are convinced that the universe is limited in extent, 'absolute space' is conceived as the space extending beyond the boundaries of the existing universe (or universes). Such an interpretation of God's immensity, however, is inadmissible. Absolute space is the same as 'imaginary space,' and the immensity of God would also be nothing more than a fiction of the mind.

Others have sought to explain God's immensity as the *relation of His presence to extended things*. This explanation must also be rejected. The reason is obvious. The existence of extended realities is altogether finite and

temporal. Hence, if God's immensity were nothing more than the relation of His presence to extended things, it would of necessity begin to exist and cease to exist with the existence of extended beings. However, God's immensity is independent of the actual existence of extended reality, because it is eternal and actually identical with His divine essence, as will be shown.

There is a difference between God's immensity and 'omnipresence' or, as it is often termed, 'ubiquity.' By *omnipresence* or *ubiquity* one understands the relation of God's presence to the beings which actually exist and to the real space which they occupy. Omnipresence is a consequence of God's immensity; because He is immense by nature, He must be actually present in all beings which exist. The *relation* of God's presence to existing creatural beings is 'real' on the part of creatures, because their very reality is dependent on God's presence; on the part of God, however, this relation is only 'logical,' because creatural beings cannot exert real influence on God's being. Since omnipresence implies the existence of creatural beings, and since this existence is entirely temporal in character, omnipresence is an attribute of God which is *relative* and *temporal*. The immensity of God, on the contrary, is prior to the existence of creatural beings and is an eternal and infinite perfection.

Proof of God's Immensity

The *opponents* among theists who have discussed the problem are relatively few. *Aristotle* was of the opinion that

God would be contaminated by beings of a lower nature, if lie were present among them. According to his view, the entire universe above the moon consisted of celestial spheres, and these spheres were composed of incorruptible matter. To safeguard God's purity of being, Aristotle placed Him in the periphery of the ultimate celestial sphere, in which place lie alone resides in eternal repose and self-contemplation. The theory of celestial spheres is now obsolete and discredited, due to the information supplied by astronomy and astrophysics. *Vorstius* (a Calvinist) and *Augustinus Steuchus Eugubinus* (a Catholic) maintained that God is omnipresent in all creatures through His power and knowledge, but He is not omnipresent through His essence and substance.

The *polytheists*, due to the decidedly anthropomorphic idea of their divinities, looked upon the gods and goddesses as very limited in essence and operation. As a result of this limitation, the divinities possessed neither immensity nor omnipresence.

The pantheists, since they identify God and the universe of reality, naturally admit the omnipresence of God, in the sense of God's absolute immanence (identity) in the world; God 'is' the world. That the immensity of God is an attribute of the Supreme Being transcendently distinct from the world of creatures, is something which they do not and cannot consistently admit. Christian philosophers, of course, are theists and as such opposed to the fundamental tenets of pantheism.

We claim that God *possesses the attribute of immensity*. Some authors contend that a stringent proof of God's

immensity and omnipresence cannot be furnished by reason without the aid of divine revelation. The proof, as formulated by D. Card. Mercier,³ is subjoined, and we think it is sound and valid. He says: "The infinite Being comprises every absolutely pure perfection; immensity is an absolutely pure perfection; therefore the infinite Being is immense.

"Proof of the minor premiss: To be endowed with an absolutely pure perfection means to possess a perfection which excludes all imperfection that can detract from it. Now the presence of a thing somewhere, inasmuch as it is something positive, a perfection; immensity is just this same perfection without the other impairing elements that are mixed with it when realized in creatures. In the case of a creature, presence involves imperfection for the double reason that it is a mode of being which depends on the creature itself, and that, as it is circumscribed or in some other way restricted, it is essentially subject to limitation. The immensity, however, of God is identical with His substantial being; that being has no extended parts but is indivisible reality unlimited in every line, and excluding by its very essence every limit, no matter what may be the number and size of the worlds to which His action extends.

"Therefore immensity is an absolutely simple perfection."

The conclusion is evident: God *is immense*.

The *omnipresence* or *ubiquity* of God, in relation to all existing creatural beings, follows as a necessary consequence from His absolute immensity. Immensity signifies the exigency on the part of God's being to be present to every existing creatural being. Consequently,

God must be present to all creatural existences as soon as they come into being, no matter what their size or number. And since God's immensity is identical with His essence, like all His other attributes, it is neither an accidental determination nor a mode of His substance; as a result, God's omnipresence does not in any way involve a change in God's being when He becomes present to a newly existing creatural being. As a further consequence, omnipresence is peculiar to *God alone, so that God alone is omni present.*

God's presence in creatural things is a presence of His essence, so that the total substance of God is in all things and in all real places; since God is absolutely simple, wherever God is said to be present, He must be there with His total essence or not at all. It is also a presence of *knowledge*; knowledge is a perfection, and consequently God must have complete knowledge of all the beings to which He is present. It is also a presence of *power*, because all creatural beings (as will be shown later on) are dependent on God in their being and operation. All this follows from the very nature of immensity and omnipresence.

If 'place' indicates 'where' a being is, the presence in a place is its *whereness* or *ubication* (Lat., *ubi*, where). Presence in a place may be either 'circumscriptive' or 'definitive' or 'repletive.'

A *circumscriptive* presence is the presence of an extended corporeal substance, so that it has parts outside parts quantitatively extended in the place which it occupies; all bodies fill extended space with their own extended

reality. A *definitive* presence is the presence of a spatially unextended substance in such a manner that it can exercise its activity only within certain limits of space. Such is the presence of spiritual creatures in the universe; and such, too, is the presence of man's immaterial soul within the limits of his body. Spiritual beings, since they are simple entities, have no parts outside parts in their substance, and thus they do not have a circumscriptive presence in space; but their activity is limited to certain restricted areas of space, so that they are 'localized' and are not present everywhere. A *repletive* presence is the presence of a spatially un-extended ('spiritual') substance in all places and spaces, past, present, and future; such a being is naturally 'everywhere.'

God's omnipresence in the universe (or universes) is not 'circumscriptive.' He is not circumscribed by a particular place or space; His infinitely perfect being cannot be restricted and limited. Nor is His omnipresence 'definitive,' in the sense that His activity and presence is localized like that of an ordinary spirit or immaterial substance; because that, too, would imply restriction and limitation. God's omnipresence is *repletive*. He is 'everywhere,' totally and compenetratingly. This 'repletive presence' is what is meant by 'omnipresence' or 'ubiquity,' and the infinite perfection which is its foundation is immensity.'

Pantheism

Opposed to theism, expounded so far, is the doctrine of pantheism. In general, pantheism (Gr., *πάν*, all, everything;

Θεός God) teaches the *identity of the Deity with the beings of this world*. In the course of the centuries pantheism has appeared in many diverse forms. The varieties of pantheism are too numerous to be discussed in detail. Yet, a brief outline of the main types of pantheism will not be amiss.

The *two main divisions* are partial (imperfect) and *total* (perfect) pantheism.

Partial pantheism maintains that God is not the totality of world-beings, but only a *part of the world*. This type of pantheism is always realistic, never idealistic.

Chief among the proponents of partial (imperfect) pantheism were the *stoics*. The school was founded by Zeno of Cittium (350—258 B.C.) and lasted for centuries. The material is the only reality; God Himself is but a finer sort of matter. God is conceived as the ‘soul’ of the universe. The reality of God and the world is at bottom identical, with only a relative difference existing between God (reality, regarded as a whole) and the world (reality, regarded in its various aspects). In medieval times, partial pantheism was revived by Amaury (Amalric) of Béne, who taught that God is the formal principle of all things, and David of Dinant, who held that God is universal matter; both lived in the twelfth and thirteenth century. In recent times Oscar Külpe expressed the view that God is the world-soul. Some modern pantheists identify God with world-energy or something similar. Generally speaking, partial pantheism was never very popular among philosophers; if they defended pantheism at all, it was a form of total pantheism.

Total pantheism (also called ‘perfect’ pantheism) maintains that *all reality is but one*. Because of this oneness

of being, Deity is totally identified with this 'one being.' Total pantheism is either 'realistic' or 'idealistic.'

Total *realistic* pantheism holds that the reality which is identified with God is a *physical entity* (not a mere product of mind or thought). This type appears in a variety of forms.

One form of realistic pantheism teaches that there exists but a *single physical reality*, and it is absolutely permanent and unchangeable; multiplicity and change are but an illusion. Among the early Greek philosophers who belonged to this group are those of the School of Elia, namely, Xenophanes (570 B.C.), Parmenides (540 B.C.), Zeno of Elia (490 B.C.), and Melissus. Most prominent in this group was Parmenides. He claimed that all 'becoming' was utterly impossible; hence, only the All-One exists, indivisible and immobile (see Chap. 4). In opposition to this doctrine is the pantheistic teaching that the only physical reality which exists is 'pure motion' and 'change.' Heraclitus (530 B.C.), among the ancients, best represents this type of pantheism (see Chap. 4). The principle of change is the divine, all-controlling 'fire,' and it is called by Heraclitus 'Zeus,' 'Deity,' 'Logos,' 'Justice.' His system is thus a system of dynamic monism. The origin of the world is explained as a transformation of primal fire.

Another form of realistic pantheism is that of the *evolution of the Deity* into the world. This evolution may be either 'transient' or 'immanent.'

Transient realistic pantheism is also called *emanationism*. Its general doctrine consists in the tenet that all beings in the world 'emanate' or flow from the divine substance, so that they originate, not by means of

God's causal action, but through a transformation of God's substance. The *gnostics* of the second century of the Christian era, particularly Valentinus, taught the origin of numberless 'aeons' through emanation from God. Plotinus (A.D. 205—270) and the *neo-platonists* defended a system of emanations. According to Plotinus, God is the One, the Good, the primal reality which is undifferentiated. Goodness gives rise to emanation; and emanation gives rise to the multiplicity of things, as a kind of overflow of the One. Mind is the first reality to emanate from God; then comes the world-soul; then plastic forces (forms, individual souls); and finally matter. Matter is the ultimate degradation of the One, because it is the source of multiplicity and evil. In medieval times John Scotus Eriugena (about 810—877) defended a transient, emanatistic pantheism.

Total *immanent* pantheism applies the principle of *evolution* to God and maintains that the divine reality has evolved into the present world. World-beings, therefore, are *modifications* of the divine reality, produced through a 'real' evolution of the divine entity. The philosophy of *India*, as laid down many centuries before Christianity in the Veda and the Upanishads, taught that originally there was but a single permanent reality, namely, 'Brahman' (God), which then evolved into the things of the world. A modern version of Indian pantheism is found in *theosophy*. Perhaps the best-known system of immanent evolutionistic pantheism is the one propounded by B. Spinoza (1632—1677). Spinoza began his system with an arbitrary definition of 'substance,' allowing but a single substance to exist, namely, God. This substance consists of infinite attributes of which two only

are known to man, 'extension' and 'thought'; these attributes are the same reality as God Himself, and for that reason are not really distinct among themselves. Besides these attributes, infinite 'modes' exist in God; and of all these modes man knows but the particular thoughts present in his own mind and the particular extensions constituting the various bodies found in the world. These modes, however, like the attributes, are not really distinct but are merely different aspects of one and the same substance of God. God thus evolves into 'nature' and 'spirit,' so that "God is a thinking thing" and "God is an extended thing." However, when Spinoza attempts to derive 'mind' and 'matter' ('spirit' and 'nature') from the infinite substance as the finite determinations of God's being, he explains the evolution of differentiation and multiplicity in a way which makes them unreal. At any rate, Spinoza's God is an impersonal substance.

Total *idealistic* pantheism proclaims as its fundamental tenet the principle that all being is actually thought-being, so that things have existence only in a mind and only in so far as they are thought. Hence, everything is derived from 'mind' and is essentially 'mental.' The main proponents of idealistic pantheism are the German philosophers J. H. Fichte (1762—1814), F. W. J. Schelling (1775—1854), and G. W. Hegel (1770—1831). Theirs is the pantheistic philosophy of the *Absolute*, and each of these thinkers sought, in his own way, to harmonize the phenomenal (appearance)' and 'noumenal (thing-in-itself)' of Kant's idealism by starting with a being which would be the unifying ground of these Kantian opposites.

The human mind invariably seeks a *principle of unification* for the multiplicity and diversity observed among the beings of the world. However, instead of finding this principle of unification in the efficient causality of a personal God, these thinkers placed it in the very being of God, and thereby they fell into the error of pantheism. Pantheism, as the materialist Ernest Haeckel once said, is nothing but “polite atheism.”

Refutation of Pantheism

In view of what has already been established concerning God’s existence and nature, it is clear that any type of pantheism, identifying Him either partially or totally with the things of the world, is erroneous. All that is required here is to point out how pantheism contradicts these established truths.

PARTIAL PANTHEISM MUST BE REJECTED.

Any theory that makes God a part of the world is erroneous. To be a part of anything means *composition*, and composition in this case would mean that the result is a ‘composite being.’ Now, the composite being, considered as a totality (whole), is more perfect than the parts which constitute the totality (whole). Hence God would be less perfect as a part than the totality (whole) of which He is the part. God, however, is infinitely perfect, and therefore He cannot be a part of the world.

TOTAL PANTHEISM MUST ALSO BE REJECTED.

According to the teaching of total pantheism, God is identified with the totality of the world, not merely with a part of it. Whether this pantheism be 'realistic' or 'idealistic,' it cannot be accepted.

Realistic total pantheism is erroneous. The origin of the world is explained either as an 'emanation' or as an 'evolution' of the divine substance. In either explanation God is identical with the world and the world with God. If this were so, the world would of necessity be a *single being*, because God Him self is one, undivided and indivisible. Such a view of the world, however, contradicts both experience and reason.

Idealistic total pantheism is also erroneous. Idealistic pantheists of modern times claim that the beings of the world are but 'modes' or modifications of the divine substance through a process of necessary evolution; and these modes are only 'thought-modes' or thought-modifications of God's evolving being. This system is an egregious error. Creatural beings are not 'modes' of any substantial being. As William J. Brosnan⁴ rightly observes: "They are complete substances in themselves, really distinct from God numerically and essentially, and really distinct from one another numerically and, in numberless cases, specifically and also generically. What is more, unless we wish to admit that our cognitive faculties are utterly and absolutely untrustworthy, we must admit that we ourselves and the rest of the creatures in the world are not mere thought-modifications of any being, but have an existence in the physical world, an existence, namely, really distinct

from, and outside of, the intellect or thought of any being, even God. To insist that the world is a mere illusion of God's intellect or of our intellects is intellectual suicide. To attempt to live practically in accord with such a theory is impossible. Even the Idealists themselves admit this."

The great *fallacy* underlying the system of idealistic immanent pantheism, especially of the Hegelian type, lies in the failure to distinguish between the *ontological* concept of God as the *ens a se* (ὁ ὢν) and the logical concept of *universal being* (τό ὄν). A comparison of the two concepts will bring out their radical difference. The concept of God is that of a *concrete* being; the concept of universal being is abstract. The absolute being of 'God' has the fullest 'comprehension,' because He comprises within Himself the *plenitude of being* in an infinite manner; but the concept of God is the smallest in 'extension,' because He is *only one in number*. The reverse is true of the abstract, logical entity of the concept of 'universal being.' From the standpoint of its 'comprehension,' it is the most meager of all concepts, because it consists of the single item of *being in general* and as such is next to 'nothing'; from the standpoint of its 'extension,' it is the widest of all concepts, since it can be predicated of every sort of actual and possible being, of substances and accidents and modes. Furthermore, 'God' and 'universal being' differ altogether in regard to the manner of their *origin*. The concept of 'God' is the result of reasoning, acquired through the process of applying the principles of reason to the data of experience. On the other hand, the concept of 'universal being' is formed through the logical process of abstraction, by ignoring the manifold

differences existing in the actual realities. Again, 'God' and 'universal being' differ completely in their *mode of existence*. 'God' exists as an individual being, independent of any creatural mind. 'Universal being' exists formally only in the abstracting mind and as such has only a mental existence; in actuality, individual beings alone exist, and 'universal being' does not exist as a real being anywhere in nature. Finally, 'God' and 'universal being' are totally different in their *properties*. Both are simple; but this 'simplicity' is predicated of them in radically diverse meanings. 'God' is said to be simple' in the sense that He is infinitely perfect; He possesses ontological indivisibility in the fullness of His Being. 'Universal being,' however, is said to be 'simple' only because of its indeterminateness, logical incompositeness, and poverty of content.

From all this it is clear that pantheism, no matter in what guise it appears, cannot stand the test of logical analysis. When examined carefully and objectively, pantheism always manifests itself as a system of flagrant contradictions. Any system of thought, however, which is inherently contradictory, must be rejected as erroneous.

God Is Personal

The term 'person' must not be confused with the term personality.' In ordinary parlance, 'personality' means the combination of all those mental, moral, and emotional traits, natural and acquired, which distinguish one human being from another. Philosophically, a *person* is defined as an individual, complete, subsistent, intellectual substance.

Originally, the notion of 'person' has been acquired by man through a study of his own being in comparison with lower beings. Then, finding that God, too, is an individual, complete, subsistent, intellectual substance, but in an infinite degree, man applies the concept of 'person' analogically to God.

God is *personal*.

God is a *substance*. He certainly exists in Himself and by Himself, so that He does not need another being as a subject in which He must inhere in order to exist. This follows necessarily from the fact that He is the first being and that He is infinitely perfect. It is certainly more perfect to exist independently of another being than to need another as a subject of inhesion.

God is an *individual* substance. Obviously, if God is unique, so that a plurality of Deities is excluded, He is an individual substance. A pantheistic deity does not possess individuality, but a theistic God certainly does.

God is a *complete*, individual substance. God is in no sense a part-substance like the human soul conjoined with matter to form 'man.' God is neither a part of the world at large nor of any being in the world. If God were not a 'complete' substance, He would not be infinitely perfect.

God is a *subsistent*, individual, complete substance. Something is said to be 'subsistent' when it is self-contained and autonomous (*sui juris*) in its existence, nature, and operations. Since God is the first being, the uncaused cause, and infinite substance, He must also be 'subsistent.'

God is an *intellectual*, individual, complete, subsistent substance. It is manifestly a greater perfection for a being

to have an intellect than not to have it. Hence, since God is infinitely perfect, he must be an intellectual being. Besides, God is the author of the order, harmony, and rationality observed in the arrangements present in the world.

God, therefore, is truly personal. The world at large is not personal, because it is lifeless and lacks an intellect. Hence, God is *distinct from the world*, even though *immanently present* to every being.

Summary of Chapter XI

In this chapter God's *immutability, eternity, and immensity* are considered. Pantheism is refuted.

1. *Notion of Immutability.* — The opposite of 'immutability' is *mutability*, and mutability means capability of change. 'Change' is the passage of a being from one state into another state. Change may be 'extrinsic' or 'intrinsic.' With reference to God's immutability, intrinsic change in the strict sense of 'physical,' 'moral,' or 'intellectual' change must be denied of God.

2. *Proof of God's Immutability.* — Intrinsic change means the acquisition or loss of some reality. If God could change intrinsically, He would have to *acquire* reality either from Himself or from another. Neither supposition is admissible. Nor can God lose reality. God is the first and necessary being and as such cannot acquire or lose any reality. Intrinsic change is also contrary to God's infinite perfection and absolute simplicity. Specifically, God cannot undergo physical, moral, or intellectual change.

God *alone* is immutable. All creatural beings are contingent and potential, and undergo change, so that they are constantly acquiring and losing reality in many ways.

3. *Notion of Eternity.* — Eternity is a form of duration; eternity is defined as a duration in existence which is essentially without beginning and end and which is essentially without real succession and intrinsic change.

Duration is either divine or creatural; either successive or permanent; either temporal or everlasting. The

everlasting duration of spiritual entities is termed 'eviternity.'

Boethius has defined eternity as "the simultaneously-complete and perfect possession of interminable life."

4. *Proof of God's Eternity.* — That God's duration is eternal, follows from the fact of His necessity and immutability of being.

God *alone* is eternal, because He alone is necessary; all creatural beings are 'contingent' in their existence and dependent on God for their being.

5. *Notion of Immensity.* — Immensity means that God must be necessarily present wherever any being exists which is not God. Immensity is an infinite, intrinsic, and absolute attribute of God, unconditioned by creatural existence or non-existence. *Omnipresence* or *ubiquity* is the relation of God's presence to the beings which actually exist and to the real space which they occupy. Omnipresence is the result of God's immensity.

6. *Proof of God's Immensity.* — The presence of a thing 'somewhere' is something positive and therefore a perfection. Immensity is this perfection without the limitation and imperfection found in creatures. Consequently, immensity is a pure perfection and as such must be an attribute of the infinitely perfect essence of God.

God *alone* possesses immensity, because no creatural being has the exigency to be present everywhere and in everything. God's presence is a presence of His essence, knowledge, and power. His presence is neither 'circumscriptive' nor merely 'definitive,' but *repletive*.

7. *Pantheism*. — Opposed to theism, pantheism teaches the identity of the Deity with the beings of this world. Pantheism is partial, when it identifies God with a part of the world; *total*, when it identifies God with the totality of the world. Total pantheism may be either 'realistic' or 'idealistic.'

8. *Refutation of Pantheism*. — Partial pantheism must be rejected. God cannot be the 'world-soul,' because such a supposition contradicts God's infinite perfection, simplicity, and immutability. Nor can He be 'universal matter,' because matter is essentially passive, potential, and changeable.

Total pantheism must also be rejected. In the *realistic* interpretation of total pantheism, the world would of necessity be a single being, because God Himself is one, undivided and indivisible. Such a view of the world, however, contradicts both experience and reason. In the *idealistic* interpretation, the beings of the world are 'thought-modes' of the Absolute's (God's) necessarily evolving being. This doctrine is contrary to fact, because man and other beings are complete substances in themselves, really distinct from God and among themselves. Idealistic pantheism would make our power of knowledge utterly untrustworthy, and so universal skepticism would be inevitable. The *fallacy* underlying idealistic pantheism lies in its failure to distinguish between the 'ontological' concept of God as the *ens a se* and the 'logical' concept of *universal being*.

9. *God Is Personal*. — Philosophically, a person is an individual, complete, subsistent, intellectual substance. This

definition is verified in God. Therefore, God is a personal being.

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1 *Summa Theologica* (New York: Benziger Bros.), Ia, qu. 3.

2 *Ibid.* qu. 12.

3 *Manual of Modern Scholastic Philosophy* (New York: Herder Book Co., 1917), Vol. II, 'Natural Theology,' n. 52, pp. 82, 83.

4 *God Infinite and Reason* (New York: America Press, 1928), p. 220. 136

Chapter 12

GOD'S INTELLECT AND WILL

THE ATTRIBUTES DISCUSSED IN THE TWO PRECEDING CHAPTERS are essential' attributes, in the sense that they pertain directly, according to our human way of thinking, to the essence of God.

Next in line are the *internal operational* attributes of God. God's essence is not an inert, inactive reality, but one that is absolutely active and operative.

In God, since He is pure actuality and infinite perfection, everything is identical with His absolute essence. Man cannot conceive this complete identity. Man's ideas are derived from finite beings, and they are always finite in their comprehension of perfection. When applied to God, all limitation must be denied. Hence, even though we predicate 'operations' of God, we must always bear in mind that such operations are not something superadded to God's essence but are identical with His absolute being.

The operational attributes proper to God's essence, considered absolutely in itself, are *vital spiritual activities*, mainly those of *intellection* and *volition*. These will now be discussed.

Nature of God's Intellection

It is clear that God *cannot be a material entity*. A material entity consists of matter; and matter consists of two or more parts in a side-by-side position, existing in such a manner that normally they are spread out in space but form a unified reality. Whenever matter exists, there is a resultant *composition* of the material parts into a whole. In God, however, there can be no composition of any kind, because He is the first being and pure actuality. God, therefore, is not a material entity. As a consequence, He is an immaterial or spiritual entity.

Every spiritual being is a *living being*. Life is 'immanent' action, and immanent action is either vegetative or sensory or spiritual. Vegetative and sensory action, however, are essentially organic, and whatever is organic is material. God, since He *is* immaterial, is not organic; consequently, his life cannot be vegetative and sensory. Hence, the life proper to God must be spiritual, characterized by intellection and volition.

Intellection, in general, has subjective and objective elements. The *subjective* element is the act (operation) of the knower, namely, thought or knowledge itself in virtue of which the thinking subject actually 'knows.' The *objective* element is the *formal principle* which immediately and proximately orders the subject's power of thinking to elicit the act of thinking.

SO FAR AS THE *ACT OF KNOWLEDGE* IS CONCERNED, THE DIVINE activity of knowing is evidently very different from that of man. In man, the act of knowing is 'really distinct' from man's nature. This fact is manifest beyond doubt, because man's act of knowing comes and goes while his nature remains. Man's act of knowledge, therefore, is always an 'accidental determination' of his intellect, so that his intellect passes from the potentiality of knowing to the actuality of knowing. In God such a passage from potentiality to actuality cannot occur; He is all essence and actuality. While, therefore, man makes a distinction in God between His essence and intellection, this is only in accordance with the limited conception of God's nature characteristic of man's thought. This conception views divine intellection as an *operational attribute* proper to God's essence. It is necessary, however, to guard against certain false notions; otherwise the limitations of man's intellection will be predicated of God's intellection.

In God there are no 'accidents' of any kind, because there is no composition. Therefore, God's intellection is *identical with His substance*. For the same reason God's intellection may not be conceived as any sort of 'process' which unfolds gradually in the course of His existence. It must be absolutely *self-subsistent* and *immutable*; consequently, through a single, comprehensive act of knowledge God must exhaust the knowable, without change in Himself and without the necessity of progressive learning. And since God's intellection is identical with His essence, it is absolutely simple and infinitely perfect complete *understanding*, so that He need not reason from

premises to conclusions nor make distinctions nor combine subjects and predicates into judgments; God's knowledge is an infinitely penetrative insight into all things which can be known, and this knowledge must be absolutely *true* and *infallible*. Similarly, infinite perfection precludes in God's intellectual act the possibility of dependence on creatures. If God in His intellectual act were dependent in any manner on creatural beings, His very essence would be dependent because of the identity between His intellection and essence; that, however, is impossible in the self-subsistent being. Hence, God's intellection is unconditionally *independent*, even with respect to man's free acts.

The Object of God's Knowledge

All human thoughts are contingent realities, because they are not eternal in their existence but begin to be and cease to be at definite moments in time. As such, human thoughts demand specific causes which determine them both in their origination and in their character as representations of determinate objects. This cause of human thought is termed, in technical language, its *formal principle* (*principium formale*), and it is defined as that by means of which the intellect is determined or ordered to elicit the knowing act.

In man, the *formal principle* of thought contains a double element, one 'external' and one 'internal.' The *external* formal principle of knowledge is the known object itself, in so far as it impresses itself upon the intellect and through this impression prompts the intellect to elicit the act of

knowledge, thereby making the mind pass from the potentiality of knowing to the actuality of knowing. Unless such an object presents itself to the intellect, the intellect simply cannot know anything about it. However, the mere presence of an object is insufficient for the eliciting of the act of knowledge; the intellect is not completely passive in the process of knowledge. In the presence of the object the intellect actively abstracts a 'representation' of the object. This representative or cognitional image is the internal formal principle of knowledge in the knowing subject and is called the *intelligible species*; by its means the intellect is proximately determined to elicit the act of knowledge.

In the case of human intellectual knowledge, the intelligible species is a contingent reality and an accidental perfection superadded to the reality of the intellect. God, of course, cannot be the subject of an accidental perfection superadded to His essence, for He is pure actuality. The divine intellect is identical with the divine essence and substance, and as such it is in sense a 'power' or 'potency' which requires the help of an intelligible species, distinct from itself, to actualize itself. In God nothing is prior to His self-subsistent essence, and nothing is distinct from His essence. Hence, if we wish to speak of an 'internal formal principle' of God's knowledge, we must use the term 'intelligible species' in a wider and less proper sense than in the case of human knowledge. Taken in this *wider* and *less proper meaning*, we can say with St. Thomas¹ that "the intelligible species does not differ from the substance of the divine intellect, as it differs in our intellect when it understands actually; but the intelligible species itself is the

divine intellect itself, and thus God understands Himself through Himself.” And God’s intellect being identical with His essence, one must also say that His essence is the ‘internal formal principle’ (‘intelligible species’) of His infinite act of knowledge. It follows, then, that God Himself is the *primary object* of His knowledge, because His knowledge is the same as His essence. All other things are *secondary objects* of His knowledge, inasmuch as He is the source of their being and they are imitations in some way of His essence. God, therefore, knows Himself and all other things in the infinitely perfect perception of His own being. As St. Thomas² puts it: “God sees Himself in Himself, because He sees Himself through His essence; and He sees other things not in themselves, but in Himself; inasmuch as His essence contains the similitude of things other than Himself.”

First, then, God knows *Himself*. And He knows Himself through an infinitely perfect act of self-contemplation. Intellectual knowledge always implies that the knower knows that he knows; this, in turn, implies that the knower knows himself in the act of knowing. God, therefore, must know Himself. And since the act of knowledge is identical with God’s infinite essence, it follows necessarily that God knows Himself in an infinitely perfect manner. This means that God’s self-knowledge is absolutely *comprehensive*, because the act of divine knowledge is co-extensive with the divine object present to His intellect. If God did not know Himself comprehensively, He would be lacking in a most important phase of knowledge and would not be infinitely perfect. But God is infinitely perfect. Therefore, He must

have a comprehensive knowledge of Himself as the primary object of His intellect.

The objective of all knowledge is *truth*, and truth is the conformity between thing and knowing subject. Since God's intellect and essence are absolutely the same reality, the conformity between His intellect and His essence is absolute in every respect. Hence, God does not 'possess' truth; *God is Truth*.

Second, God knows *all things distinct from Himself*. This conclusion is a necessary consequence of His infinite perfection. If it is a perfection for man to know things other than himself, this perfection must also be present in God. And since everything in God is infinite, this perfection must also be infinite. Hence, God must know all things distinct from Himself in an infinitely perfect manner, comprehensively. Anything short of absolute comprehension would be a limitation and imperfection. This means that God's knowledge of things is not 'abstract' and through 'universals,' as in the case of human knowledge, but 'distinct' and 'adequate' and 'without confusion.' God knows man, therefore, better than man knows himself; He knows man and every other being down to the smallest and most intimate detail of reality. Furthermore, God not only knows every *operation* of creatural beings throughout their existence, but also every operation which they can possibly perform. Everything in the past and present and future is thus open to His view, and this knowledge of God is, like His essence, *eternal*.

From all this it should be clear that *creatural reality does not determine God's knowledge*, because it does not induce

His intellect to pass from potentiality into actuality. Creatural reality is merely the *term* of God's knowledge, because by the 'term of knowledge' we understand the 'object of knowledge,' namely, that which is known to the knowing subject; and creatural reality, obviously, is known to God, otherwise it could not even exist.

Hence, God knows *all beings* both extensively and intensively with complete comprehension.

SOME MODERN AUTHORS, ESPECIALLY THE *PANTHEISTS*, HAVE denied knowledge in the Absolute, on the grounds that every act of knowledge involves two distinct realities, the *knower* and the *object known*. Hence, they say, the God of theism would of necessity be a divided reality ('knower' and 'thing known') and as such could not be infinitely perfect. Furthermore, they claim, by the very act of knowledge God would be 'limited,' since every knowing subject is 'limited' by the object it knows consequently, God would be infinite (unlimited) and finite (limited) at the same time; and that is a contradiction. The objection is futile. Certainly, a creatural mind is distinct as knower from the object known when it knows objects distinct from itself; and it is 'limited' by such objects, because the act of knowledge is something acquired and as such is superadded as a new reality to the 'power' of knowing. If the knowledge present in God were like that of man or of any other creatural being, division and limitation would be carried over into His essence. But God's knowledge is not like that. His knowledge is identical with His essence. Hence, in knowing Himself there is a perfect

identity between God as the 'knower' and as the object known'; and because of that fact He is not 'limited' in any way by the object of knowledge. Unlike man who merely has knowledge of himself and other beings, God *is* His own knowledge; that is merely another way of stating that *God is Himself*, and such a statement contains no contradiction whatever. At most, there is but a *logical distinction* between God as the 'knower' and the 'object known'.

Practically all the difficulties which the moderns advance against the knowledge of God are based on a confusion of creatural knowledge and divine knowledge. They draw a complete *parallel* between the two and argue to their *parity*. It is unfortunate that these thinkers cannot rise above the essential imperfection inherent in human knowledge to the essential perfection of divine knowledge. Basically, they labor under the misconception of an 'anthropomorphic God,' and then they are guilty of the inconsistency of accusing the theists of 'anthropomorphism.'

Kinds of Divine Knowledge

Everything in God is fundamentally and ultimately a single reality. Man cannot conceive God in a single, comprehensive idea; if he could, he would be God Himself. Man must make distinctions, even though he knows that God's essence is absolutely one, because that is the only way man can form ideas of God's being. In a similar fashion, man forms distinct ideas of God's intellect and knowledge, although he is

aware that there is no multiplicity in God. Hence, man distinguishes various *kinds of knowledge* in God's intellect.

Viewed from the standpoint of the *objects themselves*, God's knowledge is either that of 'simple intelligence' or of 'vision'; many authors add to these 'intermediate knowledge.' God's knowledge of *simple intelligence* has as its object those things that are merely possible. Such things have never existed, they do not exist, and they will never exist, because they never leave the realm of mere possibility; but they could, absolutely speaking, exist, provided God had decided to give them existence. God's knowledge of *vision* pertains to objects which at some time, either in the past or present or future, have existence. Such realities, no matter at what point of time (past, present, or future) they have actual existence, are intuitively seen by God as they actually exist when they exist. Many scholastic philosophers posit a knowledge in God which is midway between simple intelligence and vision; it is termed *intermediate knowledge (scientia media)* and pertains to conditionally future events dependent on the free will of man. These events will never happen, because the conditions for their happening will never be actually realized; but they would happen by the free choice of man, if these conditions would be actually realized. Hence, such events refer to things which a man *would* do through free choice under certain unfulfilled conditions; since these hypothetical conditions are never fulfilled, the events will never actually occur. The 'conditionally future events' are also called *futuribles (futuribilia)*. The defenders of 'intermediate knowledge' maintain that this type of

knowledge has a midway position between 'simple intelligence' and 'vision.' It agrees with 'simple intelligence' in that it deals with events and things which will never actually exist; it differs from it in that these events and things 'would' actually exist if certain conditions were fulfilled. For example, if Napoleon had not lost the Battle of Waterloo, Europe would (or would not) have fallen under his sway. It also agrees with 'vision' in this that it deals with (conditional) existing events and things; it differs from it in this that these events and things never will exist *de facto* but would come into existence if certain conditions would have been fulfilled. In the case of the Battle of Waterloo, Napoleon did not win it, and so the fate of Europe, as a consequence of Napoleon's hypothetical victory, remains unknown to us but known to God.

Viewed from the standpoint of the *manner* of God's knowledge of beings, this knowledge is either 'abstractive' or 'intuitive.' God's *abstractive* knowledge deals with events and things which never exist; His intuitive knowledge, with events and things which actually exist at one time or another.

Viewed from the standpoint of *prospective use*, God's knowledge is either 'speculative' or 'practical' or 'speculative-practical.' *Speculative* knowledge looks solely to the truth involved in knowing. Thus, God's knowledge of Himself is speculative. Practical knowledge refers to the use of knowledge for the making of something, when the intention of making is present. The knowledge which God has of the things he intends to create is a 'practical' knowledge. *Speculative-practical* knowledge is the

knowledge required to make something, but the intention to make it is absent. For instance, God has the knowledge required for the creation of the purely possible beings; however, since He does not intend to create them and give them actual existence, this knowledge, though 'practical' in itself, remains 'speculative,' so that it is a 'speculative-practical' knowledge.

Viewed from the standpoint of God's *attitude* toward things, His knowledge is knowledge either of 'approbation' or 'simple cognition.' God's knowledge of *approbation* pertains to the good. God approves of all morally or (and) physically good things which have existed in the past, or exist in the present, or will exist in the future. *Simple cognition* in God pertains to all morally or (and) physically evil things; these He does not approve. Whatever is a moral or (and) physical evil is a defect, a privation, of a good, and as such it is a lack of being, something which is negative. God, of course, knows of the actual or possible existence of such an evil, because He perceives the defect in the good being, but He does not and cannot approve of the privation of what ought to be present. Every crime is thus known by God through the knowledge of 'simple cognition' without 'approbation' on His part.

It should be carefully noted that these various kinds of knowledge in God represent *no real distinctions* in God. Because of the limitation of his mind, man must form different concepts of God's intellect and speak of these kinds of knowledge *as if* they were diverse forms of knowledge. As has been said before, however, God is one

single, infinitely perfect essence and exhausts all knowable truth regarding Himself and all things distinct from Himself.

The problem of the *scientia media* (intermediate knowledge) has agitated the minds of eminent scholastic philosophers for centuries. It might seem that here is the logical place to discuss the problem of 'intermediate knowledge.' Inasmuch, however, as the divine will-act plays a prominent part in the controversy, the discussion will be postponed until later.

Existence of God's Knowledge

In giving the proof of the existence of intellectual knowledge in God, one can make use of a general argument or of a special argument concerning the various kinds of objects.

THE GENERAL ARGUMENT.

Knowledge is a *perfection*, because it is a vital activity, and vital activity is a perfection for a living being. Animals belong to a higher level of being than plants and minerals precisely in virtue of their knowledge. Man is more perfect than animals and plants and minerals because of his rationality, his intellectual knowledge. Therefore, God must have knowledge. God being the cause of the intellect and intellectual knowledge present in man, he must also have an intellect and intellectual knowledge. Since God is infinitely perfect and absolutely simple, His intellect and its thinking must be infinitely perfect and absolutely simple.

Because of His infinity, He must exhaust intensively and extensively everything knowable. Now, the knowable is the truth, and every kind of being is something that is knowable and in so far true. Therefore, everything that is a being must be known by God. But if God knows every kind of being, He must also know the privations affecting these beings, be they moral or physical. Consequently, nothing whatsoever is excluded from the knowledge of God, and *God knows absolutely everything*.

Everything is a 'being' which does not involve a contradiction, since only a contradiction is strictly a non-being, as it is also a non-truth. Now, whatever is *possible or actual* is really no contradiction; and this includes everything which is necessarily or freely possible, everything necessarily or freely actual (in the past or present or future), and everything conditionally future. These realities involve no contradiction and as such are 'knowable.' Hence, all these objects must be known to the infinitely perfect intellect of God. Consequently, *everything without exception* must be encompassed in an infinite manner in the act of God's knowledge.

THE *SPECIAL* ARGUMENT.

That God has infinite knowledge of *Himself*, has already been shown; it follows necessarily from the fact that His essence and knowledge are identical. The problem here, then, is to prove that His knowledge also extends to all beings other than Himself.

God knows *possible realities*.

Whatever is possible can exist. But a thing can exist only because God can give it being and existence. Such a being, if it received being and existence, would be an *effect* whose perfections must be pre-contained in their cause, God. God, in giving them being and existence, cannot communicate to them a *part* of His own essence, because that would be contrary to His infinite perfection and immutability. Hence, in giving them being and existence, God can only give them a perfection *similar* to His own. He could never make anything dissimilar to His perfections; because the only thing dissimilar to Himself is nonentity ('absolute nothing') and God cannot make nonentity. Hence, things are possible only in so far as they imitate God's own perfections. However, since God knows His own essence, He also knows the *imitability* of His essence; otherwise He would lack this great perfection of self-knowledge. But He can only then know His own imitability if He knows the things that can imitate His perfections. The things, however, which can imitate God and His perfections in their own being and existence, are precisely the things that are 'possible.' Consequently, *God knows all possible realities.*

God knows *actual realities.*

At some time or other, in the past or present or future, actual realities really exist. When they exist, they exist in the presence of God, because of the perfection of His *immensity* and *omnipresence*. Since God is present to them when they exist, He must certainly know them, otherwise His knowledge would be defective; and since His knowledge is eternal and immutable (being identical with His eternal and immutable essence), God must know them from

eternity. It follows, then, that from all eternity God knows whatever realities will be actual in the course of time. Consequently, *God knows all actual realities*.

God knows all *future free acts* which actually occur.

The future free acts are acts which a free agent (for example, man) actually performs at some time as the result of a free decision of the will; they will actually occur at some moment in the future. Due to His *immensity* and *omnipresence*, God must be present to these free acts, and these free acts must happen in God's presence, when they actually occur. Hence, God must know them at the very *moment* when they really happen. Now, this knowledge of the future free acts is absolutely eternal and immutable, since it is identical with God's essence. His essence being eternal and as such prior to the temporal occurrence of these future free acts, His knowledge must also be eternal and prior to them. Consequently, God knows future free acts before they actually take place.

Furthermore, God being infinitely perfect in every way, His knowledge must also be infinitely perfect. In order that God's knowledge be infinitely perfect, it is necessary that He know everything which is objectively true. Now, all future free acts are *objectively true*; they will actually occur, and this is a truth which can be expressed in a true judgment. For instance, I am writing these words at the present moment, and this writing is the result of a free decision on my part; last night it would have been impossible for me to say whether I would be writing at this moment or not, because I myself did not know at that time what I would freely decide to do at this moment. However,

now that I am writing, the 'fact' of my writing at this moment is an objective truth which can be expressed in the judgment that 'I am writing.' And since I am writing at this moment, the true judgment that 'I am writing' expresses a fact which God must have known from all eternity; He knew from all eternity that I would write at this moment, because He knows now that I am writing, and what God knows now He knows eternally. Hence, since God's knowledge is infinitely perfect, and since an infinitely perfect knowledge must know all truth, *God knows all future free acts* which actually occur.

It will be noticed that this thesis closely resembles the foregoing one. The difference lies in the fact that the acts under consideration are the result of a here-and-now free decision. The foregoing thesis dealt with actual realities in general.

God knows all *conditionally free acts* which will not occur. 'Conditionally free acts' are those which would have occurred as the result of a free decision, provided certain conditions had been fulfilled; the conditions, however, have not been fulfilled, and so these free acts *will never* actually happen. God must know such acts. All that is at stake in this proof is the establishment of the *fact* that God knows all conditionally free acts which will not occur, even though man may never understand 'how' God knows them. And now for the proof.

The infinitely perfect knowledge of God's intellect must embrace *everything true and knowable*. Now, even the free, conditionally future acts are true and knowable. Consider these two judgments: 'If the American Revolution in 1776

had miscarried, this country would be a colony of England today,' and 'If the American Revolution in 1776 had miscarried, this country would not be a colony of England today.' It is evident that one of the members of this disjunction is true and one is false, even though the condition has not been fulfilled. The two judgments are *contradictory*. Both simply cannot be true; one must be true, and the other must be *false*. We do not know which is the true judgment and which the false; but we do know that only one, and that a definite one, of these judgments must be true, while the other judgment must be false.

But now, since God knows 'all that is *objectively true and knowable*, He must, in virtue of the infinite perfection of His knowledge, also know which of these two judgments is true and which false. This, however, is only possible if He knows what event would happen in the hypothetical case mentioned above, *if* the condition given were verified, even though it was not and never would be verified. The fact itself is clear. In every case of conditionally free acts, though they will never actually occur because of the non-fulfillment of the conditions involved, something of a definite character *would have* occurred *if* the condition had been fulfilled. The truth contained in such conditionally free acts cannot be unknown to God.

Summing up, it is clear that *everything*, which in any way is *knowable*, must be known by God. If anything knowable escaped his knowledge, He would not be infinitely perfect.

Nature of God's Will

Will is a form of appetency, and an appetency (or, appetite), generally speaking, is the inclination or propensity of a being for something which is good for it. In a more special sense, appetency is the inclination or propensity of a being for an apprehended good. In this sense, it follows a cognition of the good, and this cognition may be either sensory or intellectual. In man, the appetency of an intellectually apprehended good is termed 'will,' so that the human will is defined as 'rational' appetency. In speaking of the human will as a 'rational' appetency, consideration is given to the fact that man possesses rationality and that man's intellect is a reasoning power or reason.

God, as we have seen, does not 'reason' from premises to conclusions. His intellectual knowledge is pure insight, pure understanding, not reasoning. Reason concludes from the known to the unknown. For God's intellect, however, there is nothing unknown. In attributing 'will' to God, the imperfection of knowledge implied in 'reasoning' must be excluded. Intellectual knowledge, strictly as such, does not necessarily involve knowledge due to 'reasoning'; intellectual knowledge is more perfect when it is pure 'understanding' than when it is 'reason.' God's knowledge, being infinitely perfect, must be pure intellectual insight and intellectual understanding. Hence, God's *will* must be described as an *infinitely perfect intellectual appetency*.

Like the divine intellect, the divine will is an attribute of God's being. Entitatively it is one with God's essence. The essence of a being is conceived to be prior to anything

which flows from the essence, and both intellect and will follow the constitution of the essence. Hence, although the 'will' in God is entitatively one with His essence, according to man's way of knowing God the will flows from His essence, and as such it is an 'attribute' of God. It is not a quiescent, but an active, attribute. Just as the intellect is the principle of knowledge (intellection) in God, so God's will is the principle of His volition. God's will, therefore, is an *operational attribute*.

The volition of God is identical with His being, as are all attributes of God. It is, therefore, self- subsistent. There is no real distinction between God's will, viewed as a 'power,' and His volition, viewed as an 'operation'; God's will is conceived as a 'logical power' with respect to its operation, so that there is only a 'logical distinction' between them. The volition of God is absolutely simple, because everything in God consists of one indivisible pure act; hence, God *is* His will and His volition. His volition is also *infinite* in perfection; this follows necessarily from the fact that His volition is one reality with His infinitely perfect being. Since volition always proceeds from the conscious apprehension of the good on the part of the intellect, it is obvious that there can be nothing blind and instinctive about the volition of God; it must be intellectually *conscious*. Similarly, there is nothing arbitrary about God's volition; it is essentially *well-ordered*, so that He wills or loves Himself because of His infinite perfection and all other beings because of their similitude to His perfection.

The *object* of intellectual volition is the intellectually apprehended *good*. Man, as we know, may be in error

regarding the nature of things and strive for an 'apparent' good rather than a 'real' good. God's intellect can neither be deceived nor be mistaken in its knowledge of what is good and what is evil: God knows all things as they actually are. God's will follows His intellectual knowledge. Now, the proper object of the will is the 'good,' just as the proper object of the intellect is the 'true.' There can, therefore, be no error in the object of God's operations of the will. If God has volition at all, it can only be centered on the 'good' as known by His intellect. God wills or loves all beings according to their intrinsic goodness and in proportion to their worth. He thus loves Himself as the Supreme Good supremely, and this love is a *necessary love*, without choice and with infinite intensity. His love for creatural beings, on the other hand, is a matter of *free choice*, so far as their existence and their amount of reality is concerned.

Existence of God's Volition

That God has a will and volition follows from His spirituality and intellectuality. According to sound psychology, an intellectual being, when in the presence of the 'good,' perceives that it is suitable to its own being and naturally desires it as an object to be sought and enjoyed. But 'seeking' and 'enjoying' are acts of a will in an intellectual being. Hence, unless this volition contains imperfection in some manner, it is a *pure perfection* and as such must be present in God. Naturally, man's volition is an operation superadded as a new reality to the power of the will and as such is an 'accident'; the will of man is 'dependent' on the

objects with which it deals, because it cannot desire a good except under the condition that the good be presented to the will by the intellect. These imperfections, however, are not inherent in the will and its operations strictly a 'will' and 'volition'; they pertain to man, because man is a being in which composition is a normal part of his nature. These imperfections removed, volition is a 'pure perfection.' God, however, possesses all 'pure perfections,' and in His being there can be no imperfections for the simple reason that everything in God is one infinitely perfect reality without accidents and without composition. Therefore, God has a will and volition capable of desiring the good presented by the intellect.

Furthermore, God would be *imperfect*, if He did not possess a will and volition. If God had no will, He could not control things or dispose of them as He wished; He could not issue any commands or prohibitions; He could not love anything, not even Himself. Under such circumstances, however, God would be very imperfect, less perfect than the ruler of a nation or the father of a family. Now, God cannot be imperfect from any standpoint. Consequently, He must possess a will and volition.

Finally, the very fact that *man* has a will and volition, is a clear proof that God must also have a will and volition. Man's nature is a contingent and caused reality given to him by God as the cause. Now, the cause must pre-contain the perfection of the effect either formally or eminently. Man, however, does not possess a will because he is an organic being; he is a man and more than an animal, plant, or mineral precisely on account of his *spirituality*. Hence,

man's spirituality and his *will resulting there-from* are not 'mixed' but 'pure perfections' which must exist formally (strictly as such) in God. Consequently, will and volition are formally, not merely eminently, present in God.

There must be an *object* toward which the will and its volition is directed, and this object must be some good. From this it follows that God loves Himself and all other beings distinct from Himself.

God loves *Himself*.

The will of God is not a power or faculty; it is absolute and pure act, infinite in perfection. Since the divine will is an infinite act, it must also love an infinite object. Now, God alone is infinite in His reality. Therefore, God is the infinite object of the divine will and its volition. Hence, God loves Himself with an infinite love.

God loves *all other beings*.

All beings other than God are contingent in their essence and existence. The sufficient reason for their essence and existence does not lie in them but in God. God gives them their essence and existence. Hence, all beings which actually exist, have existed, or will exist, receive their existence ultimately from God, because He *wished* them to exist. But to 'wish' is to 'will' and 'love.' Consequently, God loves all beings distinct from Himself. This follows also from the fact that all creatural beings, whether they be *actual* or *merely* possible, can have essence and existence only in so far as they are (actual or possible) imitations of His own perfections. Now, God loves His own perfections, because His perfections are absolutely identical with Himself, and

He loves Himself. Hence, God loves all other beings; otherwise He would not love His own being infinitely.

Only *being* can be a *good*. Only 'being' is something which is knowable in itself, and only the 'knowable' can be known in itself. Hence, only 'being' can be proposed by the intellect to the will as a 'good.' It is evident, then, that God's will *cannot love privations, defects, and evils* as an object, because such things (if we wish to call them 'things') are nonentities, non-beings, nothing; 'nothing,' however, since it is a negation of being, cannot be the object of volitional activity: there is nothing to will.

Necessity and Freedom in God

'Necessity' and 'freedom' are opposing concepts. What is 'necessary' cannot be 'free,' and what is 'free' cannot be 'necessary.' In a general way, freedom is the absence of necessity. In order to understand the question of 'necessity and freedom in God,' it will be advisable to clarify their meaning.

In a *wide* sense, freedom is the absence of external coercion or restraint which hinders an appetency from expressing itself in external action. Thus, a shackled person lacks the freedom of movement; when the restraining shackles are removed, he has 'freedom from coercion.'

In a *strict* sense, freedom is the absence of intrinsic necessity or determination in the performance of an act. Something is 'intrinsically necessary' when it is determined by its very nature to be what it is and to act as it does. Applied to the will, 'freedom' means that the will is not

necessitated by its nature to act in a determined manner, but is capable of choice even when all the conditions for acting are present.

There are *three types of freedom* in the acts of the will, so far as human volition is concerned. First, there is the *freedom of exercise* or contradiction; the will can choose freely between willing and not willing, between acting and not acting. For instance, a person can freely choose to read or not to read. Second, there is the *freedom of specification*; the will can freely choose between one object and another object and therefore also between one act of the will and another act of the will. Thus, a person can freely choose between the act of reading and the act of taking a walk. Third, there is the *freedom of contrariety*; the will can freely choose between a moral good and a moral evil. A person, for example, can choose between telling the truth and telling a lie. The 'freedom of contrariety' is reducible to one or the other of the first two types, since it is a choice either between acting or not acting or between one object or another object.

The *freedom of the will* is thus defined as *the ability of the will, all conditions for action being present, to decide whether to act or not to act and whether to act in this manner or in that manner.*

The essence of the freedom of the will, as just defined, consists in indetermination, so that the will, no matter what the nature of the antecedent external and internal conditions for action may be, is not determined to act by necessity. The absence of the freedom of the will is what is

meant by *necessity*, so that the will, the conditions for action being present, must act in a determined manner.

After these preliminary explanations of 'necessity' and 'freedom,' the problem of their presence in God's volition should not be difficult to solve.

GOD LOVES *HIMSELF NECESSARILY*.

God's willing is purest act. As such, it demands an *adequate* object. This adequate object is God Himself, since He alone is infinite, and the adequate object of an infinite act must be infinite. But now, since the infinite volition of God is identical with God's essence, it must be as necessary as God's essence is. And since the act of volition consists in love, God loves Himself *necessarily*; that is to say, His love of Himself is *not free*, but determined by His very nature.

GOD LOVES *ALL OTHER THINGS FREELY*.

All beings other than God are finite regarding their number and the *amount of perfection* present in their being. This is evident. There must be a sufficient reason for this number and amount of perfection. The sufficient reason cannot lie in the *essence of the beings*. Their essence being the same, all the 'possible' individuals of the same essence would have to have received existence also. Experience, however, shows that this is not so; for instance, there could be more human beings in existence than actually exist. Nor can the sufficient reason be found in the *necessity of creation* on the part of God. This necessity on the part of

God could find its proper explanation only in a *need* of God for creatural beings; unless this 'need' were present, there would be no 'necessity' for creation. However, God, as the infinitely perfect and self-sufficient Being, cannot have a 'need' for anything outside Himself. Since, therefore, we find the necessity for creation neither in God nor in the creatures, the sufficient reason for the definite number and amount of perfections in creatural beings must reside in the *free decision* of God. Hence, God wills, and therefore loves, all creatures freely.

Again, if there were a *necessary relation* between God's will and the existence of creatural beings, He would of necessity be constrained to create either nothing at all or everything possible or some beings to the exclusion of the rest. None of these alternatives is true.

The first alternative, that God would be necessitated to give existence to *nothing at all*, is manifestly *false*. We ourselves and many other creatural beings actually exist.

The second alternative, that God of necessity gave existence to *everything possible*, is also manifestly *untrue*. More things are possible and could, absolutely speaking, exist than actually do exist.

The third alternative, that God was necessitated to give existence to *some things to the exclusion of the rest*, is also *untenable*. Why should God be compelled to give existence to the limited number? At one time all creatural beings were merely possible and not actually existing. As 'possible' beings, they were all on a footing of equality. There can, then, be no reason in the possible beings *themselves* why God should be necessitated to create just some, and not

more or less. Since all possible beings can imitate God's perfections, all have the possibility of receiving existence, so far as they themselves are concerned. If, then, a necessity exists to give some existence rather than others, the reason for this necessity must be *in God*. But what could constrain God? Certainly, the infinite imitability of God's infinite perfections cannot be exhausted by the existence of some creatural beings to the exclusion of others, because all possible beings are imitable of God's perfections. If there were any reason for this necessity in God, it could only be that He were constrained by His nature to make the best things His power could produce. Such a supposition implies that the present world is the *best possible world*. But this is not the best possible world. To leave all other beings out of consideration, man knows from his own personal experience that he himself labors under many physical, intellectual, and moral defects; he could be better than he actually is. And that is also true of other beings. But if the necessity for creating the present world as it is lies neither in the creatural beings themselves nor in God, then there can be no necessity for God to create this world as it is, giving some beings existence to the exclusion of the rest. Now, 'necessity' and 'freedom' are opposites; if there is no 'necessity,' there must be 'freedom.' Consequently, God's will is *free* in relation to the existence of creatural beings. But if God wills them freely, He also loves them freely.

The conclusion, therefore, is inevitable that He loves *Himself* with an absolutely *necessary* love and *all other beings* with an absolutely *free* love.

Liberty and Immutability

The activity of the free will in man is connected with potentiality. The freedom of man's will is the result of a power or faculty which is indifferent to different acts and objects. Every act of man's will is an added perfection, an accidental determination, and this addition of perfection involves a change in the will. On account of His absolute simplicity, a change or a super-added perfection in God is an impossibility. Since God is *ens a se*, a self-subsistent being, He is pure actuality, and His infinite perfection is an absolutely *necessary* perfection.

God's will-acts being identical with His *necessary essence*, *how can they be free?* Must not His will-acts be just as necessary as the divine essence? But can a free reality be necessary and a necessary reality free? Is not a *contradiction* involved in the very concept of the freedom of God's will?

That the *reconciliation* of God's freedom and immutability presents a grave difficulty, is apparent. Immutability seems to exclude all self-determination. Can a higher unity be effected between them?

We must bear in mind first of all, that there must be many things in an infinitely perfect being which cannot be grasped and comprehended by man's finite mind; there must be many *natural mysteries*. Man would have to have an infinite mind to encompass infinite perfection. Man's inability to fathom certain truths, so long as these truths are firmly established, cannot as such shake their validity. The inability to understand something is no criterion of its

truth or untruth. *Contradictions*, of course, are not and cannot be true; and whenever contradictions are irrefutably shown to exist, man knows that an error must have been committed. But when speaking of the infinitely perfect being, we must be very careful in our assertions. Many things, when applied to creatures, may involve a contradiction in the very terms and would be physically and metaphysically impossible; but they need not be a contradiction in an infinitely perfect being. Thus, to speak of absolute simplicity or infinite perfection in a creatural being, or of free will in a brute, is a contradiction. When applied to a higher being, however, we perceive that no contradiction is necessarily involved.

Then how about God's *freedom and immutability*? Is no satisfactory explanation available? The following explanation, given by St. Thomas,³ is offered as a *solution* of the problem. He says:

"Sometimes a necessary cause has a non-necessary relation to an effect; owing to a deficiency in the effect, and not in the cause. Even so, the sun's power has a non-necessary relation to some contingent events on this earth, owing to a defect not in the solar power, but in the effect that proceeds not necessarily from the cause. In the same way, that God does not necessarily will some of the things that He wills, does not result from defect in the divine will, but from a defect belonging to the nature of the thing willed, namely, that the perfect goodness of God can be without it; and such defect accompanies all created

good . . . As the divine existence is necessary of itself, so is the divine will and the divine knowledge; but the divine knowledge has a necessary relation to the thing known; not the divine will to the thing willed. The reason for this is that knowledge is of the things as they exist in the knower; but the will is directed to things as they exist in themselves. Since then all other things have necessary existence inasmuch as they exist in God; but no absolute necessity so as to be necessary in themselves, in so far as they exist in themselves; it follows that God knows necessarily whatever He knows, but does not will necessarily whatever He wills."

— ST. THOMAS AQUINAS

The solution of St. Thomas can be expressed in a somewhat different way, as follows. The free act of the divine will, considered *entitatively*, is *necessary*, because it is identical with God's essence which is self-subsistent and necessary. This same act of the divine will is *free* in its *relation to the contingent object* to which it is directed. The reason for the freedom of the act of the divine will lies in the 'direction' of the act, and this direction brings in a *logical relation* between the act of the divine will and the contingent being. There can be no question of a physical or metaphysical composition or change in God on this account, because this relation is only 'logical.' In the human will there is an indifference of the 'faculty' (the will) in regard to its respective acts, and through its acts it is indifferent to

the 'objects,' and thus the will is free. In God, however, the will is not a 'faculty' but a *pure act*, and this pure act is *indifferent directly in regard to the contingent objects*. Man has one faculty and a real multiplicity of acts; God has one act and a virtual multiplicity of acts. In other words, *entitatively* (in so far as the act has 'being') the act of the divine will is one with God's essence and therefore *necessary; terminatively* (in so far as the contingent being is the 'object' or 'term' of the act), the act of the divine will is *free*.

Is the mystery hereby explained? It is not. But it is a solution which removes the apparent contradiction involved in the concepts of God's freedom and immutability. After all, a contradiction exists when one affirms and denies the same thing in the same respect of the same subject. Thus, if one were to say that 'God is immutable' and that 'God is not immutable,' that would be a contradiction; or, if one were to say that 'God is free' and 'God is not free,' that would be a contradiction. In both instances, however, it would be necessary to maintain the same respect or standpoint in the affirmation and denial; otherwise there might be only an *apparent* contradiction. The solution of St. Thomas is acceptable, because it leaves intact the established truth of God's necessity and immutability and also preserves the equally established truth of the freedom of God's will. At any rate, his solution avoids an open contradiction, and that is sufficient for a solution to be acceptable in a matter so deep and mysterious.

Much more could be said about God's intellection and volition. So much, however, should be clear from what has

been given above: God has an intellect and a will and also their corresponding operations of knowledge and volition. But intellect and will and their respective acts must ultimately be identified with God's infinitely perfect essence. *That* this is so, is manifest; *how* this is so, exceeds the capacity of the human mind.

Summary of Chapter XII

This chapter deals with God's internal operational attributes of *intellection* and *volition*.

1. *Nature of God's Intellection.* — God, being spiritual in essence, possesses intellectual life. God's *act* of knowledge is identical with His substance, self-subsistent, immutable, simple, infinitely perfect; it is an absolute understanding, true, infallible, and independent of creatures.

2. *The Object of God's Knowledge.* — The *formal principle* of knowledge contains a double element: the 'external' element of the 'known object' and the 'internal' element of the 'intelligible species.' The 'intelligible species' of God's knowledge is the divine intellect itself; the 'object known' is God Himself as the primary object and all things distinct from God as the secondary object.

3. *Kinds of Divine Knowledge.* — Man distinguishes various kinds of knowledge in God's intellect: simple intelligence and vision, and (as many claim) intermediate knowledge (*scientia media*); abstractive and intuitive; speculative, practical, and speculative-practical; knowledge of approbation and simple cognition without approbation.

4. *Existence of God's Knowledge.* — *General argument.* Knowledge is a perfection, because it is a vital activity. Since God is infinitely perfect, He must know absolutely everything knowable.

Special argument. Truth is contained in everything that is 'being.' It is therefore contained in the purely possible realities, in the actual realities, in the future free acts which

will actually occur, and in the conditionally free acts which will not occur because the condition of their existence was not fulfilled. Now, infinitely perfect knowledge must embrace everything true and knowable. Therefore, God knows all these objects of knowledge.

5. *Nature of God's Will.* — God's will is an infinitely perfect intellectual appetency. It is self-subsistent, absolutely simple, infinitely perfect, conscious, and well ordered. Its object is the intellectually apprehended 'good.'

6. *Existence of God's Volition.* — That God has a will and volition follows from His spirituality and intellectuality. God would be imperfect without a will and volition. Volition is not a 'mixed' perfection but a 'pure' perfection, because 'love' is a pure perfection.

There must be an 'object' toward which God's volition is directed, and this object must be some 'good.' God thus loves *Himself and all other beings*.

7. *Necessity and Freedom in God.* — 'Necessity' and 'freedom' are opposing concepts. Applied to the will, freedom is the ability, all conditions for action being present, to decide whether to act or not to act and whether to act in this manner or in that manner.

God loves Himself necessarily, because His will and volition are identical with His essence, and His essence is necessary.

God loves all *other beings freely*. The sufficient reason for the number and the amount of perfection present in contingent beings cannot be due to their 'essence'; otherwise all possible beings of the same essence would also have to exist. Nor can the sufficient reason lie in the

‘necessity of creation,’ because God does not ‘need’ creatures; He is absolutely perfect and self-sufficient. Again, if there were a necessary relation between God’s will and the existence of creatural beings, He would of necessity be constrained to create either nothing at all or everything possible or some beings to the exclusion of the rest. None of these alternatives, however, is tenable. Therefore, God loves (wills) all creatural beings freely.

8. *Liberty and Immutability.* — God’s will-acts being identical with His necessary essence, how can they be free? Entitatively, the act of the divine will is one with God’s essence and therefore *necessary*; *terminatively*, the act is indifferent toward creatural objects and therefore *free*. The whole matter is a natural mystery.

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¹ *Summa Theologica* (New York: Benziger Bros.), Ia, qu. 14, art. 2

² *Ibid.*, art. 5.

³ *Summa Theologica* (New York: Benziger Bros.), I, qu. 19, art. 3, ad 4 et 5.

Chapter 13

OMNIPOTENCE AND CREATION

SECTION II: RELATIVE ATTRIBUTES

BESIDES THE IMMANENTLY OPERATIONAL ATTRIBUTES, WHICH produce no external effects, there are also present in God *virtually transitive* operational attributes and activities, which produce (or, at least, 'can' produce) external effects. Chief among these are omnipotence and creation, concurrence and conservation, providence and governance.

God, of course, need not have made any creatures. As the supreme and infinite good, He is absolutely and infinitely sufficient unto Himself. He is and would eternally have been 'omnipotent' even under the supposition that no creatures exist, because He could always have given them essence and existence had He so desired and decided.

As a matter of fact, creatural beings do exist. We ourselves, for instance, and many other beings have existence. The problem, therefore, arises: How did creatural beings come into existence originally? The solution to this problem is: through the omnipotent, creative activity of God. *Omnipotence* and *creation*, then, must now be discussed.

The Notion of Omnipotence

The core of 'omnipotence' is the concept of 'power,' and *power* is the ability to do something or produce something. Power is the principle of action. Action may be either performance or production. Action always results in some effect, either in doing something or in producing something. It is in creatural beings that man first notices

effects; and from such effects he concludes to the existence of 'power' capable of producing effects, because every effect demands a corresponding cause. Some effects are primarily 'immanent,' perfecting the active subject, as in the case of thinking, willing, and other vital operations; or, they may be primarily 'transient,' perfecting the passive recipient, as in the case of making steel out of iron or of throwing a ball. Whether the effects be the result of mere performance ('doing something' immanently) or efficient causality ('producing something' transiently), power is necessary to bring about the result.

In speaking of God's 'omnipotence,' reference is not made to His immanent (vital) activity but to His power to *produce* something transiently through efficient causality.

Omnipotence, as the word indicates (Lat., *omne*, all, everything; *potentia*, power), means that *God can produce everything*. Since there can be no 'passive power' in God, namely, the power to receive some perfection from some other being, omnipotence necessarily means 'active power,' namely, the power to produce all effects through efficient causality. And when it is stated that God can produce 'everything,' it is well to note the word 'thing.' The word *thing* is equivalent to *being*, and 'being' means whatever can exist. Omnipotence, therefore, implies that God can give existence to whatever can exist. In other words, God can produce whatever is *possible*.

The opposite of 'possible' is 'impossible.' Impossibility is either relative or absolute. Impossibility is *relative* when something exceeds the capability of a particular power; it does not involve a contradiction in itself, but the power in

question is lacking or is too feeble to produce it. Thus, an ordinary man cannot lift an object weighing a ton; it is not a contradiction in itself to lift a ton, but the power of an ordinary man is incapable of doing it. What is impossible for the ordinary man need not be impossible for a machine with hydraulic equipment. Relative to an ordinary man, then, the lifting of an object weighing a ton is an impossibility; relative to a greater power, however, it need not be an impossibility. Impossibility is *absolute* when something exceeds the capability of every power; it involves a contradiction in its very concept, so that it is really a non-being, a 'nothing.' God, for instance, cannot sneeze or cough, blush or have indigestion, become weak or grow old, and so forth. If God did any of these things He would be a 'material' being, while in reality He is a 'spiritual' being; a 'material spiritual being,' however, is a contradiction and as such a not being which cannot exist. Similarly, God cannot make a square circle or a stick with only one end or a stone so heavy that He cannot lift it. A 'square' consists of straight lines, and that excludes the round line of a circle; a 'circle' consists of a round line, and that excludes the straight lines of a square: since both the 'square' and the 'circle' are eliminated, there is nothing for God to make. In all such cases, the fault is not with God's power; the fault is with the supposed thing, because such a thing, involving a contradiction in itself, is a nonentity; where there is nothing to make, God cannot make it; where the effect cannot exist, no cause can give it existence. The only thing opposed to 'being' is 'absolute non-being,' sheer 'nothingness.'

Anything that is a 'being' at all can exist, and such a being is 'possible.'

The statement that *God is omnipotent* means that he can give existence to *any possible being without exception*, and a 'possible being' is one that does not contain a contradiction in its very concept or term.

Like other perfections of God, His omnipotence is *formally immanent* but virtually transient; that is to say, His omnipotence, considered from the viewpoint of its reality, is identical with God's essence, but it can produce beings distinct from the divine essence. God's omnipotence is 'extensively' and 'intensively' infinite. It is *extensive* because God's power can bring into existence anything and everything 'possible' and because it can never be exhausted. In other words, God can never come to a point where there would be nothing more to make, since there is absolutely no limit to His efficient causality. The *intensive* infinity of God's power consists in this that He produces beings with perfect independence; hence, He causes them without the assistance of an instrumental cause, without the influence of any extraneous causality, without difficulty or exertion. Having specified the meaning of omnipotence, its existence in God must be proved.

GOD IS OMNIPOTENT.

In God there can be no composition of power and essence. God's power is identical with the divine essence; and since the divine essence is infinite, the divine power must be infinite. Now, infinite power must be *omnipotent*;

that is, it must be able to bring to existence whatever can intrinsically have existence. Everything, however, which does not involve a contradiction in its concept is absolutely possible and as such can intrinsically have existence. God's infinite power, therefore, must be able to give existence to all that is absolutely possible. But to give existence to a thing is to produce it. Consequently, God's infinite power must be able to produce all that is absolutely possible. And that is the meaning of 'omnipotence.'

This capability on the part of God's power to produce all possible beings must be present in God. If God could not produce *everything* that is possible, He would be able only to produce *some* things, no matter how large the number might be, to the exclusion of at least one other possible thing. Evidently, that power would be greater and more perfect which would also include this one other possible thing. Consequently, a power that cannot produce *all* possibles is not the greatest and most perfect conceivable; it would surely not be infinitely perfect, because it would lack some perfection. But God's power is infinitely perfect, because it is identical with His infinitely perfect essence. God's power, therefore, must be able and is capable of producing all things which are intrinsically possible. Hence, God is truly omnipotent.

GOD'S POWER IS *INEXHAUSTIBLE*.

If ever God reached a point where His power would be exhausted in its productivity, so that nothing more could come into existence through His efficient causality, the

power of God would be gone. However, together with the cessation of God's power, His essence would be gone and cease to exist. This would be inevitable, because the divine power is identical with the divine essence. Hence, if God's power would be exhausted, *God Himself would cease to exist*. That, however, is impossible. Consequently, God's power cannot be exhausted in its productivity.

One cannot say that God's power would be exhausted if there were *no more objects to produce*. In such a case the divine power would not really be exhausted; the store of possibles would simply be exhausted. However, even this latter assumption cannot be consistently maintained. Since the divine essence is infinite in perfection, its imitability by creatural realities must also be without limit. As a result, the store of possibles could be exhausted only if the divine essence were limited in its perfections (and its imitability limited in consequence of this condition) or if the actual number of imitations were infinite. But either alternative involves a contradiction. The 'infinite' perfection of God cannot be 'limited'; if it were, the 'infinite' would be 'finite'; and that is a contradiction. That an 'actually infinite number' of creatural imitations also involves a contradiction, will be shown in a later section. Therefore, the store of possibles is inexhaustible, and God's power is also inexhaustible.

It follows, then, that God's power can produce whatever is intrinsically possible, and it is inexhaustible in its productivity. God, therefore, is truly *omnipotent in power*.

From the omnipotence of God one cannot legitimately conclude that He must be capable of producing an *infinite*

effect. An 'infinite effect,' like a square circle, belongs to the category of the absolutely impossibles; it involves a contradiction in its very concept. Since an 'infinite effect' is an *effect*, it is something that is *produced* and *dependent*. Now, 'being produced' and 'dependence' are absolutely incompatible with 'infinity'; a produced and dependent being is by the very fact of its production and dependence essentially 'finite.' The contradiction is evident. Being an 'effect,' it is finite; being an 'infinite' effect, it is 'infinite.' But a finite-infinite being is a contradiction, and as such it is an impossibility; it is a nonentity, a nothing, which cannot receive existence.

The Foundation of Possibles

A thing is said to possess *external* possibility when a power exists which can produce it. It possesses *internal* possibility, when the thing as such can have or receive existence, without regard to the actual existence of a power which can, as a matter of fact, actually produce it. The question now to be discussed is this: What is the *reason*, the *foundation*, for this 'internal possibility'? What is the reason, the foundation, why some things are intrinsically possible (and therefore 'can' exist) while other things are intrinsically impossible (and therefore 'cannot' exist under any circumstances)?

The answer to this question will be different, depending upon whether one asks for the *immediate* or *ultimate* foundation of internal possibility. Both answers will be given.

The *immediate foundation* of the internal possibility of the possibles lies in the *compatibility of the elements* which constitute the essence of a thing.

This is shown by the *idea* of 'internal possibility.' That thing is said to be intrinsically possible whose constituting elements do not contradict one another, but which can exist together; in other words, whose constituting elements are compatible and sociable. If one asks why a 'man' is intrinsically (internally) possible, it is because 'animality' and 'rationality' (the constitutive elements of the idea of 'man') can be united in one concept and realized as one being; these elements of man's nature are thus compatible and sociable.

Reversely, a thing is intrinsically or absolutely impossible whose constituting elements contradict one another and so cannot exist together; such contradictory elements are incompatible and insociable. Thus, a 'square circle' is intrinsically impossible, because 'square' and 'circle' contradict and mutually exclude each other; because of the incompatibility and insociability of the elements of 'square' and 'circle,' a 'square circle' is neither a square nor a circle, but absolutely nothing.

The immediate reason or foundation of internal possibility, therefore, is the *non-contradiction*, the *compatibility*, of the thought-elements constituting the idea of a thing. This is called the *formal principle* of internal possibility.

There must be a reason, a foundation, for the intrinsic possibility of the possibles which lies deeper than the essence of the possible things themselves. The question is:

What is the ultimate reason and ground why some constitutive elements are compatible, thereby making a being intrinsically possible, while other elements are incompatible, so that a being is intrinsically impossible?

God is the ultimate ground of the intrinsic possibility in all possible things.

This must be so. The intrinsic possibility of things must have its ultimate reason and foundation *outside the entire class of possibles*. Being only 'possible,' they themselves cannot give to themselves constitutive elements which would be either compatible or incompatible. If the ultimate ground for the compatibility or incompatibility of the constituting elements of their being were found in them, they themselves would be the reason or principle why some things are intrinsically possible (for example, a mountain of gold) and others intrinsically impossible (for example, a square circle). The possibles, however, are *subject* to the law of contradiction and non-contradiction (intrinsic possibility), regarding both their essence and their existence, and as such must *conform* to this law in order to be 'possible' at all. They cannot, then, be the reason or principle of this law. Hence, there must be some being outside the entire class of possible beings, which is the ultimate reason or foundation of their intrinsic possibility. Now, there is only one being outside the entire class of possible beings, existent and non-existent, and that is God. God, therefore, is the ultimate ground of the intrinsic possibility of all things.

What, precisely, is it in God that must be conceived to be the ultimate foundation of intrinsic possibility?¹

GOD'S ESSENCE IS THE ULTIMATE GROUND OF INTRINSIC possibility.

God is the ultimate ground for all possibility. But there must be something in God which is logically prior and deeper than His omnipotence, will, and intelligence, which is the ultimate reason why some constitutive elements of creatural essences are compatible or incompatible. This can only be God's essence.

A possible thing is fundamentally a 'being,' an 'essence,' while an impossible thing is fundamentally a 'non-being,' a 'non-essence.' Now 'being' ('essence') cannot have its ultimate ground in anything but 'being' ('essence'), because 'being' can proceed only from 'being' and 'existence' from an 'existent.' Consequently, God's existing *being* or *essence* is the ultimate foundation for the intrinsic possibility of things. Because God possesses 'being' to the fullness of infinite perfection, other things can obtain 'being' from Him in a limited and participated degree; they are *creatural imitations* of God's essence which He can *produce*. Thus, they are capable of receiving existence (that is to say, they are 'possible') from His omnipotence, through an act of His will, guided by His intelligence. On the other hand, a 'non-being,' a 'non-essence,' a 'nothing,' is the antithesis of God's being and essence and can, therefore, not imitate God in any way; for that reason such a thing is incapable of receiving existence from Him, that is, it is 'impossible.' Anything, consequently, which involves a contradiction in its very concept, is 'nothing'; and 'nothing' cannot exist. God

could never make it either extrinsically or intrinsically possible without contradicting His own intelligence and essence.

God's essence is thus seen to be the *ultimate* reason, or ground, or *foundation of all intrinsic possibility*, just as His omnipotence, guided by His will and intelligence, is the ultimate ground for all extrinsic possibility. This is equivalent to saying that God's essence is the ultimate reason why the constitutive elements of creatural essences are compatible among themselves; and God's omnipotence is the ultimate reason why creatural beings can be produced and thereby receive actual existence. The only thing which God cannot produce through His efficient causality is that which is 'nothing,' and 'nothing' imposes no kind of limitation on either God's being or His power.

The Notion of Creation

Closely related to God's omnipotence is the concept of *creation*. First, though, it will be necessary to obtain an accurate notion of what 'creation' means.

Creation is a type of productive action, and productive action always terminates in an effect. Correspondingly, creation may be defined either with emphasis on production as the starting point of the action (*terminus a quo*) or with emphasis on the produced reality as the goal or termination-point of the action (*terminus ad quem*). Some philosophers prefer the first method; others, the second. One thus finds different definitions of 'creation.'

St. Thomas uses both methods in his works. Thus, he says: "The proper mode of His action is to produce a whole subsistent thing"² "Creation is the production of a being"³ "to create is to make something from nothing"⁴ "creation is the production of the whole being."⁵ In these definitions he begins with the productive action as it proceeds from God. In the following definitions he places the emphasis on the produced thing: "Creation, which is the emanation of all being (*totius esse*), is from the *not-being* which is *nothing*"⁶; "Creation, whereby a thing is made according to its whole substance."⁷

Later scholastics have combined the two standpoints into one comprehensive definition. 'Creation' is thus defined technically as *the production of a thing hitherto not existing, without the use of any subject-matter from which it is produced (productio rei ex nihilo sui et subjecti)*.

Creation is said to be *productio rei*, 'the production of a thing.' It is a 'production,' and this word signifies the making of something through the positive action of an efficient cause. It is the production of a 'thing,' and 'thing' here means as much as a 'being' or a 'reality.' Creation is said to be *productio rei ex nihilo sui*, 'the production of a thing hitherto not existing.' This means that the 'being' in question is something new, something that did not have existence before the productive action gave it existence; it simply begins 'to-be,' to exist, in virtue of the efficient causality of the producing cause; before this cause gave it existence, it was a relative 'nothing,' something merely possible, but not as yet an actuality in the realm of existent beings. Creation is said to be *productio rei ex nihilo sui et*

subjecti, 'the production of a thing hitherto not existing, without employing any subject-matter from which to produce it.' The phrase *ex nihilo subjecti* excludes any and every kind of pre-existent substrate, such as matter, out of which the new being might be produced. In other words, creation is not a 'change' or 'generation' of one being out of another being. When parents beget a child, for example, their productive action is not a 'creation' in the technical sense of the term, because their action presupposes the previous existence of a material substrate (ovum and semen) as necessary conditions for the process of fecundation; this process is therefore called 'generation' or 'procreation' rather than 'creation' strictly as such. Similarly, when an organism changes nonliving food into its own living substance in digestion, its action is a 'productive action,' but it is not 'creation,' because the food is already in existence at the time. In order that a productive action be truly a 'creative' action, the new thing, both from the standpoint of its own being and from the standpoint of any kind of pre-existing substrate from which it could derive existence, must be 'nothing.' It is this *productio rei ex nihilo subjecti* which properly characterizes creation. That is what St. Thomas meant when he spoke of "the whole subsistent being," "substantial being," "whole being," "all being (*totius esse*) ," "whole substance"; and that is why he defined 'creation' as "making something from nothing."

By 'creative power' is thus understood the power to produce something *out of nothing*. The phrase 'out of nothing' does not imply that 'nothing' is some sort of material or substratum out of which something is made, as

a statue is carved out of a shapeless mass of marble or a cup is molded out of formless clay; the phrase means that there is *no pre-existent material of any kind* out of which the (created) thing is made, but that the 'total being' of the thing is produced by the creative power.

No one, except an out-and-out occasionalist or phenomenalist, denies that creatural beings exercise true productivity through efficient causality. Chemical compounds, plants, animals, and men are being continuously produced through causal action. The earth, the solar system, and the galaxies are constantly in a process of change through the interaction of bodies. Man unceasingly produces physical changes in himself and in other beings. In all these changes the effects observed are the results of *transmutative action*. These effects are either accidental or substantial, as the case may be, but they are always a *changing* of one kind of existing being into a different kind of existing being. Creation, as the production of the 'total being' out of nothing, is never observed to happen.

The problem of the divine action of creation is not concerned with *organic* or *cosmic evolution*. 'Organic' evolution pertains to the probable development of organisms here on earth or wherever they may be found to exist. 'Cosmic' evolution pertains to the probable development of the universe, as it presently exists, from a former state. Both types of evolution interest the philosopher because of the Principles of Sufficient Reason and Causality. Evolution is a factual problem which must be solved primarily by the natural sciences. Even if one

accepts the fact of evolution, evolution *presupposes* the things which evolve, whether these things be organisms or celestial matter: evolution cannot occur unless something exists which *can evolve*.

What is at stake is the *origin*, the *first beginning*, of things, not their subsequent change and development. If the universe is a development of matter which has existed from eternity without a beginning, it is evidently not a created universe; on the other hand, however, if it had a beginning in time, it is evidently a created universe. The question, therefore, is this: Must we accept 'creation' as the logical explanation of the existence of the universe?

Opponents of Creation

The *Jews* always maintained that the world was created by God. The first line of the Book of Genesis states expressly: "In the beginning God created heaven and earth." To 'create' was understood in the sense of a 'production out of nothing.' This can be seen from the words of the mother⁸ of the Machabees, addressed to her youngest son just before his martyrdom: "I beseech thee, my son, look upon heaven and earth and all that is in them: and consider that God made them out of nothing, and mankind also." The Christians, too, have defended creation at all times, both in their religious doctrines and in their philosophic dissertations.

To the pagans of antiquity creation was practically unknown. *Polytheism* is essentially an anthropomorphic religion, and its anthropomorphism is reflected in its

doctrines concerning the limited power of the deities. Even the greatest of the *Greek philosophers* (not to speak of the lesser ones) never quite succeeded in arriving at the concept of creation as a 'production out of nothing.' Plato expressly taught that matter was eternal. Aristotle, although he argued to the existence of a personal God, presupposed the eternity of matter; matter became 'transformed,' but it never had a real beginning.

It remained for the modern *pantheists* and *finitists* to have the dubious distinction of reviving the pagan concept of God by eliminating creation entirely or by reducing the creative action of God to a production of limited effectiveness. Ever since Spinoza, Fichte, Schelling, and Hegel launched their pantheistic systems, many thinkers, tired of the superficiality of materialism, have found mental refuge in the identification of divinity with the world. God, in their view, is 'immanent' to the world, in the sense that God and the world are one ultimate reality. A goodly number of modern scientists, weaned away from their Christian heritage, subscribe to the doctrine of a modified pantheism. Science, strictly as such, is neither pantheistic nor theistic, for the simple reason that the field of scientific research is limited to the physical facts which are observable and measurable. Scientists, however, are not so restricted, and thus it frequently happens that scientists leave their field of science (in which they are recognized as authorities) and enter the field of philosophy (in which they are not authorities). But they think they can justifiably carry their scientific ideas over into the domain of philosophy. Many scientists are now convinced that the universe is

limited, finite; the universe also shows intelligent purposiveness, and so they are also convinced of the existence of 'mind' in the universe. Not being able (or willing) to dissociate this mind from the reality of the universe, they identify Mind or God with the universe as a whole. The result is a *finite God*. Edgar Sheffield Brightman⁹ gives expression to the view of modern finitists when he says: "We need a temporalistic rather than a purely eternalistic view of God.... Thus our finite God is not one of finished perfection; his perfection and the perfection of this world consist in their perfectibility."

Pantheists and finitists find the concept of creation as a production out of nothing' unpalatable. As Eddington¹⁰ says. "Philosophically the notion of an abrupt beginning of the present order of Nature is repugnant to me, as I think it must be to most." Or, as James Ward puts it:¹¹ "The ordinary notion of creation — viz, that at a given moment there was no world and at a subsequent moment the world was there — is rejected as having no sort of analogy with experience, and as therefore unthinkable." Pringle-Pattison¹² has the following to say: "The more thoughtfully we consider the idea of creation, as a special act or event that took place once upon a time, the more inapplicable does it appear... God exists as creatively realizing Himself in the world, just as the true Infinite is not a mere Beyond, but is present in the finite as its sustaining and including life." One can quote many modern authors expressing themselves in a similar vein.

All we are interested in from the standpoint of philosophy is the establishment of the *ultimate cause* of the

world. Neither the age of the world nor its original arrangement (whether as 'formed' or as 'chaotic') is a philosophic problem. God's existence has already been established; now His creatorship must be established.

Proof of Creation

In proving creation, the purpose is not to prove *how* God produced things out of nothing, but simply to prove *that* God produced them in this manner. The *fact* of creation is what must be proved, and this fact is proved as follows.

God is omnipotent; and to be omnipotent means that the infinite power of God can produce (give existence to) whatever is *intrinsically possible*, that is, to anything which does not involve a contradiction in the constitutive elements of its concept. Now, the concept of 'producing a thing out of nothing' *involves no contradiction*. The crux of the whole problem resides in this last statement; hence, it cannot be accepted without proof, and this proof must now be given.

The concept of creation is *not self-contradictory*, like the idea of a square circle or of an animate-inanimate organism. The 'production' of things is a common occurrence in the world. New beings are continually being produced, as is evidenced by daily experience. They originate through change and generation through the causal efficiency of other beings. Atoms are made and unmade; chemical compounds are formed and dissolved; plants, animals, and men come into existence and die. In every such instance of 'production,' of course, a pre-existent substrate of some kind is present. 'Production'

itself, therefore, offers no difficulty: 'What is, can be.' But production 'out of nothing' contains no more contradiction than mere 'production' itself, when it is a question of the *first origin* of finite beings. Everything in this world is *finite and contingent*; that was shown in the proof for God's existence. Now, 'finite' and 'contingent' being does not have the sufficient reason for its existence in itself; or such a being would be 'infinite' and 'necessary.' Since all beings in this world are 'finite' and 'contingent,' they must have the sufficient reason for their existence in a being outside the world, namely, in the infinite and necessary being of God. But if they have the sufficient reason of their existence in God, that means that God gave them existence, that God *brought* them from nonexistence to existence. However, outside of 'everything in this world' there is nothing but God. Therefore, God, if He gives them existence, can give them existence by 'producing them without a pre-existing subject,' that is to say, 'out of nothing.' In fact, there is no other way that God *can* bring about the *first origin* of the contingent beings of this world. 'Production,' in the strict sense of the word as 'giving existence to a new being,' necessarily includes the concept of 'efficient cause'; but the concept of a 'pre-existent subject (material cause)' out of which the new being is effected is neither included nor excluded. The elements of 'efficient cause' and 'absence of a preexisting subject' are thus seen to be compatible, at least in the omnipotence of God. It follows, then, that 'efficient cause' and 'production out of nothing,' since they are not contradictory, *may be united* into the single concept of 'creation' without contradiction. Creation, therefore, must

be intrinsically possible because it involves no contradiction in the concept.

Now, omnipotence can perform anything intrinsically possible. Creation, however, is intrinsically possible, as has just been shown. Consequently, creation is possible to God.

God, therefore, can create.

THE ENTIRE UNIVERSE IS CONTINGENT, BECAUSE THE UNIVERSE IS nothing more than the sum of all the beings which form the parts of it, and all the single beings in the universe are not necessary but contingent. Hence, the entire universe must have had its *first origin* from God. In other words, the entire universe must have been 'produced out of nothing.' One cannot say that the entire universe was made out of preexistent matter, because matter is an essential part of the universe. If, then, the entire universe, together with its constituent matter, had to be given existence through the efficient causality of God's omnipotence, it had to be produced 'out of nothing.' But the universe exists. Therefore, its *first origin* could not have been achieved except through a production out of nothing. That, however, is 'creation.' Consequently, *creation is a fact.*

The fact of creation also follows from the infinite perfection of God's power. Being infinitely perfect, it must be *absolutely independent* of any assistance in the exercise of its efficient causality. Hence, God's power must have been absolutely independent of any pre-existent subject, such as primordial matter.

God, therefore, created the world out of nothing.

THE REASON WHY CREATION IS NECESSARY FOR THE FIRST ORIGIN of things is not difficult to find. Whenever creatural beings produce something, production is always the result of *changing* one kind of thing into another kind of thing; it is the changing of a 'this' to a 'that.' But in the case of the first origin of things, the *whole being* of these things is involved, not merely a 'this' and a 'that.' Hence, in the case of the first origin of things, they cannot be produced by a mere 'change.'

St. Thomas expressed this truth very admirably, when he said:¹³

"We must consider not only the emanation of a particular being from a particular agent, but also the emanation of all being from the universal cause, which is God; and this emanation we designate by the name of creation. Now what proceeds by particular emanation, is not presupposed to that emanation; as when a man is generated, he was not before, but man is made from not-man, and white from not-white. Hence, if the emanation of the whole universal being from the first principle be considered, it is impossible that any being should be presupposed before this emanation. For nothing is the same as no being. Therefore as the generation of a man is from the *not-being* which is *not-man*, so creation, which is the emanation of all being (*emanatio totius esse*), is from the not-being which is *nothing*... If therefore God did

only act from something presupposed, it would follow that the thing presupposed would not be caused by Him. Now it has been shown above (Q. 44, AA1, 2), that nothing can be unless it is from God, Who is the universal cause of all being. Hence, it is necessary to say that God brings things into being from nothing.”

— ST. THOMAS AQUINAS

God Alone Can Create

The questions to be answered are these: Can God alone create? Can a creature act as the principal cause of creation? Can a creature act as an instrumental cause of creation? The pertinent terms are obviously ‘principal cause’ and ‘instrumental cause’.

A *principal cause* is one which has a fully proportionate and sufficient power to produce the entire effect either alone or by using something else as instrumental cause in its productive action. An *instrumental cause* is insufficient of itself to produce the entire effect but causally influences the production of the effect under the direction and in the service of another (the principal) cause. A normal person, for instance, has the power to open his eyes in order to see; his own power is fully proportionate and sufficient to produce the effect of opening his eyes, and he does not need the assistance of any other thing to produce this effect. This same person, in order to drive a nail into a board, uses the instrumentality of a hammer; he is the ‘principal cause’ of this effect, because without his causality

the hammer would not function. The hammer is the 'instrumental cause,' because its own peculiar causality of driving the nail into the board is used under the direction and in the service of the person acting as the principal cause.

God, of course, can create; that has been established. The *question* then arises: Can a creature be either the 'principal' or the 'instrumental' cause of creation? In answering this question, the matter under consideration refers to the *natural* power of a creature to be either the principal or instrumental cause of creation. Whether a creature can exert instrumental creative power in the 'supernatural' field is a disputed question which does not properly belong to philosophy.

The *Arians* taught that God created the Logos (Word), and the Logos in turn created all else. Avicenna maintained that the material world was created by the angels. *Frohschammer* defended the theory that parents create the souls of the children they generate. *Durandus* and *Arriaga* claimed that creation was at least possible to creatures.

NO CREATURE CAN BE THE PRINCIPAL CAUSE OF CREATION.

Creative power does not produce a particular kind of being, but being as such (*esse quod esse*). This is clear, whether we view the creative act in its starting-point or in its terminal point.

Viewed in its *starting-point* (*terminus a quo*), the creative act begins with not-being as such, because there is nothing present from which the created being is produced.

To this 'not-being as such' is opposed, not a specific kind of being, a 'this' or 'that,' but simply and absolutely 'being as such.' Viewed in its *terminal point* (*terminus ad quem*), namely, in the effect of the creative act, the effect is *being as such*, because that which is produced is always 'being as such' and not merely a particular kind of being. True, creation produces 'this' or 'that' kind of reality, so that a definite, specific kind of being receives existence; but the peculiar and proper effect of creation is the production of the *first being* (*primum esse*) of the whole thing, since the latter existed in no way and in no part before. Change and generation can produce a definite, specific kind of being (for instance, man can generate man), but it cannot confer 'being as such' to the new reality.

Now, the most universal effect demands as its sufficient reason the most universal cause. But 'being as such' (*ens qua ens, or esse qua esse*) is the most universal effect, because enters in the concept and essence of everything *real* and *possible*. Hence, creative power must be able to produce everything that is real and possible. Such a power, however, must be *infinite*, because the store of possible imitations of God's infinite perfections is inexhaustible. Hence, if a creatural being could be the principal cause of the creative act, it would have to be capable of giving existence to everything real and possible. That, however, necessarily exceeds the power of any and every creatural thing, because its very being, and consequently also its power, is something essentially finite and limited. God alone is infinite, and there can be no more than one infinite being. Hence, no creatural thing can possess infinite power, so

that it would or could be the principal cause of creation. It follows, therefore, that no creature can, in its natural capacity, be the *principal* cause in the creative production of any reality.

NOR CAN THE CREATURE BE THE *INSTRUMENTAL* CAUSE OF creation.

In order that something be an 'instrumental' cause in a productive action, it would really have to *influence the effect causally*, according to whatever way it acts as an instrument. A hammer, for instance, contributes its share toward the production of the total effect by pounding; a knife by cutting; and so with every type of instrument acting as a partial cause. An instrumental cause acts only under the direction of, and in the service of, a principal cause; but it must contribute its influence, in its own characteristic way, according to its nature.

Now, in the creative act this effect of the instrumental causality of the creature would have to either precede or follow or accompany the effect of the principal cause (God). But none of these alternatives is possible. The characteristic effect of the instrumental causality of the creature *cannot precede* the effect of the divine principal cause, because before creation there is nothing to which its causality could be directed. It *cannot follow*, because, once God as the principal cause has effected creation, there is nothing afterward for the instrumental cause to effect. It *cannot accompany* God's creative action: it would have to produce the entire existence of the created being, since existence is

an indivisible reality, and then it would be the principal cause; or, it would not produce existence at all, since existence is an indivisible reality, and then it is no cause whatsoever. Now, a creatural being cannot be the principal cause of creation. Consequently, no creature can be the instrumental cause of creation.

This argument follows the line of St. Thomas¹⁴ on this matter. To quote:

“It happens that something participates in the proper action of another, not by its own power, but instrumentally, inasmuch as it acts by the power of another; as air can heat and ignite by the power of fire. And so some have supposed that although creation is the proper act of the universal cause, still some inferior cause, acting by the power of the first cause, can create... But such a thing cannot be, because the secondary instrumental cause does not participate in the action of the superior cause, except inasmuch as by something proper to itself it acts dispositively to the effect of the principal agent. If therefore it effects nothing, according to what is proper to itself, it is used to no purpose; nor would there be any need of certain instruments for certain actions. Thus we see that a saw, in cutting wood, which it does by the property of its own form, produces the form of a bench, which is the proper effect of the principal agent. Now the proper effect of God creating is what is presupposed to all other effects, and that is absolute being. Hence nothing else

can act dispositively and instrumentally to this effect, since creation is not from anything presupposed, which can be disposed by the action of the instrumental agent. So therefore it is impossible for any creature to create, either by its own power, or instrumentally that is, ministerially.”

— ST. THOMAS AQUINAS

GOD ALONE CAN CREATE.

This conclusion is a necessary consequence from what has just been said. If a creatural being is neither the principal nor the instrumental cause of creation, it simply cannot create. But it is neither the principal nor the instrumental cause of creation. Therefore, a creatural being cannot create. God, however, can create. And since no other being can create, *He alone can create*. Creation, therefore, is the essential and incommunicable privilege of the omnipotent power of God.

As St. Thomas¹⁵ states: “If a greater power is required in the agent in proportion to the distance of the potentiality from the act, it follows that the power of that which produces something from no presupposed potentiality is infinite, because there is no proportion between *no potentiality* and the potentiality presupposed by the power of a natural agent, as there is no proportion between *not being and being*.”

Eternity of Creation

God exists from eternity. The question, therefore, naturally arises: Can God create from all eternity? This question leads to the next: *Can a created thing exist from eternity?*

God being omnipotent, it is manifest that He can give existence to anything which is intrinsically possible. Whatever is intrinsically impossible (that is, is contradictory in its very concept), cannot receive existence from God because it is essentially 'nothing'; and 'nothing,' of course, cannot exist. The problem thus simmers down to the question: Is an 'eternal creation' a contradiction in terms, or not? If not, God can create an 'eternal creature'; if it is, God cannot create it. God could not create it, not because of a lack of power on His part, but because there would be nothing positive on the part of the creature which He could produce.

The problem has puzzled philosophers a great deal, and three opinions have been advanced in an effort to solve it. The *first* view affirms the possibility of an eternal creation of things, both of those things which form a 'successive series' and of those which are 'permanent.' Among the advocates of this view are St. Thomas¹⁶ (who claimed that the impossibility of an eternal creation cannot be 'demonstrated' by reason, although it is clear from revelation that the world had a beginning in time), Vasquez, the nominalists, and many thomists. The *second* view affirms the possibility of an eternal creation regarding 'permanent' things, but denies the possibility regarding 'successive' things. This view is defended by Suarez,

Molina, John of S. Thomas, Urráburu, and others. The *third* view denies the possibility of an eternal creation regarding every type of created being, 'successive' or 'permanent'; they claim that an 'eternal creature' is a contradiction in terms, because of the contingency of the creature, and so an 'eternal creation' is intrinsically impossible. The majority of scholastics adhere to this third view.

The *third* view seems the *more probable*, both with regard to 'successive' and 'permanent' things.

AN ETERNAL CREATION OF SUCCESSIVE THINGS IS IMPOSSIBLE.

The supposition is twofold: there is a series of successive realities, and this series is created. In this series of members, one succeeds the other. Since these members of the series succeed one another, some are later and some are earlier than the others in this succession. Such a succession, however, must inevitably lead to one member before which there was no other and after which all the others follow. This first member of the series is the *beginning of the succession*, and the entire series can thus be measured according to a *before* and *after* in its succession. But a succession measured according to 'before' and 'after' is the characteristic of *time*. Consequently, the first member of the series represents the *beginning of time*. Eternity, however, is not time and has no beginning. Hence, such a series would have creatures which are in time and are not in time, are eternal and not eternal, are arranged according to a 'before' and 'after' and are not arranged according to a 'before' and 'after,' have a

beginning and have no beginning. In other words, an 'eternal creature,' created by God in eternity, is a *contradiction in terms* and as such impossible. God, therefore, cannot create from eternity; and this impossibility is due to the nature of the 'creature as a creature, not to God as omnipotent.

AN ETERNAL CREATION OF PERMANENT THINGS IS IMPOSSIBLE.

An eternal 'permanent' being, one in which there is no change, must be indestructible. Eternity means duration without beginning and without end. Therefore, an eternal being is one which has all possible duration simultaneously. Now, what the omnipotence of God creates it can also destroy; if He is capable of giving existence, He must also be capable of taking existence away. No created being has necessary existence; this is clear from the very fact of its creation. Hence, it can be destroyed by God in any moment of its duration. A being, however, which can be destroyed by God and lose its existence in any moment of its duration, can have an *end to its duration*. But where there is an end to duration, there must also be a *beginning* to duration; a duration, however, which has a beginning and (or) an end, is not eternity but *time*. Either, then, God does not have the power to destroy such a creature, or the creature is not eternal. But it is evident that God possesses this power of destruction. Therefore, the supposedly 'permanent' creature is not eternal. But if the creature cannot be eternal, God cannot create a creature from eternity without contradiction. Consequently, an *eternal creation* of any kind

is impossible because it is contradictory to the very nature of a created being.

Infinite Number of Creatures

God is infinitely perfect, and He can, absolutely speaking, be imitated by creatures in any number of ways. It is, therefore, pertinent to ask: *Can God create an actually infinite number of creatures?* The answer is very much like the one given in the foregoing section. There is no limit to God's omnipotent power or to His imitability by creatures. But an 'actually infinite number' of creatures involves a contradiction in terms and as such is impossible. It makes no difference whether one postulates the simultaneous or successive existence of these creatures; the number would exist simultaneously or successively, but it would be 'actually infinite' in either case.

AN ACTUALLY INFINITE NUMBER OF CREATURES IS IMPOSSIBLE.

That an actually infinite number of *successive* beings or events implies an actually infinite number of *simultaneously existing* beings, is clear. God could, for example, create an immortal soul every time one being or event succeeds the other. And thus there would exist an actually infinite number of 'successive' and 'simultaneous' things at the same time.

Now, it is intrinsically impossible that an actually infinite number of beings exist simultaneously.

An actually infinite number is limitless and inexhaustible. If it were limited, or if it could be exhausted, it would obviously not be infinite but finite. Now, the concept of an infinite number or multitude ends in a *contradiction*. Any number is made up of units; it is also made up of couples and tens, etc. Consider the result. There must be twice as many units as there are couples in such a number, and ten times as many units as there are groups of ten. For example, if an actually infinite number of human persons were created by God, the number of arms would be twice the number of human beings, and the number of fingers would be ten times the number of human beings. But the number of human beings is supposedly 'infinite,' that is, limitless and inexhaustible; and yet the number of human beings is only half as large as the number of arms and one tenth as large as the number of fingers. It follows that there are *different infinities*, some smaller and some larger, some half and some twice the amount of the other, some one tenth and some ten times the amount of the other; and yet they are *the same*, because all are infinite. Halving the infinite number would result in two infinities, and yet only one, because two finite numbers cannot add up to infinity; since two finite numbers are limited and each is exhaustible, their addition cannot result in an infinite number, and still they would. In fact, since an actually infinite number is limitless and inexhaustible, it would remain the same notwithstanding an infinite number of divisions and subtractions. All this, of course, is *self-contradictory*.

Hence, an actually infinite number of created beings is *intrinsically impossible*. In other words, no matter how many creatures God produces, His being can still always be imitated by other creatures without limit; other creatures are possible, and their possibility is inexhaustible. This means that the number of creatures which can exist, either simultaneously or successively, is *negatively infinite*; that is to say, the existing number can only be *actually finite*, but it is *potentially without limit*.

Therefore, God cannot create an infinite number of actually existing creatures, due to the fact that such a number is intrinsically impossible in actuality. God being actually infinite in perfection, his imitability by creatural beings, and as a consequence also their creatability, is limitless and inexhaustible.

A few more strokes have now been added to the portrait of God's nature: His power is almighty and creative. Obviously, God does nothing aimlessly, because He is an intelligent being. The reason why God created the world at all, and the reason why He created just this amount of beings in the world, cannot lie in the creatures themselves, but must lie wholly in Himself. He did not create because He needed them; He is absolutely self-sufficient, and He was infinitely happy from all eternity. The only assignable reason for creation, therefore, can be this: God, being *infinite goodness*, freely decided, under the guidance of His intelligence, to communicate being to creatures in order that they might *share* in His infinite being and goodness. *Bonum est diffusivum sui*, goodness tends to diffuse itself.

Summary of Chapter XIII

This chapter treats of two virtually transitive (or transient) operational attributes of God, namely, *omnipotence* and *creation*.

1. *The Notion of Omnipotence*. — The basic concept underlying omnipotence is 'power.' Omnipotence means the power to produce everything which is possible (can exist); and something is 'possible' whose existence does not involve a contradiction in its very concept.

2. *Existence of God's Omnipotence*. — Since the divine essence is infinite, the divine power is also infinite. God's omnipotence, therefore, must be able to produce everything existible, without exception. Hence, God is *omnipotent*.

God's power is *inexhaustible*. His power is identical with His essence. If His power would or could be exhausted, God Himself would cease to exist and He would not be infinitely perfect.

God cannot produce an *infinite effect*. An 'effect' is something produced and dependent; as such it is finite. An 'infinite effect,' therefore, involves the contradiction of a being which is 'finite-infinite.'

3. *The Foundation of Possibles*. — The ultimate reason (or foundation) why some beings are non-contradictory (possible) and others contradictory (impossible) lies in *God*; not in the creatures themselves, because they are subject to the law of contradiction and non-contradiction.

God's *essence* is this ultimate ground. A thing is possible because it denotes a 'being,' and something is a being because it is an imitation of the 'being' of God.

4. *The Notion of Creation.* — Creation is the production of a thing hitherto not existing, without the use of any subject matter from which it is produced (*productio rei ex nihilo sui et sub jecti*). It means, therefore, the production of a thing out of nothing.

5. *Opponents of Creation.* The opponents of creation are the ancient' pagans and modern pantheists and finitists.

6. *Proof of Creation.* — The problem is that of the first origin of the universe. The concept of creation does not involve a contradiction. 'Production' itself occurs constantly. Production 'out of nothing' is not self-contradictory, when it is a question of the first origin of creatural beings on the part of God's productive power. There is no other way that God can give existence to the first things than by producing them 'out of nothing.' Therefore, God can create.

If the universe exists, it must, therefore, have been produced by God out of nothing. But it exists. Consequently, creation is a *fact*.

7. *God Alone Can Create.* — If a creature can be neither the principal cause nor the instrumental cause of creation, then God alone can create. The creature, however, can be neither the principal nor the instrumental cause of creation.

No creature can be the *principal* cause, because the effect of creation is 'being as such,' and no creature has the power to give existence to 'being' absolutely; it can only change a 'this' to a 'that.' It takes infinite power to bring something from a not-being to being. Nor can a creature be

the *instrumental* cause of creation. If it were, its own proper causality would have to either precede, follow, or accompany the effect of the divine principal cause; none of the alternatives is possible. Therefore, *God alone can create*.

8. *Eternity of Creation*. — An eternal creation of successive things is impossible. Where there is such a succession, there is a 'before' and 'after' in succession; that, however, is *time*, not eternity.

Neither is an eternal creation of *permanent* things possible. If such a creature is eternal, it is indestructible; if it is a creature, it can be destroyed by God, and then its duration would not be eternal.

9. *Infinite Number of Creatures*. — God cannot create an actually infinite number of creatures, because an actually infinite number would involve a *contradiction in terms*.

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¹ See the author's *The Domain of Being* (Milwaukee: The Bruce Publishing Co., 1939), Chap. 7.

² St. Thomas Aquinas, *Summa contra Gentile.*, tr. by the English Dominican Fathers (New York: Benziger Bros., 1925), Bk. II, Chap. XVI.

- 3** *Ibid.*, Bk. II, Chap. XVIII.
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Chapter 14

CONSERVATION AND CONCURRENCE

OMNIPOTENT power is creative power. Because creatural beings are contingent, they do not have the reason for their essence and existence in themselves. Of themselves, they are nothing. The sufficient reason both for their essence and existence must reside in the necessary being, in the self-existent essence, in God. God *is* His existence; all other beings have received existence. They were 'created,' and for this reason they are rightly termed 'creatures.'

What most people do not realize, however, is the fact that creatures are dependent on God for more than the initial giving of existence. They seem to think that, once created, all creatural beings are capable of enduring in their existence and of performing their proper functions without any further action on the part of God. This view is erroneous.

For continued endurance in existence, creatures need the active *conservation* of God, and for the performance of all their functions they need the active *concurrence* of God. While the conservation and concurrence of God are not as clear to the average mind as the dependence of all

creatures for their initial existence on God, a little thought will show their necessity.

Notion of Conservation

By *conservation*, in general, one understands continuation in existence through dependence on a cause. Taken 'passively,' it means that a being continues in its existence through some cause; taken 'actively,' it means that something is the reason why a being continues in its existence. Since we are concerned here with God as the cause of the continued existence of creatures, conservation is taken in its meaning of *active* conservation.

Active conservation can be either 'negative' or 'positive.' *Negative* conservation occurs when a being continues in existence *by not being destroyed* by another, although the other has the power to destroy it. Thus, a person negatively conserves a building by not demolishing it; or, a person conserves some papers by not throwing them into the furnace to be consumed by fire. In all such instances, the 'negative' conservation consists in refraining from performing the action required to make the thing cease to exist, although the person could execute the required action if he so desired.

Positive conservation occurs when a being is made to remain in existence *through some action* which is performed. This action may be either 'indirect' or 'direct' in its conservative power. *Indirect* positive conservation takes place when the action *hinders* destructive causes from destroying a thing or *provides the means* needed for the

thing to remain what it is. Thus, rescuing a drowning person is indirectly the cause of preserving this person's life by hindering the water from filling his lungs and making breathing impossible; or, giving food to a starving person enables him to continue living and not to die of starvation. *Direct* positive conservation takes place when the continued duration of a thing is the immediate effect of the positive action of a cause. In such a case the thing in question cannot continue in existence without the continuation of the influence of the cause. Thus, color vision is possible only so long as the causal influence of light persists; vital activity in a living body is dependent on the immediate action of the soul, the principle of life in the body.

In speaking of divine conservation, it is necessary to guard against certain misconceptions. That God does not preserve in existence all things in their specific nature for all time, is clear from the mere fact that very many beings (for example, individual atoms and compounds, plants, animals, and men) come into existence, remain for a while, and then disappear as specific entities. That He preserves all things for the time of their actual existence with a 'negative' conservation, is evident from the fact that many things actually do exist at the present moment and actually have existed during the past; God certainly could annihilate them at any time in the past or present, but He does not do so. That not all beings which exist are preserved in their existence by God with a positive 'indirect' conservation (in the sense mentioned above), is manifest in the case of spiritual beings, such as immaterial human souls; spiritual beings, since they are simple in essence, cannot be

dissolved and destroyed by natural agencies, and thus they need no 'indirect' conservation on the part of God to keep them in existence.

Proof of Divine Conservation

In recent years *E. Iglesias* proposed that divine conservation need not extend to all creatures without exception. According to him, God conserves in existence all subsistent beings which He has created; these 'subsistent' beings are primordial matter, angelic spirits, and human souls. On the other hand, 'non-subsistent' beings, such as 'material forms' and 'accidents' (the latter are qualifications or determinations of substances), are not necessarily conserved by God in their existence; they can be conserved by other natural causes without any direct operation of God's conservative power.

This view is in opposition to the doctrine of all scholastic philosophers. *St Thomas* summarizes¹ the common doctrine on divine conservation in the following manner: "The being of every creature depends on God, so that not for a moment could it subsist, but would fall into nothingness were it not kept in being by the operation of the divine power."

We agree with St. Thomas and contend that *God preserves all things without exception by a positive and direct influence*. The proof rests upon the contingency of all beings distinct from God.

Every being, distinct from God, must be one of three types: it must be either a 'spirit' or a 'material being' or a 'compound of matter and spirit.' But these things are all

contingent, that is to say, they have been created and have not the reason for their existence in their own essence; of themselves and in virtue of their own essence they are nothing. Consequently, they must have the sufficient reason for their essence and existence in another. So long as they have a contingent essence, they have the sufficient reason for their existence in another. Now, they retain their contingent essence during the entire period of their existence, from the first moment until the last. Therefore, during the entire period of their existence, from the first moment until the last, they are contingent and have the reason for their existence in another. Hence, they owe the entire period of their existence, from the first moment to the last, not to themselves, but to another.

This sufficient reason for existence cannot be found in their 'spiritual substance' or in their 'matter,' because both this spiritual substance and this matter are contingent and constitute the contingent essence of the being; hence, since they are totally contingent, they must also have the sufficient reason for their existence in another. And this truth applies to the entire universe and every being in it, because every created being as such is contingent. It follows, then, that the sufficient reason for the existence of the entire universe and of every being in it and of every created being as such, from the first moment to the last, must be found in a *non-contingent being*.

Now, there is no 'non-contingent being' except the *ens a se*, because the self-subsistent being alone has the reason for its existence in its own essence. But the *ens a se* is God. Consequently, just as the *initial* existence of the creatural

being is contingent and, because of this contingency, needs the positive and direct activity of God to give actual existence to the being, so also its *continued existence*, because it remains contingent from the first moment until the last, demands the same *positive and direct influence* of God's activity. Hence, all creatural beings are preserved in their existence, from the first moment until the last, by the positive and direct influence of God's activity. That, however, is what is meant by divine conservation. Divine conservation, therefore, is a necessity.

One cannot validly say that a created *substance* can *preserve itself*, once it has acquired existence. This existence is contingent, not necessary, and as such demands a *cause*. The substance itself cannot be this cause; if it were, a patent contradiction would be involved, since such a situation would presuppose existence as well as non-existence at the same time in the same thing. It presupposes *existence*; because, if a being is the cause of its own continued existence, it must exist in order to exert its causality. It presupposes *non-existence*; because existence is the effect and result of the being's preserving action. Hence, the cause for the being's 'continuation' in existence must be in another, just as the cause of its 'beginning' had to be in another. Now, the entire universe is but the sum-total of creatural beings. Consequently, the entire universe (and every single being in it) must have the cause of its continuation in existence in the extra-mundane Being, namely, in *God*.

Nor can one validly say that the cause of the continuance of a being in existence lies in some *force* or *faculty*. Every

force and faculty needs a substance as its basis. Every substance, however, owes its existence to God's positive and direct influence, as was just shown. Hence, since every force or faculty is by nature posterior to its substance and depends for its existence on the existence of the substance, it is incapable of preserving the substance in existence. In other words, both the substance and its force or faculty demand the positive and direct influence of God's conserving power in order to receive existence and to remain in existence.

Just as God has the power to create, He has the power to *annihilate*. He is the Supreme Lord over all things. He gives existence, and He can also make a thing cease to exist. Since annihilation means to 'make a thing cease to exist,' it cannot consist in any sort of positive activity. Every positive activity must have as the term of its influence a positive effect. Annihilation, however, has as its term a 'nothing,' a 'nil.' Hence, it cannot consist in a positive action on the part of God. Still, annihilation is something. Consequently, since it is no positive activity itself and still must be something on the part of God, it must consist in the *withdrawal of some positive activity* on the part of God. Now, if annihilation ('making a thing cease to exist') consists in the withdrawal of some positive activity of God, then the *perseverance* in existence on the part of the creatural being must be due to the *positive activity* of God which is withdrawn in annihilation. Hence, perseverance in existence, or continued existence, must be due to a positive activity of God; and that is divine conservation.

Creatural beings can neither create nor annihilate. All that creatural beings are capable of doing through the influence of their efficient causality is to *change already existing bodies*. Such changes are either accidental or substantial; but in every such change *matter* is always present as the existing subject of change. Since creatural beings cannot give existence to matter, they are incapable of producing anything *ex nihilo sui et subjecti*; that is to say, they are capable of generation and corruption, so that they can change a ‘this’ into a ‘that,’ but they cannot produce the *total reality* of the thing. The existence of this ‘total reality’ is not due to creatural beings but to God alone. And since creatural beings cannot *produce* the total reality of any being, they cannot *preserve* this total reality in existence either. This preservation in existence, or conservation, must be due to the uncreated being who produced the total reality by creation in the first place, namely, to God. This agrees with what St. Thomas² writes:

“God cannot grant to a creature to be preserved in being after the cessation of the Divine influence: as neither can He make it not to have received its being from Himself. For the creature needs to be preserved by God in so far as the being of an effect depends on the cause of its being. So that there is no comparison with an agent that is not the cause of *being* but only of becoming.”

— ST. THOMAS AQUINAS

Creatures, of course, also possess the power of conservation and exercise it in behalf of other beings. But it must be remembered that whatever creatures can accomplish in the line of conservation depends on the specific essence they have; they themselves, however, are not the real reason why they have this essence rather than another. It is God who gave the specific essence to things and who established the order between things. Hence, *God* is the *principal cause* of creatural conservation in all beings, while creatures are only the *secondary causes* (*con-causes*, together with God as the principal cause) of conservation in a *limited* measure.

What is the *relation* between God's power of *creation* and His power of *conservation*? Fundamentally they are one, with a logical distinction between them. As St. Thomas³ expresses this truth: "The preservation of things by God is a continuation of that action whereby He gives existence." For this reason conservation is often called a 'continued creation.' The phrase must not be confused with 'iterated creation,' as Pierre Bayle (1647—1706) interpreted conservation. An 'iterated creation' would mean that creatures fall back from moment to moment into nothingness and then are continuously recalled from moment to moment into existence by God. That such an interpretation is false, is evident, because man knows from his own conscious experience that he remains constantly in existence from moment to moment.

The nature of the conservative action on the part of God consists in the *omnipotent will-act* of God which, after

creating a being, makes a being already created *remain* in existence.

Notion of Divine Concurrence

Divine *concurrence* (*concursus*) is defined as God's influence operating with the creatures in producing the same effect as they produce through their own activity. This concurrence or co-operation may be of different kinds.

Concurrence is either 'moral' or 'physical.' *Moral* concurrence consists in some sort of moral action, such as commands, exhortations, promises, rewards, and punishments. The 'moral' concurrence of God is not in question here. God's *Physical* concurrence consists in a physical action through which He cooperates with the actions of creatures, so that He influences the effects produced by creatures through their actions.

The divine 'physical' concurrence will be either 'mediate' or 'immediate.' God's physical concurrence is *mediate* in so far as He *prepares* the creatures in such a way that they are fit for action and *preserves* them in that condition. Thus, God creates a thing with certain powers of action (operative powers); He preserves the thing and its operative powers, so that it is capable of action; He is the ultimate cause that the thing in its own proper order is the sufficient cause for a certain action. In mediate concurrence God sees to it that the 'causes' of action are present and fit to operate under proper conditions, but mediate concurrence does not bring about the effects of creatural actions strictly as 'effects.'

By means of His *immediate* physical concurrence, in the very moment when the creature acts in the production of an effect, God *effectively and directly* influences the creature in the production of the action itself. In other words, God and the creature are the two coefficient principles in every creatural action; every creatural action owes its efficacy and existence to God as the *primary* and *superior* cause and to the creature as the *secondary* and *subordinate* cause. The meaning of this statement is not, of course, that the action of the creature is due under all respects to the immediate concurrent action of God; that would be 'occasionalism,' which denies any real action of the creature, and occasionalism is false.

The *real meaning* of the immediate physical concurrence of God in all creatural actions has been well expressed by B. Boedder:^{[4](#)}

"What we do assert is that, although under one aspect the action of a creature is truly its own action depending on its own activity, under another it is at the same time dependent on God, and this not only mediately but immediately. In other words, the creature in action depends upon a causal exercise of the omnipotent Divine Will, not only for the existence and preservation of its nature and faculties, but also for the actual exercise of those faculties; so much so that it can use none of them unless the Creator, in the very moment when the faculty is used, supports it with the efficacy of His Divine power. To this power

the creature owes not only its faculties as applicable for action, but also as applied to act.”

— B. BOEDDER

Both together, God and creature, produce the *totality* of the action, and the action could not occur without the causality of both effectively influencing the action. Each assists in the production of the effect to such an extent that the effect simply would not exist if either cause would not operate. Illustrations for this principle are readily available. In order, for example, to have an organ recital, a player, a wind pumper, and organ pipes are required; each agent contributes toward the totality of the effect (the music), and without the effective contribution of each cause the entire effect would be absent. Similarly, for every creatural action without exception divine concurrence is necessary for the totality of the effect. And this divine concurrence is not merely moral but *physical* in character.

The creature is really active according to the nature and powers it has ultimately received from God the Creator of all. It stands to reason that the creature's nature and powers must first of all be 'conserved' by God, so that the creature is 'fit to act' under proper conditions. Besides conservation, however, 'physical concurrence' on the part of God is required so that the creature can pass from potentiality (power) to actuality (action); then, and only then, can the creature really produce the action natural to its power.

Proof of Physical Concurrence

Scholastic philosophers universally accept the fact of God's physical concurrence as a necessary agent in the production of every type of creatural action. However, in the fourteenth century *Durandus of St. Pourçain* (he died probably in 1332) maintained that God's conservation of the creature's power to act is required, but there is no immediate physical influence of God's causality on the action itself; so long as the creature has the power to act, it can proceed to the action without assistance from God. In recent times, *E. Iglesias* and *J. Stuffer* have sided with Durandus on this question.

In opposition to Durandus and his modern followers, we maintain that *an immediate physical concurrence of God is necessary for all creatural action*, whether this creatural action be necessary or free.

The relationship between creature and Creator in this regard is that of an essentially 'subordinate' and 'secondary' cause to the absolutely 'superior' and 'primary' cause. Two 'coequal' causes cannot produce an identically same effect through their respective actions, because each of the two causes would produce its own effect through its respective action. The result would be that each cause would produce only a *part of the effect*, but would not be the cause of the *total effect*. It would be like two horses pulling a load too heavy for either one to move alone jointly they can move the load, because each horse pulls a part of it. Such a situation does not happen in divine concurrence. The *superior* cause can concur with the subordinate cause

in the production of the same action and its effect. Both causes, superior and subordinate, co-operate in the production of the *total effect*, but each agent is responsible for the 'total effect' under a different respect: the Creator-cause attains it under the respect of a 'contingent' being considered strictly in its contingency, while the creature-cause attains it under the respect of a being restricted to a definite class of effects (not to 'being as such'). The combination of Creator-cause and creature-cause then brings about an effect whose *totality* is dependent on God as the 'superior' and 'primary' cause of its *contingent* being and also dependent on the creature as the 'subordinate' and 'secondary' cause of its *specific* being (inasmuch as the effect is 'this' or 'that' particular reality, and not 'being as such'). The creature-cause really and truly produces the effect, but with the immediate and physical co-operation of God who, through His assisting action, also really and truly produces the effect. This immediate and physical co-operation of God with the action of the creature-cause in producing an effect is what is meant by God's *concurrence*.

AND NOW FOR THE *PROOF*.

The proof is based on the *complete contingency of the creature*. The creature is contingent in every respect. In no phase of its being, whether in its nature or in its action, is it self-sufficient. Nothing that it is or has or does is due to its own self; everything in a creatural being is 'contingent.' Contingency implies the ultimate and absolute dependence of the creature on God as the first and necessary cause.

God as Creator is the supreme cause of all that has existence outside Himself. Since every creatural being is contingent in its very essence and nature, it can exist only in perfect and absolute dependence on God. Action follows nature. Consequently, also in its *action* the creature is dependent on God in a perfect and absolute manner; otherwise the creature's dependence on God (and God's dominion over the creature because of the latter's complete contingency) would not be perfect and absolute. But now, in its essence and existence the creature is dependent on God on intrinsically, essentially, and immediately. Hence, the dependence of the creatural action and its effect must also be intrinsic, essential, and immediate. However, there will be an immediate dependence of the creature's action upon God only if God gives His divine concurrence to the action. Any other assistance of God would not be 'immediate' at all; because, if God gave and conserved only the nature and operative powers of the creature, the action itself would be immediately dependent only on the creature and not on God. It follows, therefore, that the complete contingency of the creature demands the *immediate assistance* (concurrence) of God in *its actions*.

Again, whatever exists depends for its *existence* directly on the power of God. God alone is self-existing and exists necessarily; all other beings (creatures) exist contingently and as such cannot have the *adequate reason* for their existence in themselves or in any other creatural being, but in God alone. Now all *actions* and *effects* of creatures are a positive reality in the order of existence. Hence, they are, as existing realities, dependent on God for their existence.

This dependence must be *immediate*. If this dependence were only 'mediate,' namely, if the creatural actions were dependent on God only through the intermediation of some other being, they would not be dependent on God just inasmuch as they are *existing*. No being can be dependent on a finite being inasmuch as it has 'existence'; otherwise whatever has 'existence,' and in whatever the concept of 'being' is verified, would have to be dependent on this finite being. This, however, is manifestly impossible. Consequently, every creatural action must be immediately dependent on God in its existence.

Finally. God can *hinder* any creatural being from performing an *action*, and that without destroying the creature's power of action or the object to which the creature's action might be applied. Since God has absolute dominion over all beings distinct from Himself, He can do anything which does not involve a contradiction. Now, it certainly involves no contradiction if a creature's power of action does not go into operation, even when all the requisite conditions for action are present. Hence, God can hinder any creatural being from performing an action, even when all the requisite conditions for action are present. This hindrance of creatural action, however, would be impossible for God, if He did not *co-operate* in the creatural action *in a positive manner*. The reason is obvious. Unless God withdrew His immediate, physical assistance (concurrence) accompanying the creature's action, there would be nothing to stop the creature from performing the action, if the power fit for action and the required

conditions for action remained intact. Hence, every creatural action also demands God's concurrence.

A NUMBER OF *OBJECTIONS* HAVE BEEN RAISED AGAINST THE doctrine of divine concurrence. The more important ones will be discussed.

First objection. According to the view expressed above, God must also be a *coefficient principle in sin*. But it is against God's infinite sanctity to give active assistance to sin. Hence, He gives no concurrence.

Answer. God in His concurrence is a coefficient principle in the production of the *reality* of the sinful act, but *not of the sin itself*. Sinfulness is not a positive entity but the absence of conformity of the act to the moral law; sin is, therefore, no reality in the strict sense of the term, but something negative. The real cause of sin is that which is the 'determining' cause of the sinful act, namely, the human will. God wills the act in so far as it is a positive reality; only if He were the determining cause of the sinful act, could the sin (sinful act) be imputed to Him. God gives an *indifferent* assistance for the act with regard to its positive reality, not with regard to its sinfulness as such (deviation from the moral law). The physical and physiological act is not wrong as a physical and physiological reality; otherwise such an act (for instance, killing a person, sexual excitement, pronouncing sacred names, etc.) could never be allowed. The sinfulness of such an act lies in its disagreement with the demands of morality.

Second objection. God created beings with the necessary *powers of operation*. Then why should divine concurrence be necessary? Divine concurrence is *superfluous*.

Answer. God gave operative powers, and they are used by the creature in its actions. But nothing can take away the *contingency* of the creature in its entire being; it is and will always remain essentially contingent and therefore an essentially dependent principle of action.

Third objection. If divine concurrence were a fact, God would be only a *partial cause* in the action. However, it would be an *imperfection* in God to be a partial cause.

Answer. To be a 'partial cause' would be an imperfection for God only if He could not perform an act by Himself; not, however, if He *gives* a creature power to act itself, since that is a sign of divine benevolence. God is still always the *total cause of the totality of the effect*.

Mode of Divine Concurrence

With very few exceptions, noted above, scholastic philosophers agree in maintaining the necessity of God's immediate physical concurrence in creatural actions. It is in the discussion of the particular *mode of divine concurrence* that agreement ceases. A heated controversy arose in the sixteenth century concerning the 'mode' of divine concurrence, and the controversy is still very much alive in our day. This discussion gave rise to two main schools of thought — *bannesianism and molinism*. Previously, some philosophers expressed ideas akin to those incorporated in

these two rival theories, but they did not eventuate into distinct schools of thought.

The system of 'bannesianism' derives its name from *Domingo Bañez* (1528—1604), while that of 'molinism' had its origin with *Luiz de Molina* (1535—1600). Bañez was a Dominican and Molina a Jesuit; historically, the Dominicans generally have followed Bañez, and the Jesuits, Molina. Similarly, the thomists usually defend the doctrines of bannesianism.

In the beginning, the controversy centered on the theological problem of 'grace' and 'free will.' The operation of 'grace' is an instance of supernatural divine concurrence. Supernatural concurrence has its counterpart in the general concurrence of God with creatural action in the field of natural activity. Even in the field of natural activity, however, the crux of the problem is found in the action of man's free will.

The chief point of the controversy thus resides in the answer to the question: How reconcile the *absolute dominion of God* over all creatural actions (including the free acts of man's will) with the *self-determination of man's free will*? Both the 'absolute dominion' of God and the 'freedom of the will' must be maintained and safeguarded. But how should this be done?

The bannesianists and the molinists attempt to give the answer. And their attempt at an adequate answer has precipitated a never ending controversy. Some of the greatest minds have attempted a solution and failed. Here an explanation of the rival systems will be given.

The Answer of Bannesianism

Leaving aside the question of grace as not germane to philosophy, the answer of the bannesians to the problem indicated above is briefly as follows.

The bannesians (and, generally speaking, the thomistic school) contend that a mere simultaneous concurrence on the part of God is insufficient to maintain His supreme dominion over creatures. They therefore claim that God applies a *physical premotion*, a *physical predetermination* (*concursus praeuius*) directly to the creature's operative power. This 'physical premotion' is not an act of the divine will or of divine power or anything else identical with God's nature; it is a *finite created entity*, a quality (according to the general view), which is applied to the creatural faculty and gives it the immediate preparation for action (places it in *actu primo proximo* for action). Only when the creatural operative power has received this physical assistance ('physical premotion, determination') from God, can the power perform its proper action (*actus secundus*); without it, it cannot pass from potentiality (of action) to act.

The physical predetermination is *prior* to the activity of the creature, not with a priority in time, but with a priority of nature; it is prior in nature as the cause is always prior to the effect. This physical premotion removes the creature's indifference to action, thereby determining it to act (hence the terms 'premotion' and 'predetermination'). Premotion is not merely a 'moral' influence whereby God 'induces' the creature to act; it is a 'physical' assistance and influence *determining* the finite cause to its last actuality, so that the

act naturally results of itself. This physical premotion (predetermination) is necessary for every creature's every activity and therefore also for man's free acts of the will.

This teaching on physical premotion and predetermination leads to some interesting results. Physical premotion, by its very nature, *infallibly* brings the operative power of the creature into act. Not only 'can' the power act in virtue of this physical divine assistance; it infallibly does act, and that not in any *manner* and *direction*, but in that particular manner and direction which corresponds to the nature of the predetermination given by God. That is also true of the *free acts* of the rational creature. As long as the will is not predetermined, it is absolutely impossible for the will to act; if and when it is predetermined by God, it is absolutely impossible for the will to produce any kind of act except that to which it is pre-determined.

The will has no means of *choosing* a certain predetermination in preference to another, because without a previous determination it cannot be active at all. Hence, the will cannot decide for or against predetermination, nor for or against any particular kind of predetermination. *Whether* and *when* and *how* it be predetermined lies alone in the *decree of God's will*; and if and when the free will of the creature is predetermined, it *infallibly performs* the act for which the predetermination is given by God.

Nevertheless, the bannesians (and thomists) say, man's *will does not* thereby become *un-free*. God predetermines every creature according to its particular kind of nature. If the creature, because its constitution is such, acts necessarily, the predetermination is given by God so that it

acts necessarily. If the creature possesses a free will, the will is predetermined so that it acts infallibly, but it still acts in a perfectly free manner.

One can now understand the position of the bannesians (and thomists) with regard to *God's knowledge* of the future free acts of man. God knows what the free will of man can and will decide by simply knowing the *predetermining decrees* of His own will concerning these acts of man's will. Just as there are only two classes of acts, namely, those which will not occur in the future and those which will (depending on God's physical premotion), so there are but two kinds of divine knowledge, namely, *simple intelligence and vision*. As a consequence, the bannesianists reject absolutely all 'intermediate knowledge.'

The Answer of Molinism

The answer of *molinism* to the problem of the mode of divine concurrence differs radically from that of bannesianism (and thomism).

The molinists, in order to distinguish their doctrine of immediate divine concurrence from that of the bannesians (and thomists), call it *simultaneous concurrence*. In doing this, they want to express their rejection of any kind of an immediate 'previous' assistance (physical premotion, physical predetermination) to creatural activity on the part of God. According to the molinistic view, God has *decreed from all eternity* to give His concurrence to a certain creatural act which will take place in time; however, the concurrence itself is *given in time*, at the very moment

when the act is performed. This decree is one of the prerequisite conditions placing the creature in immediate preparation to act (*in actu primo proximo*). Since the concurrence is given, not prior to the act, but at the time when the act is performed, it is 'simultaneous' and not 'previous.'

From the standpoint of God it is a 'readiness to concur' with the creature's activity, and this is termed the *offered concurrence* (*concursus oblatus*). The act of the creature, if it is a necessary act, will now proceed with necessity from the creature's nature; thereby the 'offered' concurrence becomes *actual* (*concursus collatus, concursus in actu secundo*).

Concerning creatural *free* acts (as in the case of man's free choosing) God's concurrence will be *indifferent*; that is to say, it will not be 'determined,' as is the case with beings acting necessarily. God's decree of concurrence, therefore, with regard to 'free' acts will not be: "I will give this creatural action my determined concurrence"; such a decree applies only to the necessary' actions of creatural beings. In 'free' acts, God's decree will be: "I will give this creature in its free acts such a concurrence which does not compel it to act, but which *enables* it to act and that in any of the different ways which it *can choose* under the circumstances." Divine concurrence is thus, with regard to the free acts, eternally and entitatively one but indifferent and virtually multiple.

Only such an 'indifferent' divine concurrence, molinists claim, is compatible with that active indifference and self-determination which is the essence of the freedom of the

creature's will. Only under the supposition of an 'indifferent' concurrence is the creatural will capable of *omitting* an act which it could otherwise perform or of *performing* one particular act instead of another. By omitting an act (although it could perform it) or by performing one kind of act (although it could omit it or set a different act), the will makes use of its God-given freedom of action; thereby it determines both itself and the actual concurrence of God. God is thus a partial cause of the creatural free act; and so also is the free will a partial cause of the same act. Every free act of the will thus has two partial causes, two coefficient principles; but only one is the 'determining' cause, and that is the creatural will itself. The totality of the effect, however, depends on each of these two partial causes, so that, if either one were missing, the total effect (the act in its entirety) would also be missing.

The molinists strenuously oppose the doctrine of the bannesians (and thomists) that God knows all actually and conditionally future free acts of man in His predetermining decrees; they claim that in such a view the freedom of man's will is sacrificed. God's decrees, they say, are not the source of His knowledge. And yet it must also be maintained that God's knowledge of the free acts of man is absolute and eternal; it cannot be conditioned by man's free will, so that God would know of man's free decisions only at the time they are made. To solve this very great difficulty, the molinists have recourse to *intermediate knowledge* (*scientia media*) in virtue of which God infallibly and eternally knows all that a free will *can* or *would* do in every combination of circumstances. By means of this

‘intermediate knowledge’ God foresees every actually or conditionally free act of the will, because each such act contains within itself a *formal* and *objective truth* which must be known to the omniscient mind of God prior to any decision of His own will regarding it. This ‘intermediate knowledge’ of God is independent of any divine decrees and is logically prior to them. In this manner the molinists seek to harmonize the eternal and infallible foreknowledge of God and the freedom of the created will.

The Defense of Thomism

At the present time the *thomists* defend the tenets of the bannesian theory.

Two main questions are constantly in the foreground of the controversy: the question of divine physical premotion in general concerning all creatural activity; and the question of maintaining the freedom of the human will during divine physical premotion.

THE QUESTION OF *PHYSICAL PREMOTION IN GENERAL*.

The thomists, who are the chief defenders of Bañez and bannesianism, base their argument for divine physical premotion on the ‘principle of motion.’ This principle reads: *Quidquid movetur ab alio movetur. Whatever is moved is moved by another.*

The ‘principle of motion,’ say the thomists, is a strictly universal principle and law, and it admits of no exceptions. Now, all creatures are ‘moved’ in their actions, since they

pass from *potentiality* to *actuality* (from 'potency' to 'act') in their activities. The passage from potentiality to actuality in creatural beings always implies the acquisition of some new reality; if they possessed the reality already, they could not acquire it by passing from potentiality to actuality. Consequently, the new reality is not present in the creatural being beforehand. Yet the new reality cannot come from nothing, because 'nothing is nothing' and has nothing to give. The new reality must, therefore, come from a being already 'in act,' and this being must be 'other' than the being acquiring the new reality by passing from potentiality to actuality. However, *all* creatural beings pass from potentiality to actuality and thereby constantly acquire new reality, and so they must be 'moved' in this acquisition by another.' But there is only one 'being in act' outside the sum of 'all creatural beings,' namely, God. Therefore, whatever new reality creatural beings acquire must be received from God. *God is the mover.*

To be 'moved by another' means to be 'educated from potency to act by another,' because the very action of the 'passage' from potentiality to actuality is a new reality which was not previously present in the being. It follows that the creatural being must be *intrinsically dependent* in its passage from potency to act on the action of the mover, so that there exists a priority of nature between the action of the mover and the transition from potentiality to actuality. But a merely 'collateral' or 'simultaneous concurrence, as the molinists interpret God's concurrence, is insufficient to account for the *entire* transition. The molinistic theory always supposes the creature to move

itself at least in some part of the action, namely, when the creature, in passing into act, makes the 'offered concurrence' become 'actual concurrence.' Such an action on the part of the creature is against the above-mentioned 'principle of motion' and therefore impossible. More, then, is needed than a 'simultaneous' concurrence. God must give a physical premotion in order that a creature can really act.

George Hayward Joyce⁵ (a Jesuit, by the way) expresses this view admirably:

"Inasmuch as all action is a transition from potency to actuality, it is totally impossible that it can take place without the continuous agency of a cause external to the immediate agent: that otherwise we should be driven to admit that a being can confer on itself a new reality which it does not possess, giving to itself that which it has not got to give. The principle that the transition from potency to actuality supposes the operation of a cause which itself possesses the perfection actualized, is, we maintain, self-evident — though, of course, the perfection may exist in the cause in a higher manner, and not in the manner in which it is found in the effect. It follows that the operations of a finite agent can only take place in virtue of a premotion, ultimately referable to the First Cause. The finite cause is instrumental in regard of the Prime Mover: and apart from a 'previous' concurrence, its efficient powers lack their final complement."

— GEORGE HAYWARD JOYCE

Since every act of man's free will entails a transition from potentiality to actuality, the free will in its action is also moved by God by means of a *physical premotion* into action.

The free will, under the influence of the physical premotion of God, *wills infallibly* that to which it is predetermined. It does not follow from this, thomists contend, that the will is moved with *necessity* to act as it does; rather, it is placed by God in the act of *freely willing* something. The will of God not merely sees to it that something comes into existence by the thing which it moves, but it also sees to it that this is done in the manner which agrees with the thing's nature and is demanded by the thing's nature. Now, it is demanded by the nature of the will that it be moved *freely*. Hence, it must be held that the human will, in virtue of this physical premotion, is placed by God in the act of willing something 'freely.'

Garrigou-Lagrange⁶ (a thomist) says in this connection: "Who could demonstrate that there is any contradiction in maintaining that the *Creator of the free will*, who is *more intimately associated with the will than freedom itself is*, can *infallibly move the will to determine itself freely to act*? Infallibility is not necessity." In a footnote to this passage Garrigou-Lagrange remarks: "Thus in the case of a regularly constructed syllogism, in which the major is a necessary proposition and the minor is contingent, the conclusion follows *infallibly* though being at the same time in itself a contingent statement. In other words, there is *necessity of consequence* and not necessity of *consequent*, as in the following example: The virtuous person is deserving of credit. Now the Apostles were models of

virtue. Therefore they were deserving of credit.” A little farther on⁷ he says:

“How can the finite being exist apart from the infinite Being? It can exist only on condition that it is caused by Him and remains absolutely dependent upon Him. How can a secondary liberty exist apart from the primary liberty [of God]? It can exist only on condition that it is caused and moved by the latter, so that the faculty of willing passes from a state of passive indifference to one of active indifference contained in the very choice made by the faculty. Thus all the perfections of this secondary liberty pre-exist eminently from all eternity in the primary liberty. Why would God not have the power to produce infallibly in us and with us the freedom of our acts? . . . To maintain that God, as first cause, cannot produce with us and in us the free mode of our acts, is to maintain that a mode of being cannot be produced by the prime Being, who is the Creator of all the being there is outside Himself.”

— GARRIGOU-LAGRANGE

The reason, therefore, why the thomists insist on a ‘physical premotion’ for all creatural activity, including that of man's free will, is the *absolute dependence* of the creature on the Creator. God is the Lord and Master of all, and this, they feel, would not be so unless God

predetermined all creatural activity by means of a 'physical premotion.'

The Defense of Molinism

The molinists take as the starting-point of their discussion of the problem the *freedom of the will*. The freedom of the will is admitted, at least in principle, by both the thomists (bannesians) and the molinists; the fact itself, whether viewed from a theological or philosophical point of view, is indubitable, and the freedom of man's will must be safeguarded against all attacks. But the thomistic position, molinists contend, destroys free will in their doctrine of 'physical premotion (physical predetermination).' As a result of this conviction, the molinists attack the doctrine of 'physical premotion' as the proper interpretation of 'divine concurrence'; in its stead they advocate simultaneous concurrence.

Physical predetermination, molinists claim, is not necessary. And the freedom of man's will cannot be upheld under the influence of physical premotion.

Physical premotion is superfluous for the purpose intended. The thomists demand this physical premotion, first of all, in order to make it clear that God is the absolute *Prime Mover* of all creatures and to show their *complete dependence* on Him in all actions. However, the molinists say, all this will be upheld, and God can do everything described above, without 'physical premotion.' Hence, physical predetermination is superfluous for the purpose.

The *absolute dependence* of every creature on God is sufficiently clear and safeguarded when the following points are accepted:

The creature owes its entire *being* and all its *powers* directly to God; thereby its absolute dependence on God is assured under all circumstances.

No creature can pass from the state of *insufficient preparation* for action to the state of sufficient preparation, unless God (either alone or through creatures entirely dependent on Him) brings the creature into a state of immediate preparedness for action.

No creature, even when in a state of immediate preparedness for action, can pass from potency to act *unless assisted by divine concurrence* in the very act, that is to say, unless God, as a coefficient principle, produces (together with the creature) the actual application of the operative power to its connatural and proportionate action by willing this action to be produced and to proceed from the creature's operative power.

For all this, however, 'simultaneous' concurrence is sufficient, and 'physical premotion' is not required. Hence, physical premotion (predetermination) is not necessary for *complete dependence* of the creature on God.

Furthermore, thomists demand the existence of 'physical premotion (predetermination)' so that God *can direct all creatural actions to His purposes and ends*. Certainly God must be able to do this if He is the Master of all things. Molinists agree that God must be able to direct all creatural actions so that His supreme purposes and ends will prevail, but God can do this *without a physical premotion*.

With regard to the creatures which act *necessarily*, God knows from all eternity just what forces for action lie in them. By giving them their particular nature and powers and by arranging the order existing in the universe, God can produce, through 'simultaneous' concurrence (without which they cannot operate), any result that He wishes and direct them to any purpose that He desires by the very fact that He arranges them in their respective order and that they act with necessity. More is not needed.

With regard to the creatures which *act with freedom of the will*, God, since he created the will with freedom of action, leaves the free will intact. Still, He can direct the free will of men to any particular purpose that He wishes. Through His 'intermediate knowledge' God knows from eternity what every person *will actually decide* to do and what he *would* decide to do under any and every possible condition. God thus knows, infallibly and eternally, that this or that person will actually and freely do something in the circumstances as given. Consequently God knows with absolute certainty what He should decree and what circumstances He should bring about, in order that the free will of man fulfill His own purpose in a free manner; all this should cause no difficulty for the omniscient and omnipotent Creator of man's free will.

There is, therefore, *no necessity* for any kind of 'physical premotion (physical predetermination),' so that God can bring about any result He wishes. 'Physical premotion' is thus superfluous for the purpose intended; 'simultaneous concurrence' is all that is required. Why, then, postulate physical predetermination of the will, especially when the

theory presents insurmountable difficulties in maintaining the will's freedom?

PHYSICAL PREMOTION CONTRADICTS FREE WILL.

The freedom of the will consists essentially in an *active indifference* which makes the will master of its own acts and places it in its power to act or not to act (freedom of exercise), to will 'this' or 'that' (freedom of specification), and that even if all the requisite conditions for action are present. But this active indifference' is made impossible by physical premotion, whether one considers the will as predetermined or not as yet predetermined.

The *will as predetermined* by God has no active indifference. Under the influence of physical premotion it is metaphysically impossible, as the thomists and bannesians assert, for the will to *omit* the act to which it has been predetermined by God or to *change* it. The will simply *cannot* act in a manner *different* from that to which it has been predetermined by God. Hence, it has no active indifference or choice, so that it could perform or omit the act or choose 'this' rather than 'that.'

The *will not as yet predetermined* has no active indifference either. This physical premotion, according to the thomists, is a necessary *prerequisite condition* for every act of the will, and as such the will, without physical premotion, is absolutely incapable of performing an act at all.

Now, if the human will lacks active indifference before and in and after predetermination, then it cannot be said to

be free in its choice. Hence, free will is incompatible with physical premotion (predetermination). And yet, the *human will is free in its choice*. Consequently, physical premotion (predetermination) must be said to destroy free will. Physical premotion, herefore, must be rejected as the proper interpretation of the mode' of divine concurrence.

Thomists, of course, assert that God applies His physical premotion according to the nature of the agent, and He therefore applies it in such a manner to the will that it acts freely under the influence of the predetermination. Molinists say to this that the thomists uphold free will *in words*, but their *explanation really destroys* the will's indifference and thereby its *freedom* also. Their explanation involves, not a mystery (as some of them claim), but a *contradiction*: man's will would be actively indifferent and undetermined (because the will is 'free,' which implies self-determination) and yet be determined through physical premotion. Now, an 'undetermined-determined' will is a contradiction pure and simple.

PHYSICAL PREMOTION CONTRADICTS GOD'S SANCTITY.

For all acts without exception, thomists and bannesians claim, God must give His physical premotion, or they cannot be performed. Molinists contend that such a view makes *God the author of sinful acts*; and they argue in this manner.

God alone is the *author* of physical predetermination, and the influence of this premotion on the will is such that it has an irresistible, infallible effect. Hence, God is the

'determining cause in every concrete act according to its entire concrete being, while the position of man is that he *cannot omit* the act. God's will in this respect is to man's will as the irresistibly determining to the irresistibly determined. But one who is the determining factor in a concrete act which, under the circumstances of time, person, etc., is sinful, is in the real sense of the word the *cause of the sin*; otherwise there is no cause for sin at all. For example, some person likes a 'drink.' He has drunk to the limit of soberness and realizes that he ought to stop; but he continues to drink until completely intoxicated. For every glass he needed a physical premotion from God; with a physical premotion he could not possibly have stopped to drink. In virtue of the physical premotion and predetermination given to his will by God, he simply had to drink on to intoxication; he not only could drink on, but he could not possibly have prevented it. Without physical premotion the very possibility to drink was taken away, and with it the very possibility of avoiding intoxication was excluded. The cause of intoxication, therefore, is the influence of the physical predetermination; rather, God, the author of physical premotion, is the responsible author of the sinful act of intoxication. And so with all other sinful acts. Now, God, the infinitely holy, cannot be the author of anything sinful. But He would be, according to the theory of physical premotion. Therefore, the theory is wrong. Thomists resent this interpretation of their theory. God, they say, merely predetermines man to the *material* sin (to the positive reality found in the sinful act), *not to formal sin* (to the sinfulness of the act precisely as sinful). To this the

molinists answer that it is true that God predetermines the creatural will merely to the physical reality of the act. However, we impute the physical act as 'sinful' to the creatural will because the will actively determines itself to this concrete physical act which, considering all the circumstances, does not agree with the moral law. When, therefore, God actively *predetermines* the will by means of physical premotion to this same act, He is, even more than the creature, the responsible agent of the sinful act.

That thomists dislike this imputation and its conclusion, is obvious. As Garrigou-Lagrange⁸ writes: "The opponents of the Thomist thesis would have it that we say: 'God determines our choice,' whereas we say: 'God *moves* our will to *determine itself* freely in a certain manner.' After thus misrepresenting our thesis, they find it easy to add that, like Calvinism, it destroys liberty because it leads to the conclusion that free will, moved and prompted by God, cannot resist." For this reason the thomists constantly repeat their distinction between the 'infallibility' and the 'necessity' of the creatural act proceeding under the influence of God's physical premotion.

The molinists counter by claiming that the thomists are guilty of *inconsistency* when, in view of their doctrine of physical premotion and predetermination, they ascribe the sinful act to the will of the creature. In their explanation of the sinfulness of an act, and in order to make the creature responsible instead of God, they *surreptitiously introduce self-determination into the creatural will*. So they *do* admit (contrary to their avowed principles) that the will of man can 'actively determine itself,' irrespective of the divine

premotion. But then why postulate physical premotion and predetermination? 'Simultaneous concurrence' suffices. In any case, molinists insist, self-determination on the part of the creatural will is incompatible with complete predetermination.

Evaluation

Both thomism and molinism have their good points and also their obscurities. The two theories approach the problem from different angles, due to the emphasis on certain truths.

Thomism stresses the *absolute sovereignty of God* over the creature and, as a consequence, the absolute dependence of the creature on God. God is the creator of everything outside Himself, so that everything, including the action of creatures, owes its existence to the almighty power of God. Without God the creature is nothing. And since God does not act blindly but with evident purpose for all things, it is clear that creatures cannot frustrate the ultimate purpose of God. In order to safeguard the infinite sovereignty of God, thomists are convinced that it is necessary to make all creatural action (and that includes the action of the free will) dependent on a divine *physical premotion* and *predetermination*.

Molinism, on the other hand, while admitting the absolute sovereignty of God, emphasizes the *freedom of man's will*. The freedom of the will is the basis of all morality, for without this freedom there can be no responsibility, no reward, no punishment, no

commandment. Take away man's effective freedom and man is lowered to the level of a beast or of an automaton. The freedom of man's will must be safeguarded at all costs. And so also must God's absolute sovereignty. God cannot force man's free will, because in His infinite goodness He decided to create man as a free agent capable of good and evil through active self-determination. As they see it, physical premotion and predetermination would destroy this freedom of man's will. *Simultaneous concurrence*, based on intermediate knowledge, suffices to safeguard God's absolute sovereignty and also man's freedom. And thus complete harmony is established between God's sovereignty and man's freedom of the will.

No reference to the teaching of St. Thomas Aquinas has been made in the foregoing sections outlining the views of thomism and molinism. The reason for the omission is simple: both schools of thought quote passages of St. Thomas in support of their theory, and their interpretations are naturally influenced by their respective views.

Summary of Chapter XIV

The divine *conservation* of creatures and the divine concurrence in creatural action is the subject of the present chapter.

1. *Notion of Conservation.* — By *conservation* one understands continuation in existence through dependence on a cause. It is either passive' or 'active.' The issue in question here is the 'active' conservation of creatures on the part of God, namely, that He is the cause of the continued existence of creatures. Active conservation is either 'negative' or 'positive,' and positive conservation is either indirect' or 'direct.'

2. *Proof of Divine Conservation.* — We claim that God preserves all things without exception by a *positive and direct influence* (direct conservation).

All creatural beings are *contingent* and as such do not have the sufficient reason for their being in themselves but in God. This insufficiency pertains to the entire period of their existence. Hence, the sufficient reason for the entire period of their existence (not merely for their beginning in existence) lies in the non-contingent being, in God. Hence, their *continued existence*, because it is contingent like their beginning, demands the same positive and direct influence of God's activity. That, however, is what is meant by *divine conservation*.

God has the power to *annihilate*, that is, to make a being cease to exist. But annihilation, since it is no positive activity directed toward a positive result, must consist in the

withdrawal of some positive activity of God. Consequently, the perseverance in existence on the part of the creature must be due to a positive activity of God; and this positive activity is divine 'conservation.'

3. *Notion of Divine Concurrence.* — Divine *concurrence* is the influence of God operating with creatures in producing the same effect as they produce through their own activity. It is either 'moral' or 'physical,' and physical concurrence is either 'mediate or immediate.' God's concurrence to creatural action is physical and immediate.

4. *Proof of Physical Concurrence.* — The complete contingency of the creature affects not only its nature but also its *action*. Hence, also the action of the creature is dependent on God intrinsically, essentially, and immediately. Consequently, God must give His physical and immediate concurrence to the action of the creature.

Again. Whatever exists depends for its *existence* directly on the power of God. Now, all actions and effects of creatures are a positive reality in the order of existence, and as such depend directly on the power of God for their existence.

Finally. God can *hinder* creatural *action*, because no contradiction is involved. This hindrance, however, would be impossible for God, if He did not co-operate in the creatural action in a positive manner.

5. *Mode of Divine Concurrence.* — Bannesianism (and thomism) and molinism attempt to give an explanation of the *mode* or manner of divine concurrence. The problem is how to reconcile the *absolute dominion* of God over all

creatural actions (including the free act of man's will) with the *self-determination* of man's free will.

6. *The Answer of Bannesianism.* — The bannesians (and thomists) claim that God applies a physical premotion (predetermination) to the creature's operative power, thereby determining the finite cause to its last actuality so that the act naturally results of itself. The action 'infallibly' follows the kind of premotion given. But 'infallibility' is not the same as 'necessity'; the free acts of man follow infallibly but 'freely,' because God premoves according to the nature of the being He assists in its action. God's *knowledge* of the creature's free acts is based on His predetermining *decrees*.

7. *The Answer of Molinism.* — Molinism rejects physical premotion and in its stead advocates *simultaneous concurrence*. In actions of the free will this concurrence is 'indifferent,' enabling the will to choose and determine itself. Instead of God's knowledge resulting from His predetermining decrees, molinists postulate an *intermediate knowledge* (*scientia media*) in connection with the free acts; each such act contains a formal and objective truth which must be known to God's omniscient mind prior to any decision of His will regarding it. Only in this way, molinists are convinced, can the freedom of man's will be safeguarded.

8. *The Defense of Thomism.* — As regards *physical premotion* in general, thomists base it on the universal principle that 'Whatever is moved is moved by another.' Every creatural action is a passage from potentiality to actuality, and as such the new reality acquired can come

only from the *Prime Mover, God*. This principle applies also to the *free acts* of man. Since 'infallibility' is not 'necessity,' the free will acts infallibly but freely under the influence of physical premotion.

9. *The Defense of Molinism*. — Physical premotion, the molinists contend, is *superfluous* for the purpose intended. The thomists assert that physical premotion is required in order to make it clear that God is the Prime Mover of all creatures and to show their complete dependence on Him in all actions. Both purposes are achieved with simultaneous concurrence.

Physical premotion *contradicts free* will because it deprives the human will of the 'freedom of exercise' and the 'freedom of specification.' A physically determined will has not the 'active indifference' necessary for freedom.

Physical premotion *contradicts God's sanctity*, because it makes God the author of sinful acts. Thomists say that God premoves the will to act freely. But, the molinists assert, what the thomists say in words they contradict in their explanation, or they surreptitiously introduce, contrary to their avowed principles, self-determination into the creatural will.

10. *Evaluation*. — Thomism stresses the *absolute sovereignty of God*; molinism emphasizes the *freedom of man's will* in its actions.

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4 *Natural Theology* (New York: Longmans, Green & Co., Inc., 1927), p. 361 f

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Chapter 15

PROVIDENCE AND GOVERNANCE

ALL CREATURES OWE THEIR EXISTENCE TO GOD. GOD CREATED them because He is infinitely good and wished them to share in His goodness. Creatures thereby imitate the perfections of God in a limited fashion.

More, however, is required than creation. For creatures to endure in their being and existence, they need the 'conservation' of God; without this, they would immediately return to nothingness. For them to be active, both with regard to their own being and in relation to others, they need the 'concurrence' of God. Under all circumstances and conditions, creatures are thus dependent on the First Cause for their being and activity.

Another transient activity of God, relative to creatures, is His *providence* and *governance*. All theists agree in this. Even the pagans in their religious observances manifest a belief in the providence and governance of God, at least implicitly, because they pray and offer sacrifices to their deities for protection and assistance.

Belief alone, however, is insufficient to establish the providence and governance of God; solid reasons are

required, in order to establish this activity of God to the satisfaction of the philosophic inquirer.

Notion of Providence

Etymologically (Lat., *pro*, for; *videre*, to see, to look) the term *providence* means as much as ‘to look out (care) for something.’ And that is the common significance of the word. From a philosophical standpoint, all that is further required is a deepening and broadening of the term.

St. Thomas¹ defines God’s providence as the “type (plan) of the order in things towards an end.” And in another passage² he calls it “the type (plan) of the order of things foreordained towards an end.” What St. Thomas wants to say is that God has *in His mind* a definite plan of the order which He intends and foreordains in His creatures, so that the particular purpose of their being will be in accordance with the universal purpose of all creation. In other words, God did not give existence to His creatures and then let them fend for themselves, without bothering about them and their future in any special manner. On the contrary, God not only gave them their being, but also ‘foreordained’ the order of their being in themselves and in relation to other beings in this world; and He sees to it that this order is directed toward an end and is carried out toward the end He desires.

Two things, therefore, are involved in the providence of God: an act of His intellect containing the *plan* of the order which shall exist in creatural beings; and an act of the will containing the *decree* that this order shall prevail according

to the particular and ultimate purpose (end) He has assigned for them.

So far as the *purpose* of creatural beings is concerned, a distinction is necessary. Each individual being has its own inherent purpose, namely its own particular fitness and well-being. But each individual is also a member of a wider group and of the universe at large, and as a member it is subordinated to the purpose of the entire universe as a whole, namely, to the order of the universe as God has foreordained this order. And all beings, whether considered as individuals or as members of the entire universe, have as their ultimate purpose the manifestation of God's perfections, namely, the external glory of God.

The *whole* has more intrinsic value than the parts constituting the whole. In the designs of God's providence, therefore, the well-being of the parts of an individual being are subordinated to the well-being of the total individual, and the well-being of the individuals is subordinated to the well-being of the universe as a whole; all, however, whether viewed as individuals or as a universe, have as the ultimate purpose of their being and existence the manifestation and exaltation of God. This arrangement of creatural beings, both in themselves and in their relation to other beings as members of the entire universe, is what is meant by 'the order of things' foreseen and decreed by God in the designs of His providence. We maintain that every being, nonliving and living, material and spiritual, is subject to the loving direction of God's providence.

God's providence thus extends to the well-being of the individual beings and of the universe at large.

Correspondingly, a distinction is made between 'particular' and 'universal' providence. God's *particular* providence is the practical ordering of the individual beings for the achievement of the various ends proper to them. His *universal* providence is the practical ordering of the universe of things for the attainment of the end proper to the universe as a whole.

Now, if an 'end' is intended, the 'means' required to achieve the end also must be intended. God, then, through the plan of His providence supplies each creature with the means needed for its physical well-being; this is *physical* providence. Man, however, is also a moral being, and God gives man the means needed by him to live in conformity with his moral nature; this is the *moral* providence of God.

Notion of Governance

The *governance* of God is the execution of the plan of providence among existing beings; in other words, whereas providence pertains to the 'plan' of the order among things in the mind of God, governance is the 'actual direction' of things toward the end established for them by God.

Providence, considered as the plan of the order of things, is an exemplary idea present in the intellect of God which the divine will decrees shall be carried out; as such it is identical ultimately with God's infinite essence and exists in Him from all eternity. Governance (or 'government'), on the other hand, considered as the execution of the plan of providence, presupposes the fact of creation and of the existence of creatural beings, so that, if creatures did not

actually exist, there would be no governance on the part of God. As St. Thomas³ expresses the matter: “Two things pertain to the care of providence — namely, the reason of order, which is called providence and disposition; and the execution of order, which is termed government. Of these, the first is eternal, and the second is temporal.”

In a *strict* sense, therefore, providence and governance are by no means identical. Providence exists in the mind of God *prior* to the existence of creatures, while governance is *posterior* to (that is, follows) their existence.

In a *wider* sense, however, providence may be considered, as a matter of actual fact under present circumstances, to include governance. Creation need not have occurred; if it had not occurred, there would have been providence but not governance. Creation, however, actually having occurred, the providence of God involves its execution in fact. For this reason most authors include governance in the general concept of providence.

Henceforth in this chapter, since creatural beings actually exist, the concept of ‘providence’ will be used in the wider sense as including ‘governance.’

Proof of God’s Providence

The fact of divine providence is denied by the materialists, pantheists, finitists, fatalists, and many deists. We maintain that *God, through His providence, directs the world in general and man in particular* in a most wise manner toward the end He has decreed.

FIRST, GOD'S *GENERAL PROVIDENCE*.

The general providence of God can be proved either indirectly or directly. Both proofs will be given.

Indirectly, God's general providence is proved by showing the *absurdities* which necessarily follow its denial. A person could deny the existence of divine providence, only by maintaining that God either does not know how to direct all things to their proper and ultimate end, or that He has not the power to do it, or that He could do it but does not care to do it. None of these alternatives can be reasonably defended. God is infinite in His wisdom, His power, and His goodness. The first alternative is contrary to His infinite wisdom; the second, contrary to His infinite power; the third, contrary to His infinite goodness. Consequently, God's general providence directs the world and all creatures toward the end He has decreed.

Directly, God's general providence is proved from the *nature of God and of His creatures*. The nature of every single creatural being is such that it is immediately dependent in essence and operation on God as the First Cause. The end and purpose of each creature has been designed by the Creator. The creature attains its proper and ultimate end through action, and action follows nature and essence. As a result, creatural action necessarily requires not only that God give the creature a nature capable of, and fit for, action, but also immediately and directly assist it in the realization of its actions. This assistance on the part of God is conservation and concurrence. Now, to assist a creature immediately and directly in the achievement of its end and purpose of being

through concurrence in its every action is the same as to 'direct' it toward its end and purpose of being, because without God the creature can do nothing. Therefore, God directs all beings, from the smallest to the largest, toward the end and purpose of their being. That He does this in a most wise manner is evident from the fact that every act of God is infinitely perfect and consequently infinitely wise. Now, such an infinitely wise direction of all creatures toward the end and purpose of their being is what is meant by 'general providence.' God, therefore, directs the entire universe by means of His general providence.

It is obvious that every single being has its *own proper end* and purpose. Its 'proper end' is indicated by the specific nature it possesses, and every being has its specific nature. Man, because of the constitutional limitation of his mind, may and, in most cases, will be ignorant of the specific nature of the beings he encounters in the world; but this ignorance does not alter the fact that such a specificity is present. By the very fact that God gave a specific nature to each being He *intends* the realization of this specific nature as the proper end and purpose of the individual being; and what God 'intends' He realizes.

Besides the proper end and purpose inherent in its nature, each individual being and all together have an *ultimate end* and purpose. Whatever is inseparably connected with something that is intended must be intended with it. Now, the manifestation of God's goodness is inseparably connected with creation, inasmuch as creatures are things which are 'good.' Therefore, the manifestation of God's goodness in His creatures is

intended by God. But this manifestation of God's goodness is what is understood by God's 'external glory.' Consequently, the ultimate end and purpose of all creatural beings, singly and collectively, is God's external glory. God, therefore, intended His external glory as the ultimate end and purpose of all creatural beings. What God intends, however, will and must eventually come about; God's will cannot be frustrated by creatures. Hence, whether creatural beings know it or do not know it, consciously strive for it or do not consciously strive for it, they actually manifest the goodness of God and thus carry out the 'ultimate end' and purpose of their existence.

Since it is the 'intention' of God that all creatures, singly and collectively, realize the particular and ultimate end and purpose of their being, and since God's intention is always effective, His providence extends over the entire universe and every being in it. In other words, God's providence is truly universal.

NEXT, *GOD'S SPECIAL PROVIDENCE CONCERNING MAN.*

Moral philosophy, or ethics, shows that man strives naturally and necessarily for *perfect happiness*; it also shows that man cannot find this perfect happiness in creatural goods, but only in God the supreme good. Man is unable to achieve this goal in his life here on earth. Hence, the perfect happiness of man can consist only in an intimate union with God in eternity through contemplation and love of God.

Now, the entire world and every creature in it is by its very nature *fit to dispose* man for this final happiness. Hence, it must be the *intention* of God that all creatural beings do this.

Man uses the things within his reach for food, shelter, clothing, ornamentation, and the commodities of life. Directly or indirectly, the world has the natural function of ministering to man's vegetative and sentient life. Man's vegetative and sentient life, however, is the foundation of his intellectual life, and this intellectual life is the preparation for his ultimate happiness. The things present in the universe thus give occasion to man to develop his intellectual powers by study and contemplation, and thus man can mediate himself for a more perfect knowledge and love of God by acquiring a deep knowledge of God's creatures. The world leads man's mind to God. Creatural beings furnish man with abundant material to know God, acknowledge His dominion, love Him above all things, and to show his complete dependence on God in many ways. In this manner all things conspire to man's benefit.

After all, man is a *moral* being, subject directly to God as the eternal lawgiver. Morality can exist only when there is a conformity of man's actions with the norms of moral living. Man's ultimate happiness is closely bound up with the observance of the moral law. And since the moral law has God as its author, it is evident that God *intended* man to live according to the dictates of the moral law and also intended to be the supreme object of man's ultimate happiness. God, therefore, in making man a moral being and in giving him

an eternal goal of happiness to strive for, has *ordered* the things of this world in such a way that the inferior beings are in existence for the *well-being and happiness of man*. Man, consequently, is not subordinated in any way to the material things of this world, but they are subordinated to him; *man is subordinated to God*, inasmuch as all things should lead him to know and love God as the ultimate truth and the supreme good. Man may, of course, violate the moral law and thus frustrate the innermost purpose of his being, but he cannot thereby frustrate the purposes of God. Man, too, exists for the external glory of God. He will glorify God either in His goodness or in His justice.

God having intended that man observe the moral law here on earth and thereby find his eternal happiness in union with God, it is evident that *He has given man a special end* and purpose. Man is thereby a special object of God's providence. According to his bodily nature, man is a part of the universe at large; according to his spiritual nature, man has a purpose in life which is much nobler than that of the whole physical universe. Mere size means nothing in the eyes of God. It is man's moral well-being that counts in the estimation and intention of God. And because God loves man with a special predilection of His providence and governance, man must love God with his whole heart, his whole mind, his whole soul, and with all his strength. Only in this way will man make himself worthy of God's special providence and achieve his eternal happiness.

God does not do things by halves. Just as a wise architect, in contemplating the erection of a building, not only designs the plan but also makes provision for all the

requisite materials and then supervises the actual construction; so, too, God in His infinite wisdom not only plans the nature of each individual being and of the universe as a whole, but also orders the requisite means for them to realize their particular and ultimate end. Any other procedure would reveal a lack of wisdom. Man, therefore, since he occupies a special position in the scheme of things and has a special purpose as a spiritual and moral being, can be sure that the providence of God directs all things in such a manner that his specific and ultimate end can be realized. God will never abandon man to be a mere piece of driftwood tossed about aimlessly on the sea of the world.

St. Thomas⁴ proposes the argument for divine providence in the following clear and succinct manner:

“It is necessary to attribute providence to God. For all the good that is in created things has been created by God, as was shown above (Q.6, A.4). In created things good is found not only as regards their substance, but also as regards their order towards an end and especially their last end, which, as was said above, is the divine goodness (Q.21, A.4). This good of order existing in created things, is itself created by God. Since, however, God is the cause of things by His intellect, and thus it behooves that the type of every effect should pre-exist in Him, as is clear from what has gone before (Q.19, A.4), it is necessary that the type of the order of things towards their end should pre-exist in the divine mind: and the type of things

ordered towards an end is, properly speaking, providence.”

— ST. THOMAS AQUINAS

Providence, therefore, is a fact.

Physical Evil

The problem of the existence of physical and moral evil in the world is by no means modern. It has exasperated the mind of man from time immemorial. The *existence of evil* has always been adduced as an argument against divine providence.

Already the *epicureans* denied divine providence and governance because of the presence of evil. But that was like spilling the child out of the tub in spilling out the water of the bath; then the manifest order existing in the universe could not be explained. Later on, the *Manicheans*, taking over the two supreme principles of light and darkness from the Persian religion, maintained that all the good in the world owed its existence to the ‘principle of light’ as the source of good and that all the evil owed its existence to the ‘principle of darkness’ as the source of evil. Both principles are supreme in their respective spheres and are in perpetual war with each other, but eventually the ‘principle of light’ will conquer the ‘principle of darkness’ and the good will triumph over the evil. They overlooked the fact that ‘darkness’ and ‘evil’ are negative in concept and being and that the ‘principle of darkness’ can have no existence

as such without it being a 'good.' *Pluralists* and *finitists*, like William James and many moderns, identify God with the finite world and consider Him to be subject to all the limitations and defects present in the things of this world; God, in their view, is continuously combating evil through self-improvement. That their 'God' is not the infinitely perfect God of the theists, is obvious; in fact, this world-god is not God at all, at least in the traditional sense of the term. There is no need of proving here the existence of the Supreme Being as distinct from finite beings.

The existence of *physical evil is admitted* unreservedly. The fact is too evident to be denied. What is not admitted, however, is that the existence of physical evil in the world is a valid argument against the providence of an all-wise Creator. Man's mind, of course, is very limited in its power and knowledge, and man cannot expect to penetrate the depths of God's infinite wisdom; many things, therefore, will always remain obscure and mysterious to man.

Unfortunately, too, the real force of the argument of physical evil lies in its emotional appeal, particularly if someone has suffered personal loss or injury. The problem, of course, must be met on a *rational, not an emotional, basis*. If this is done, much of the difficulty vanishes.

Of primary importance in properly judging the presence of physical evil is the fact that *God freely created the world as it is*. He was under no compulsion to create at all; nor was He under compulsion to create this particular world rather than another. Much less was He under compulsion to create the best possible world. Undoubtedly, God could have created a world without physical evil in it, had He so

desired. The fact is, He created this particular world with a *hierarchy of inferior and superior beings*, and to these beings He gave the power of action. The individual being is a member of a group, and the various groups constitute the universe. In this way each individual being has a definite place in the *order of the universe as a whole*, just as the constituent parts of the individual have a definite place in the order of each being as an individual.

Now the parts, although they have their own proper being, exist for the whole; the inferior is subordinate to the superior. The well-being of the whole may well require the sacrifice of the well-being of the parts, and the well-being of the superior may well require the sacrifice of the well-being of the inferior. Subatomic particles furnish the material for the elements; the elements, for the compounds; the compounds, for the plants; the plants, for the animals; the animals, for man; and all, for the order of the universe as a whole. In this *hierarchy of order*, therefore, the lower beings must give way to the higher. And so it happens that in the interplay of action between lower and higher beings some lose their physical integrity, and *physical evil results*.

What is wrong with such an arrangement? Nothing whatsoever. The individual being thus has its own proper end as an individual and also an end in the order of the group and of the universe. As an individual being it is less important than as a member of the group and of the universe. God's providence extends to all beings, whether they be considered as individuals or as members of a higher order. But if God wanted the order of the physical world to be such that the inferior beings exist for the superior and

that the well-being of the individuals be subordinated to the well-being of the groups and of the universe as a whole, then that is the way the world should be. And that means that *physical evil is a normal feature of the world*.

St. Thomas⁵ develops this point very plainly, when he writes:

“The perfection of the universe requires that there should be inequality in things, so that every grade of goodness may be realized. Now, one grade of goodness is that of the good which cannot fail. Another grade of goodness is that of the good which can fail in goodness, and this grade is to be found in existence itself; for some things there are which cannot lose their existence, as incorruptible things, while some there are which can lose it, as things corruptible. As, therefore, the perfection of the universe requires that there should be not only beings incorruptible, but also corruptible beings; so the perfection of the universe requires that there should be some which can fail in goodness, and thence it follows that sometimes they do fail. Now it is in this that evil consists, namely, in the fact that a thing fails in goodness. Hence, it is clear that evil is found in things, as corruption also is found; for corruption is itself an evil... God and nature and any other agent make what is best in the whole, but not what is best in every single part, except in order to the whole, as was said above (Q.47, A.2). And the whole itself, which is the universe of creatures, is all

the better and more perfect if some things in it can fail in goodness, and do sometimes fail, God not preventing this. This happens, firstly, because 'it belongs to Providence not to destroy, but to save nature,' as Dionysius says (Div. Nom. IV); but it belongs to nature that what may fail should sometimes fail; secondly, because, as Augustine says (Enchir. 11), 'God is so powerful that He can even make good out of evil.' Hence many good things would be taken away if God permitted no evil to exist; for fire would not be generated if air was not corrupted, nor would the life of a lion be preserved unless the ass were killed. Neither would avenging justice nor the patience of a sufferer be praised if there were no injustice."

— ST. THOMAS AQUINAS

Physical evil is thus no valid argument against the providence of God. The deficiencies of nature are the necessary result of the *limited perfection* of created nature and its powers. There must be some limitation and some deficiency somewhere. Hence, God can permit physical evil and indirectly will it as a normal feature of the order of the universe.

BUT WHAT ABOUT *PAIN* IN BRUTE AND MAN? PHYSICAL PAIN IS real; not a mere illusion, as Christian Science claims. Does not the presence of pain bespeak cruelty in the Creator?

Not at all. In organic sentient beings pain has a normal function in the economy of their system.

Brutes have two classes of supreme tendencies — the preservation of the individual and the conservation of the species. For this purpose brutes possess senses and instinct. Together with these powers they have *pleasure and pain*, and they are the sanction of the preservation or violation of their fundamental natural tendencies. Since brutes do not possess reason, they have pleasure and pain to guide them in the preservation of the order stamped upon their nature.

Physical *pleasure* accompanies the normal exercise of every natural faculty in the service of the well-being of the individual animal and in the service of the conservation of the race. Physical *pain* is the natural result of the overuse or the lesion of some bodily organ; as such, pain prompts the animal nature to repair the damage suffered. Since the brute by its very nature seeks pleasure and avoids pain, the natural order is maintained or restored. Organic disorder would become a permanent disability, if there were no pain to force it to seek relief. To suffer no pain under any condition of life would be equivalent to destroying the animal itself. Pain is never present for itself; it is merely an indication that something is wrong, and its function is the restoration of normal function. That is why *pain is exceptional*; it is never the rule.

The same principle applies to *man*, taken according to his sentient nature. Man would refrain from doing many things conducive to his physical well-being, if it were not for pain. But here, too, pain is a means of preservation, of

preventing injury, and of restoring proper function and structure. Every pain indicates some kind of organic need, and thus physical pain is a wise ordination of providence.

From an *ethical standpoint*, pain has an even greater significance. It prevents moral evil and *stimulates* moral good. It is an occasion for great virtue. Self-control, self-sacrifice, fortitude, patience, forbearance, charity — all are hardly possible without a certain amount of suffering and pain. Pain also shows the *value of life*. It plainly and persistently calls to man's mind the truth that he is not made for this life, that the earth is no playground and life no play, that he was created for something nobler than this transient world, that there is a better existence to come for which he must prepare himself. Pain is also a *means of penance*, a restoration of the violated moral order which demands satisfaction and atonement.

But what about the *calamities* and *catastrophes* which destroy human life? An earthquake, for example, occurs in a thickly populated territory. All are sleeping. In a moment the walls of the home rock and crash. There is a shriek, a gasp, a groan — and hundreds and thousands of persons die a violent death. To the unthinking such an occurrence may seem to be against the providence of an all-good God. The answer, however, is relatively simple and clear. Man's ultimate happiness and destiny does not consist in this earthly life; it consists in his *eternal happiness* after death, and the sudden cessation of man's earthly existence does not affect his eternity. Hence, God is in no way obligated to suspend the established laws of nature for the sake of saving human lives, since this does not really influence

man's eternal soul and does not hinder him from attaining the ultimate purpose of his existence — happiness in eternal union with God. Besides, such fatalities are a great warning which may deter many from sin and keep hundreds of thousands on the path of righteousness. If some human beings thereby lose their destiny, the fault is not God's but man's. Death is by no means the greatest evil; sin is.

The fact of an eternal life also explains why many good people suffer misfortune on earth, while the wicked frequently prosper: the latter have their reward here; the former are to receive it in the life to come.

Physical evil, therefore, cannot be adduced as a valid argument against the providence of God.

Moral Evil

In relation to divine providence, some thinkers find an insoluble difficulty in the *existence of moral evil*, of sin, in the world. Yet, like physical evil, moral evil is no valid argument against God's providence.

There is a great difference between *permitting* sin to happen and *approving* sin when it does happen. The 'approval' of sin on the part of God would indeed be contrary to His infinite holiness. To 'permit' sin to occur means merely 'not to hinder' it from occurring, although one could, *per se*, hinder it from taking place. In committing sin, the created will is the sole cause of the transgression; God merely gives His concurrence to the physical or

physiological act of man, and thus He does not hinder' man from setting

the act, but He does 'not approve' of the act in so far as it involves a violation of the moral order. Specifically, moral evil is neither against God's goodness nor against His wisdom.

It is not against *God's goodness*.

So long as man has a *free will*, he can choose to perform an action or refrain from an action which is in conformity or in disconformity with the moral law. Man knows this from personal experience: he is forced neither to obey nor to disobey the dictates of conscience. The *possibility* of moral evil (sin) is thus necessarily connected with the created will because of its 'freedom.' 'Where there is necessity, there is no freedom; and where there is no freedom, there is no possibility of sin. God could, of course, have decided to make moral evil impossible by simply *abstaining from creating* the human will as free; but in that case such a creature would not be 'man.' Man as man is a being endowed with freedom of choice; man as man, therefore, will always be able to decide to act contrary to his conscience and disobey the moral law. Consequently, if God decided to create man, He foresaw the possibility of moral evil in the free will of man. Or, God could have decided to give *such assistance* to man's free will that he would, as a matter of fact, never disobey the moral law. Such an assistance, however, cannot be demanded of God's goodness, because God gives *enough* assistance (conscience, promises of reward, threats of punishment) to deter man from committing sin. Besides, man is not

compelled to sin; sin is a *free* act, and it can always be avoided by a person of good will. So long, then, as God gives man the power and the means to avoid sin, there is no fault on His side. If man sins, the fault is entirely his. Hence, moral evil is not against God's goodness.

Nor is it against *God's wisdom*.

The truly wise person always acts for a definite end and uses the proper *means* to achieve the end. The final end to be achieved by creation and by man is the greater glory of God. The existence of moral evil would be contrary to God's wisdom only if moral evil would frustrate this final end. But it cannot and it does not. Even if a human will obstinately persists in moral evil unto death, God's wisdom triumphs. For God directs even moral evil to the ultimate purpose of creation, because, by means of his sanctions in the life to come, God leads man to glorify His infinite *justice*. Even in this life God's wisdom uses moral evil for the *welfare of man*: He does this for the welfare of those who have done evil by leading them to repentance, as in the case of St. Paul, St. Augustine, and of countless others; and for the welfare of those who suffer the ill effects of moral evil at the hands of others, by leading them to greater virtue, as in the misfortunes of the martyrs and in general of those who are persecuted unjustly. In this way God uses the presence of moral evil, which He never approves but tolerates, as a means of showing His infinite mercy to man. Sin thus is the condition and occasion for much moral good; and this good is a sufficient reason for God to *permit* sin to occur. Ultimately, the ways of God's wisdom are vindicated.

The following quotation from St. Thomas⁶ is pertinent to the matter under discussion:

“Providence multiplies good things among the subjects of its government. Therefore any thing that would deprive things of many good things does not belong to providence. Now if the will were deprived of freedom, many good things would be done away: for no praise would be given to human virtue; since virtue would be of no account if man acted not freely: there would be no justice in rewarding or punishing, if man were not free in acting well or ill: and there would be no prudence in taking advice, Which would be of no use if things occurred of necessity. Therefore it would be inconsistent with providence to deprive the will of liberty.

“Hence it is said (Ecclus. XV, 14): ‘God made man from the beginning and left him in the hand of his own counsel’; and again (*ibid.*, 18): ‘Before man is life and death, good and evil, that which he shall choose shall be given him.’

“Hereby we refute the opinion of the Stoics who held that all things happen of necessity according to the order of infallible causes, which order the Greeks called *εἰμαρμένη*.”

— ST. THOMAS AQUINAS

The evidence for the existence of Providence, as seen especially in the order prevailing in the universe, is so great

that it would be un-philosophic to doubt or deny providence merely because some facts seem to be irreconcilable with it. Isolated facts, particularly when not too well understood, can never be a valid argument against a well-established law. In our shortsightedness we see only the immediate causes, effects, and purposes of things, and we are unable to penetrate into the deeper meanings of God's wisdom and knowledge. Ignorance is neither an excuse nor a fit argument.

Fate and Chance

Is there such a thing as *fate*?

The answer will depend on what meaning is given to the term. Seneca⁷ defines 'fate' as "the necessity of all things and actions which no force can break." If 'fate' is taken in an *absolute* sense, namely, in the sense that all creatures and their actions are so controlled by other creatures and creatural forces (for example, by the stars) that the course of their existence is absolutely determined for them beforehand, then fate is non-existent. Fate in such an absolute sense implies the denial of the freedom of God and man and leaves no room for divine providence and governance in the affairs of men and of the world. But if 'fate' is taken in a *relative* sense, its existence can be readily admitted. In this relative sense 'fate' would merely mean the arrangement of secondary (creatural) causes so as to produce the effects foreseen by God and decreed by Him according to the purpose of His providence. It is in this sense that St. Thomas⁸ speaks of 'fate.' Generally speaking,

however, it is better not to use the term 'fate,' because people usually take the word in an absolute sense.

Is there such a thing as *chance*?

The term 'chance' can be taken in one of two ways: either with regard to the intellect or with regard to the cause. With regard to the *intellect* something is said to happen 'by chance' when the intellect is ignorant of the *cause* producing the effect. With regard to the cause something happens 'by chance' when it occurs outside of the intention and arrangement of the cause. Taken in the first meaning, many things can be said to happen 'by chance' in so far as man's intellect is concerned, because man is naturally ignorant of many of the causes which operate in nature; God being omniscient, however, nothing can happen 'by chance' with regard to His intellect. From the standpoint of the operating causes, it is evident that many things can and do happen 'by chance' where particular causes are concerned. For example, when a brick slips from the hand of a bricklayer high up on a scaffold and in falling hits a passerby on the head, it does so by chance, because it does not lie in the nature of the brick to strike a passerby on the head. However, with regard to God as the provident universal cause concurring in all creatural actions, nothing can ever happen 'by chance.' Chance, therefore, occurs with respect to creatural beings, both from the standpoint of knowledge and causality, but never with respect to the providence of God.

It is, therefore, a grave error of judgment to speak of good fortune and misfortune as if they occurred independent of the rule of divine providence: whatever

happens, happens either according to God's intention or at least with His permission.

Optimism and Pessimism

Optimism, as a philosophic system of thought, is the doctrine that the present universe is the best of all possible worlds. G.W. Leibnitz (1646—1716) was an advocate of absolute optimism. He admitted the existence of evil, but attributed its ultimate source to the imperfection intrinsic to all limited existence. In order to vindicate God's absolute perfection, therefore, he maintained that the present world is the best which God could create.

While we assert that God is infinitely good and perfect in all that He does, so far as He Himself is concerned, we deny that the present world is *absolutely the best* which God could create. Not only does experience reveal many physical and moral evils in this universe as it is presently constituted, but an absolutely perfect world, the best which God could create, is a *contradiction in terms*. God being infinitely perfect is indefinitely imitable by creatural beings. Every creatural being, however, is necessarily finite in its perfections. More perfect beings must be possible to God's creative power; otherwise a limit is set either on God's power or on His perfections. God cannot be necessitated to create, much less to create beings with greater perfection than that which the present world contains. God freely created the present world, and it is *relatively perfect*, namely, as perfect as He intended it to be; but it is not the

best possible world, because such a world is self-contradictory.

Pessimism, as a philosophic system of thought, is the opposite of optimism. Its doctrine contends, at least as far as man is concerned, that there is nothing good in life and in the world. Absolute pessimism is just as erroneous as absolute optimism.

Buddhism as expounded by Gautama (or Gotama) looks upon living as essentially full of sorrow. Existence itself is an evil, and the main problem of life is to obtain the extinction of all desire (the source of all pain and suffering) in nirvana and of all being in parinirvana. *Modern pessimism* owes its vogue mainly to the philosophies of Arthur Schopenhauer (1788—1860) and Eduard von Hartmann (1842—1906). From their writings pessimism was carried over into the field of literature.

That there is much suffering in life, is an evident fact. But that life is essentially a failure and an endless source of pain and sorrow, is contrary to all experience. Pantheism and finitism can never succeed in giving an adequate explanation of the existence of physical and moral evil in the life of man. Theism alone can. Just as this world is not absolutely the best, so it is also not the absolutely worst. The infinite goodness of God is reflected in His creatures; it cannot be otherwise. Hence, in so far as beings have essence and existence at all, they *must be good*. Now, if the world is essentially good, pessimism is false.

The ultimate explanation of life, of course, is not found in the natural order. It is found in the *supernatural destiny of man*.

Miracles

From the standpoint of its etymological derivation, a 'miracle' (Lat., *mirari*, to wonder) is anything that causes wonderment. Wonderment, however, can be caused in a person for reasons of ignorance. For instance, an electric storm or the rise and fall of the tides may produce wonderment in an uneducated rustic, although they are purely natural phenomena. More is needed for a 'miracle' properly so called.

In traditional usage, a *miracle* is defined as a perceptible event which exceeds the order and power of nature and has God as its author. The terms need clarification.

Miracles are viewed as a testimony of God's intervention in the course of nature on behalf of man. For this reason the definition of a 'miracle' is formulated as given above. A miracle is an *event*, that is, an occurrence, a happening, an effect of some sort. It must be a *perceptible* event. One could just as well say that it must be a 'sensible' event, because only something sensible is perceptible. Man derives his knowledge through the senses, and purely spiritual realities make no impression on the senses. For instance, the spiritual transformation of a soul is of a higher order than a sensible occurrence; but it is not classed as a 'miracle' in the strict sense of the term, because its existence cannot be proved by means of the regular channels of information. Then, a 'miracle' *must exceed the order and power of nature*. The word 'nature' here means the assemblage of all creatural beings, whether they be material or spiritual, together with all the powers flowing

from their essence. The phenomena of spiritism (if they are genuine) would be performed by spirits; however, since such spirits are creatures belonging to the realm of 'nature,' such phenomena are not 'miracles' in the accepted meaning. The 'order of nature' is presupposed as existing; and on this account divine creation and conservation and concurrence are excluded from the concept of a 'miracle' since they are prerequisites for this order itself. To be a real 'miracle' the occurrence must exceed the powers of any and all creatural beings, so that it *has God as its author*. The mere fact that an event is rare and extraordinary does not make it miraculous; nor does the fact that man is ignorant of the forces at play. The circumstances must be such that man is certain that the existing forces of nature are incapable of producing the effect in question, so that recourse must be had to the omnipotence and wisdom of God as the only logical explanation of the occurrence. Every 'miracle' is thus a *suspension of the ordinary laws of nature* on the part of the Almighty.

Some events exceed the order and powers of nature *substantially (quoad substantiam)*. Such effects simply do not occur at all in the realm of nature. Effects of this kind would be, for example, the restoration of life to a really dead person, the actual compenetration of material substances (physical bodies), the giving of sight to a person born blind because of some organic deficiency. These effects lie entirely beyond the range and power of natural causes and laws; only God can produce them. Other events exceed the order and power of nature because of the *manner (quoad modum)* in which they are performed. The

events themselves occur in nature and are produced by natural causes and forces, but not in the particular 'manner' as in the miraculous occurrence. Thus, it is a natural event that diseases are cured and broken bones mended. But when such facts occur instantaneously, by means of a mere word or command, then this 'manner' or 'mode' is not in accordance with the procedure of natural causes and laws; hence, in such cases it is the manner of the occurrence, not the event itself, which must be ascribed to the omnipotent power of God in whose name they are performed.

Miracles Are Possible

Whether miracles have ever actually occurred is a matter of historical evidence. The philosopher is primarily concerned with the twofold problem of the *possibility* and *cognoscibility* of miracles.

Pantheists of all shades deny the possibility of miracles. To be consistent, they must. According to their doctrine, God is identified with the world; God (or nature) is the only reality which exists. There can be nothing outside of, or above, or contrary to, nature; that would be equivalent to saying that something exists outside the entire range of being, or above, or contrary to, all existing being. Granted their premise, the possibility of miracles must certainly be denied. *Deists*, as a rule, assert that God has indeed created the world, but after that He leaves it entirely to the forces and laws which operate in nature, so that no exceptions occur in the natural course of events. *Fatalists*

maintain that every being in the world, man included, is controlled by the iron law of necessity which nothing can abrogate or alter. *Materialists* admit of no beings but those which are material. God, providence, and miracles can have no place in their system. *Many physical scientists* deny the possibility of miracles. They, perhaps more than others, perceive the admirable order of the universe and the complete reign of law in nature and in each single being, and from this constancy of order and uniformity in nature they argue that the possibility of miracles is precluded. A miracle, they claim, would be a violation of nature's inflexible laws, and to admit the possibility of that would be tantamount to the destruction of science. Others, like *Spinoza, Locke, and Kant*, admit the possibility of miracles in principle. Practically, however, they deny it. What man calls a miracle, they say, is really a natural event, only he does not and cannot discover the natural laws and causes that govern the phenomena.

WE CLAIM THAT *MIRACLES ARE POSSIBLE*.

If miracles were impossible, the reason would have to be sought either in God or in the laws of nature. But neither is true.

The reason does not lie *in God*.

Certainly, miracles would be impossible on the part of God, if they would imply an *imperfection* of some kind in God, either because of the 'fact' that a natural law has been suspended or because of the 'manner' of the action or

because of the 'purpose' of the miracle. That, however, is not the case.

Every miracle, of course, is a suspension of a law of nature in a particular instance. But this fact does not oppose God's *immutability*. Together with the uniformity of nature which God has undoubtedly decreed, He also decreed the exception involved in the miracle. Hence, in wishing both the laws and the exception to some law, He does not change His plans and decrees, but merely His works. Nor does the fact of a miracle contradict His *wisdom*. If God worked a miracle in order to correct some mistakes in the creation of the world or to remedy a positive defect which He had somehow overlooked, then an imperfection in God would be implied. However, it is preposterous to think that the all-knowing and all-wise Supreme Being could make mistakes or overlook a defect. If, then, God decreed from all eternity that a miracle should occur at a particular point of time, the miracle would be a result of His wisdom and not contrary to it.

The same line of reasoning applies to the *manner* in which a miracle is worked. If a miracle were worked because of *arbitrariness and fickleness* in God's will, it would involve an imperfection in God's being and be impossible. But why would a miracle be the result of arbitrariness and fickleness on God's part? It certainly need not be so. And if it is not, a miracle must be, to say the least, in accordance with His perfection.

So far as the *purpose* of a miracle is concerned, a miracle would be impossible on the part of God if His purpose in working a miracle were against His sanctity. But

that could only happen if God's purpose were contrary to holiness itself. God the all-holy, however, cannot have an unholy purpose in any of His operations. Hence, His purpose in working a miracle cannot be contrary to His sanctity.

The *laws of nature* do not make miracles impossible.

The present order of nature is not necessary. It is an effect of creation, and creation came about through an act of *free choice* on the part of God. God, therefore, was in no way constrained to create just this particular order. Consequently, in decreeing the present order God could also include exceptions to this order.

Of itself, the *order* of the world *could be different* from what it actually is. This order had to be known by the divine intellect before God's will brought it into being. Now, God's intellect could and did see in the imitability of His perfections other worlds and other natural orders capable of imitating His perfections. It is evident, therefore, that of itself the present order of nature could be different. Hence, exceptions to this order, that is, miracles, are not intrinsically impossible.

All creatural beings exist in *absolute dependence* on God as their creator. Because God gave to these beings their entire substance and all their powers, He can, immediately and most intimately, influence them in any way He desires. It follows that the order of nature and the laws governing nature are not *immutable* in relation to God. If He can annihilate the creatures completely, He can certainly change them in their substance and powers, and He can

certainly also suspend their operations any time He so decrees.

One must never forget that a miracle is not an 'abrogation' of a natural law; rather, it is an *exception* to an existing law. When a miracle occurs, the law remains in full force throughout the universe except in this particular place and at this particular time and on this particular occasion. Fire, for instance, does not cease to burn and consume on earth, because the three youths were spared by God in the furnace of Babylon. Men are not cured instantaneously now, because Christ cured a man born blind in an instant by His mere word. A body heavier than water would sink into the water anywhere, even though Christ once walked on the waters of the Sea of Galilee. If God designs to work a miracle, the natural tendencies of creatural beings remain intact. God does not change the 'nature' of being through the performance of a miracle, nor does He disturb the uniformity of the order of nature; all He does is *suspend the effects* of nature and its forces in a particular instance.

It is thus evident that neither on the part of God nor on the part of the laws of nature is a miracle impossible. When, therefore, certain scientists fear that a miracle would tend to destroy science and scientific knowledge, their misgivings are utterly unfounded.

Miracles Can Be Known

The intrinsic possibility of miracles is thus established. However, it is one thing to say that miracles are possible,

and quite another thing to claim that miracles can be objectively recognized as having actually occurred. Can this claim be established beyond reasonable doubt?

Two considerations enter the problem. The first is: Did such and such an occurrence actually happen? This is a question of *historical fact*. The second is: Does this occurrence exceed the order and powers of nature? This is a question of *philosophical judgment*.

So far as the actual occurrence of a miracle as a *historical fact* is concerned, its acceptance will be conditioned by the 'evidence' furnished by the witnesses. All events, whether miraculous or not, are on an equal footing as historical facts. They depend entirely on the competence of the witnesses, and this competence is determined by their *knowledge* of the facts and their *trustworthiness* as witnesses. Since a miracle is a 'perceptible' event, the knowledge required is simply the knowledge obtained through ordinary observation. That a man limps because his one leg is shorter than the other is an ordinary observable fact; and that his walk is afterward normal because both legs are now of equal length, is also an ordinary observable fact. That a person has tuberculosis of the lungs in an advanced stage, any competent physician can verify with the help of X rays; that the destroyed tissue of the lungs is later restored, the physician can also verify with the help of X rays. The trustworthiness of the witnesses, as we see in courts of law, can also be established to the satisfaction of reason. Hence, the *fact* of a certain occurrence, considered to be miraculous, should not be too difficult to establish,

provided one takes all the significant circumstances into account.

The miraculous character of an occurrence presents a more serious problem of *philosophical judgment*. For this judgment knowledge of the cause of the event is necessary: if the cause is a natural force, the event itself is natural; but if a natural force cannot have produced the observed effect, the event is miraculous. Some thinkers, especially some scientists, claim that man can never know that a miracle has actually occurred because some 'hidden force' of nature may have produced the effect. In order to be certain, they say, man would have to know *all* the forces of nature, and such a knowledge man can never acquire. This is an extravagant demand, one which these scientists never exact in their own field of research. All that is required is a knowledge of the *pertinent* forces, and such a knowledge man may have in many instances.

For example. *Decomposition* of the body and *rigor mortis* are true signs of the death of a person, and they are readily observable. Suppose they are present; death has most certainly overtaken the organism. Everybody, especially the scientist and physician, knows that no pertinent natural force can restore life to the corpse. The restoration of life to a dead person, therefore, cannot be the effect of a natural power. If then, this dead person is restored to life, the restoration must be adjudged a miraculous event. Another example. Every physician is aware that *muscular atrophy*, resulting in paralysis, may possibly be cured through prolonged exercise; but he also knows that a mere verbal command will not be a sufficient cause to restore the

atrophied tissue. Yet it is done. What must be his verdict in the case? That some 'hidden natural force' produced the effect? Not at all. He knows that no 'pertinent' force of nature was present in the verbal command, and the cure was therefore 'miraculous.'⁹

Miraculous events, therefore, are possible and their occurrence can be verified under proper conditions. That is all that logically pertains to philosophy.

God and Man

Philosophy, by its very nature, is restricted to the findings of unaided, natural reason. The supernatural is thus excluded from philosophical investigation. It is on this foundation that the science of theodicy has been built.

But the supernatural is also a fact, although philosophy is incapable of proving it. God has given man a supernatural destiny, culminating in the Beatific Vision in heaven. This is the sublime purpose of man's existence. It explains everything. And the supernatural means which God gave man to attain his eternal goal is sanctifying grace. Grace makes man truly a son of God by adoption; and God is truly man's Father. But if man is a son, then he is also an heir. His inheritance is the immortal possession of God in never ending glory and in everlasting bliss. This is an end eminently worth striving for and living for through a lifetime of loving God. Therein lies the wisdom of the ages.

As it is said in the Book of Wisdom:¹⁰

"Wisdom is glorious, and never fadeth away, and is easily seen by them that love her, and is found by them that seek her ... For she goeth about seeking

such as are worthy of her, and she showeth herself to them cheerfully in the ways, and meeteth them with all providence. For the beginning of her is the most true desire of discipline. And the care of discipline is love: and love is the keeping of her laws: and the keeping of her laws is the firm foundation of incorruption: and incorruption bringeth near to God. Therefore the desire of wisdom bringeth to the everlasting kingdom.”

— WISDOM 6

Summary of Chapter XV

God's *providence* and governance are the subject of this chapter.

1. *Notion of Providence.* — *Providence* is "the type (plan) of the order of things foreordained towards an end." God's intellect has the 'plan,' and His will decrees that this order shall prevail. As an individual, each being has its 'proper' end; and as a member of the universe at large, it has an 'ultimate' end. The providence of God is thus 'particular' (pertaining to the 'proper' end of each individual being) and 'universal' (pertaining to the ultimate end of all beings in the universe at large).

2. *Notion of Governance.* — *Governance* is the execution of the plan of providence among existing beings. Since the world actually exists, governance is often viewed as an integral part of divine providence.

3. *Proof of God's Providence.* — As regards *general providence*, it can be proved 'indirectly' and 'directly.' *Indirectly*, God's providence is proved by the absurdities which follow the denial of it; such a denial involves the denial either of God's wisdom or power or goodness. *Directly*, God's providence is proved from the nature of God and of His creatures. Since God created each being and the universe and the order prevailing in them, He had to 'intend' this order and its execution.

As regards God's *special providence concerning man*, it is proved by the nature of man as God created him. Man seeks 'perfect happiness' naturally and necessarily, and this

happiness can be found only in the life to come after death. Man is a 'moral' being, and his happiness is dependent on the observance of the moral law. This being man's nature, God *intended* that man observe the moral law and find his eternal happiness in the union with God. God, therefore, has created man with a special end and purpose. That man can fulfill this end and purpose, demands a special providence which directs all things so that his special end will be realized.

4. *Physical Evil*. — The presence of physical evil in the world is no valid argument against God's providence. God created this world *freely* and with it the *hierarchy of order* consisting of inferior and superior beings. In this order the interplay of action is such that some beings lose their physical integrity, and physical evil results. Physical evil is thus a normal feature of the world, due to the limited perfection of created nature and its powers.

5. *Moral Evil*. — The presence of moral evil is also no valid argument against God's providence. God 'permits' moral evil, but He does not 'approve' it. If moral evil were contrary to God's providence, it would have to be either against His goodness or His wisdom. It is neither.

Moral evil is not against *God's goodness*. The possibility of moral evil (sin) is necessarily given with the freedom of man's will. If God wanted to create man, then He had to give him a free will; and 'free will' involves the free choice of man to choose sin. That God created man, is a sign of His goodness. Nor is moral evil against God's wisdom. God gave to man a definite end and the proper means to achieve this end; that is wisdom. Moral evil does not frustrate the

ultimate end of man; if he does not glorify God's goodness, he glorifies His justice.

6. *Fate and Chance*. — *Fate* in an 'absolute' sense is non-existent, because it would be contrary to the freedom of God and man. It exists in a 'relative' sense, as the arrangement of creatural causes so as to produce the effects intended by God's providence.

Chance occurs with respect to creatural beings, both from the standpoint of knowledge and causality; but with respect to God's providence, nothing ever happens 'by chance.'

7. *Optimism and Pessimism*. — *Optimism* is false. The present world is not the best of all possible worlds. God, because of His infinite perfection and power, could always create a better world. The 'best possible world' is a contradiction.

Pessimism contends that there is nothing good in life and in the world. This system is false. In so far as beings have essence and existence at all, they must be good.

8. *Miracles*. — A *miracle* is a perceptible event which exceeds the order and power of nature and has God as its author. It may exceed nature either 'substantially' or in the 'manner' of its occurrence.

9. *Miracles Are Possible*. — They are possible from the standpoint both of God and of the laws of nature. In no case do they imply an *imperfection in God*. From the standpoint of the *laws of nature*, these laws are not absolutely but only relatively necessary.

10. *Miracles Can Be Known*. — Two things are involved: the *historical fact* of the occurrence, and this depends on

the knowledge and trustworthiness of witnesses; the *philosophical judgment* that the effect cannot have been brought about by a natural cause, and for this a knowledge of the 'pertinent' laws of natural causes is sufficient.

11. God and Man. — Although theodicy, as a department of philosophy, is restricted to the 'natural,' the 'supernatural destiny of man' is all-important.

READINGS

Driscoll, John T., *God*, Chaps. XII-XV. — Joyce, George H., *Principles of Natural Theology*, Chap. XVII. — Boedder, Bernard, *Natural Theology*, Bk. III, Chap. II. — Mercier, D. Card., *A Manual of Modern Scholastic Philosophy*, Vol. II, 'Natural Theology,' Part III, Chap. III, n. III. — McCormick, John F., *Scholastic Metaphysics*, Vol. II, Chaps. XIV, XV. — Brosnan, William J., *God Infinite, the World, and Reason*, pp. 154-236. — Garrigou-Lagrange, R., *Providence*. — Smith, Gerard, *Natural Theology*, Chap. XVI. — Aquinas, St. Thomas, *Summa Theologica*, I, qu. 22; *Contra Gentiles*, Bk. III, Chap. 71 if.

1 *Summa Theologica* (New York: Benziger Bros.), I, qu. 22, art. 1

2 *Ibid.*, art. 3

3 *Ibid.*, qu. 22, art. 1, ad 2

4 *Ibid.*, qu. 22, art. 1

5 *Ibid.*, qu. 48, art. 2

6 *Summa Contra Gentiles*, tr. by English Dominican Fathers (New York: Benziger Bros., 1925), Bk. III, Chap. LXXIII, 4.

7 *Natur. Quaest.*, 1. 3, c. 36: "*Necessitas omnium rerum actionumque, quae nulls via rumpat.*"

8 *Summa Theologica* (New York: Benziger Bros.), qu. 116

9 Read the account of the cure of the blind man in St. John, Chap. 9, and of the lame man in Acts, Chap. 3. On the presumption that these narratives are historically true, the cures are 'miracles.'

10 Wisd. 6

GLOSSARY

ABIOGENESIS. The theory that living beings ultimately came into existence through a development on the part of the forces indigenous to nonliving matter. Spontaneous generation.

ABSOLUTE. The unconditioned, the ultimate ground of all reality.

ACCIDENT. A being, incapable of existing in itself, which needs another being in which to inhere.

ACT. The condition or state of existing; whatever exists is 'actual being.' Act, therefore, is the perfection, determination, or degree of reality present in a thing as it exists.

ACTUAL. See Act.

ACTUALITY. See Act.

AGNOSTICISM. The doctrine which denies or doubts the constitutional ability of the human mind to know ultimate reality. It usually concludes with the recognition of an intrinsically Unknowable.

ANNIHILATION. The reduction of an existing being into non-existence; the complete destruction of a being.

APPETENCY. The inclination or propensity of a being for something which is good for it.

APPROBATION. See Knowledge of Approbation of God.

ASEITY. The state of God considered as not owing His existence to another but to Himself, so that existence is of His essence; He is, therefore, 'of Himself' (a se).

ATHEISM. The doctrine that no divinity or God exists.

ATTRIBUTE. That which follows by natural necessity upon a fully constituted essence. Another term for 'attribute,' practically synonymous with it, is property. The 'divine attributes' are all those perfections which flow necessarily from the divine essence and which are found in no other being but God.

ATTRIBUTE, ABSOLUTE. An attribute which pertains to God's essence as such.

ATTRIBUTE, RELATIVE. An attribute of God that has a relation to things other than God.

BANNESIANISM. The doctrine that God applies a physical premotion, a physical predetermination, directly to the creature's operative power, and therefore also to the will of man in making its free choice. The bannesians claim that such a physical premotion is required in order to safeguard God's absolute dominion over His creatures.

BECOMING. See Change.

BEING. Whatever exists or is capable of existence. Expressed negatively, 'being' is that which is opposed to 'absolute nothing'; expressed positively, 'being' is anything which has actual or possible existence.

BEING, RELATIVE. Anything which is 'capable of existence,' though now does not actually exist.

BEING, SELF-SUBSISTENT. A being which exists or subsists in virtue of its own essence.

BEROSONIANISM. See Evolution, Creative.

CAUSE. Anything which assists in the production of a thing through some positive influence.

CAUSE, EFFICIENT. Anything which produces something, that is, brings it from non-existence to existence by the positive influence of its own action.

CAUSE, INSTRUMENTAL. A cause which is insufficient of itself to produce the entire effect but influences the production of the effect under the direction and in the service of another (the principal) cause.

CAUSE, PRINCIPAL. A cause which has a fully proportionate and sufficient power to produce the entire effect either alone or with the use of an instrumental cause.

CHANCE. A mode of causal activity, not purposive in character, regarded as determining an event.

CHANGE. The actualization of something potential; it implies the passage of a being from one state to another.

CHANGE, EXTRINSIC. Change is extrinsic, when it is the result of an 'extrinsic denomination.'

CHANGE, INTRINSIC. Change is intrinsic when some reality is either acquired or lost in the passage of the subject from one state to another.

COGNITION, SIMPLE, IN GOD. See Knowledge of Simple Cognition in God.

CONCURRENCE, DIVINE. God's influence operating with creatures in producing the same effect as they produce through their own activity.

CONCURRENCE, IMMEDIATE PHYSICAL. As applied to divine concurrence, concurrence is physical in as far as God effectively and directly influences the creature in the production of the action itself.

CONCURRENCE, MEDIATE PHYSICAL. As applied to divine concurrence, concurrence is mediate in so far as God prepares the creatures in such a way that they are fit for action and preserves them in that condition.

CONCURRENCE, MORAL. Concurrence based on some sort of moral action, such as commands, exhortations, and promises.

CONCURRENCE, PHYSICAL. Concurrence based on some sort of physical action.

CONSERVATION. Continuation in existence through dependence on a cause.

CONSERVATION, ACTIVE. The activity of a cause producing continuation in existence.

CONSERVATION, DIRECT POSITIVE. Positive conservation is direct when the continued duration of a thing is the immediate effect of the positive action of a cause.

CONSERVATION, DIVINE. God's influence in the continuation in existence on the part of creatures.

CONSERVATION, INDIRECT POSITIVE. The conservation which occurs when an action hinders destructive causes from destroying a thing or provides the means needed for the thing to remain what it is.

CONSERVATION, NEGATIVE. Conservation is said to be negative when a being continues in existence by not being destroyed by another, although the other has the power to destroy it.

CONSERVATION, PASSIVE. Continuation in existence on the part of a being through the activity of some cause.

CONSERVATION, POSITIVE. Conservation is said to be positive when a being is made to remain in existence through some action which is performed.

CONTINGENCY. That state in virtue of which something can be otherwise than it is in its being or existence or both; if a contingent being actually exists, its non-existence would involve no contradiction because existence does not belong to the constitution of its essence.

CONTINGENT. Something is said to be 'contingent' when it actually exists but need not exist.

CONTRADICTION, FREEDOM OF. See Freedom of Exercise.

CREATION. The production of a thing hitherto not existing, without the use of any subject-matter from which it is made; *productio rei ex nihilo sui et subjecti*.

CREATION, ETERNAL. Creation from eternity, so that the created being has no actual beginning in time.

CREATOR. One who creates or produces something out of nothing.

CREATURE. Anything created; any being apart from God.

DEISM. A quasi-philosophic movement in opposition to revealed religion. Chiefly, deism defended a universal

natural religion; it conceded that it could be proved on rational grounds that God exists and is the Creator. Many deists, however, contended that God, after creating the world, took no interest in mundane affairs.

DESIGN. The arrangement of various items into a system or whole, so that the order obtained is the result of plan and intention. The 'purpose' of design consists in the achievement of a definite end through the use of definite means.

DISTINCTION. The difference or diversity between various realities or between the concepts of the same reality. Distinction always implies an absence of identity between things or concepts.

DISTINCTION, MENTAL. The difference between concepts of the same reality.

DISTINCTION, PURELY MENTAL. The difference between concepts of the same reality without a foundation in the thing itself. *Distinctio rationis ratiocinantis*.

DISTINCTION, REAL. The difference between things that are not alike in their reality, independent of the consideration of the mind.

DISTINCTION, VIRTUAL. The difference between concepts of the same reality, with a foundation in the object itself for the distinction. *Distinctio virtualis, distinctia rationis ratiocinatae, distinctio rationis cum fundamento in re*.

DISTINCTION, VIRTUAL, WITH AN IMPERFECT FOUNDATION. A virtual distinction is said to have an imperfect foundation when the concepts of the same reality

are distinct in such a manner that they are not mutually exclusive but rather include each other implicitly.

DISTINCTION, VIRTUAL, WITH A PERFECT FOUNDATION. A virtual distinction is said to have a perfect foundation when the concepts are so distinct in comparison to each other (although they apply to the same reality) that they are objectively different in content.

DURATION. The permanence of a being in its existence.

DURATION, PERMANENT. Duration which remains constant and intact.

DURATION, SUCCESSIVE. Duration in which one part continuously follows the other.

EMANATIONISM. See Pantheism, Transient Realistic.

EMINENTLY CONTAINED PERFECTION. A perfection present in a producing cause in such a manner that it is precontained in some higher perfection of the cause.

EMPIRICISM. The doctrine which denies or doubts the validity of all intellectual knowledge and admits only the certainty of sense-knowledge or 'experience.'

ENS A SE. Being independent of any other being; self-subsistent being.

ESSENCE. That through which a being is just what it is (id quo res est id quod est).

ESSENCE, METAPHYSICAL. An essence consisting of all those elements which are necessary for the concept of the thing and without which this thing cannot be conceived. The 'metaphysical essence of God' is that perfection which is conceived by man as being the most basic to an understanding of God.

ESSENCE, METAPHYSICAL, OF GOD. 'Self-subsistent Being' is the metaphysical essence of God.

ESSENCE, PHYSICAL. The complex of all the fundamental elements without which this thing cannot exist in the order of reality, independent of the consideration of the mind contemplating it.

ESSENCE, PHYSICAL, OF GOD. 'Omniperfection' is the physical essence of God.

ETERNITY. Duration in existence which is essentially without beginning and end and which is essentially without real succession and intrinsic change.

EVIL. The privation of a good.

EVIL, MORAL. The privation of a good pertaining to the moral order; sin.

EVIL, PHYSICAL. The privation of a good pertaining to the physical order.

EVITERNITY. The everlasting duration of a naturally incorruptible being in its existence.

EVOLUTION. The gradual unfolding of something precontained.

EVOLUTION, CREATIVE. The doctrine of Bergson and his followers that everything is in a continuous flux of becoming and change, without any underlying subject which becomes and changes.

EVOLUTION, EMERGENT. The theory that nature is the product of evolution in such a manner that entirely new and unpredictable properties originate through synthesis and thereby form new and higher levels of reality in a continuously ascending process of development.

EVOLUTION, ORGANIC. The theory that the various species and types of animals and plants derive their origin, not through distinct and separate creative acts of God, but through development from other pre-existing species and types, all differences being accounted for by modifications acquired in successive generations according to purely natural laws.

EVOLUTION, PURPOSIVE. The theory that the Supreme Intelligence endowed nature with a purpose and with the necessary principles of action to realize this purpose through evolution.

EXISTENCE. Something is said to 'exist' or 'to have existence' when it is outside the producing power of a cause and is actually present in the world of reality, so that it has 'being' of its own; hence, the condition or state of being outside the mind and outside the productive power of an efficient cause.

EXPERIENCE, RELIGIOUS. The doctrine that man has an experience, either intellectual or emotional, of God's existence; this experience is supposed to be 'non-inferential.'

EXTRA-MUNDANE. Not a part of the present universe, but existing apart from it.

FATE. Necessity controlling all creatural actions of whatever kind, so that these action are predetermined

FATE, ABSOLUTE. Fate is absolute, when all creatures and their actions are so controlled by other creatures and creatural forces that the course of their existence is necessarily determined for them beforehand.

FATE, RELATIVE. The arrangement of secondary (creatural) causes so as to produce the effects foreseen by God and decreed by Him according to the purpose of His providence.

FIDEISM. The theory or attitude that human reason is incapable, of its own native ability, of reaching certitude regarding any truth or at least regarding truth of the philosophic and religious order; it affirms that knowledge of truth consists in an act of faith.

FINITISM. The theory which holds that God is always in a process of becoming.

FORMALISM. The doctrine which holds that the necessity of judgments is due to native a priori mental forms.

FORMALLY CONTAINED PERFECTION. A perfection precontained in the producing cause in such a manner that the actuality of the perfection is present according to its real being in the efficient cause.

FREEDOM. In a wide sense, the absence of external coercion or restraint which hinders an appetency from expressing itself in external action; in a strict sense, the absence of intrinsic necessity or determination in the performance of an act.

FREEDOM OF CONTRADICTION. See Freedom of Exercise.

FREEDOM OF CONTRARIETY. The freedom to choose between a moral good and a moral evil.

FREEDOM OF EXERCISE. The freedom to will or not to will, to act or not to act. Also called freedom of contradiction.

FREEDOM OF SPECIFICATION. The freedom to choose between one act of the will and another act of the will, between one object and another object.

FREEDOM OF THE WILL. The ability of the will, all conditions for action being present, to decide whether to act or not to act, and whether to act in this manner or in that manner.

FUTURIBLES. Conditionally future events; events referring to acts which a man would do through free choice under certain unfulfilled conditions.

GENERATION, SPONTANEOUS. See Abiogenesis.

GNOSTICISM. The doctrine which maintains the origin of numberless 'aeons' through emanation from God.

GOD. God is the ultimate author of all change in the universe; the absolutely necessary being and the sufficient reason for the existence of all contingent beings; extra-mundane, unchanged and unchangeable; the uncaused cause, the ens a se; the intelligent designer of the order present in the universe; pure act and pure spirit, possessing unlimited perfection and life; a substance, absolutely simple, devoid of all potentiality and composition, without accidental determinations of any kind; absolutely unique; personal; omnipotent; omnipresent; the creator of the world; the supreme being, incomprehensible and ineffable.

GOOD. Something suitable for a being.

GOVERNANCE, DIVINE. The execution of the plan of divine providence among existing beings.

IMMENSITY. The intrinsic attribute of God in virtue of which He is necessarily present wherever any being exists which is not God.

IMMUTABILITY. The impossibility of undergoing change.

IMPOSSIBILITY, ABSOLUTE. Impossibility is absolute when something exceeds the capability of every power, because it involves a contradiction in its very concept.

IMPOSSIBILITY, RELATIVE. Impossibility is relative when something exceeds the capability of a particular power, but does not involve a contradiction in itself.

IMPOSSIBLE. Something is said to be 'impossible' when it does not exist and cannot exist. Such a being is either absolutely or relatively impossible.

INFINITE. Without limits or bounds.

INFINITE, ACTUALLY. A being is said to be actually infinite, or to possess actual infinity, if its reality exists without limitation.

INFINITE, POTENTIALLY. A finite being is said to be potentially infinite, or to possess potential infinity, if its reality can be increased without limit.

INTELLECTION. Exercise of the intellect; knowing.

INTELLIGENCE, SIMPLE. By the 'simple intelligence' of God one understands God's knowledge which has as its object those things that are merely possible.

KNOWLEDGE, ABSTRACTIVE, OF GOD. God's knowledge of events and things which never exist.

KNOWLEDGE, ANALOGICAL. Knowledge based on unlike, but related, realities, so that such knowledge is partly the same and partly different. Our knowledge of God

is analogical, since the terms referring to the perfections common to God and creatures are neither absolutely identical nor absolutely equivocal in meaning.

KNOWLEDGE, INTERMEDIATE. With respect to God, intermediate knowledge pertains to conditionally future events dependent on the free will of man. *Scientia media*.

KNOWLEDGE, INTUITIVE, OF GOD. God's knowledge of events and things which actually exist at one time or another.

KNOWLEDGE, PRACTICAL, OF GOD. God's knowledge for the making of something, when the intention of making is present.

KNOWLEDGE, SPECULATIVE, OF GOD. God's knowledge which looks solely to the truth involved in knowing.

KNOWLEDGE, SPECULATIVE-PRACTICAL, OF GOD. God's knowledge required for making something, but the intention to make it being absent.

KNOWLEDGE OF APPROBATION OF GOD. God's knowledge of all that is good.

KNOWLEDGE OF SIMPLE COGNITION IN GOD. God's knowledge of evil.

LAW OF PROBABILITY. Probability, on the basis of chance, follows the ratio of geometrical progression.

LIBERTY. See Freedom.

LIFE. Immanence of action.

LOGICAL DISTINCTION. See Distinction, Mental.

MANICHEISM. The doctrine that there are two supreme principles governing the world, one good and one bad.

MATERIALISM. The philosophic system of thought which considers matter to be the only reality and attempts to explain everything in the universe as the result of the conditions and activities of matter.

MIRACLE. A perceptible event which exceeds the order and power of nature and has God as its author.

MODERNISM. The doctrine which holds that God is present in man through 'vital immanence,' in consequence of which man is emotionally conscious of God's presence and has a 'vital experience' of God dwelling and working in him.

MOLINISM. The doctrine, opposed to bannesianism and its theory of physical premotion, of simultaneous concurrence on the part of God in free actions. The molinists claim that a simultaneous concurrence is required to safeguard the freedom of man's will.

MONISM. The doctrine which seeks to deduce all phenomena from a single principle; specifically, the doctrine which holds that there exists but one fundamental reality or being, either mind (idealism), or matter (materialism), or a neutral reality that is neither mind nor matter but is the substantial ground of both: opposed to dualism and pluralism.

MONOTHEISM. The doctrine that there exists only one divinity; the worship of a single Deity.

MOTION. In reference to the existence of God, motion means the same as 'movement.' See Movement.

MOTUS. See Movement.

MOVEMENT. In Aristotelian and scholastic technical language, movement is 'the act of a being in potency in so far as it is in potency.' Substantial or accidental change; the reception or loss of any reality in the process of change.

NATURAL THEOLOGY. See Theology, Natural.

NATURE. A 'nature' is an essence considered as the ultimate principle of operation in a being.

NECESSARY. Something is said to be 'necessary' when it actually exists and also must exist.

NECESSITY. That state in virtue of which something cannot be otherwise than it is. With regard to existence, a thing is said to be 'necessary' when it must exist and cannot not exist.

NECESSITY, ABSOLUTE. Necessity for a being is absolute when it exists in such a manner that it must exist, independent of any condition; the non-existence of such a being would imply a contradiction.

NECESSITY, HYPOTHETICAL. Necessity for a being is hypothetical when its existence is dependent on a cause, but which, once the condition of its existence is given, must be (cannot not be) a definite reality.

NON-BEING. Whatever does not exist or is incapable of existence.

NON-BEING, ABSOLUTE. The total absence of being, so that it neither actually exists nor is it 'capable of existence'; its very idea involves the impossibility of existing. Absolute nothing.

NON-BEING, RELATIVE. Something which does not now actually exist, either because it has ceased to exist or has

not as yet received existence although it is 'capable of existence.' Such a being, because it is 'capable of existence,' is also by that fact a 'relative being.'

NOTHING, ABSOLUTE. See Non-Being, Absolute.

NUMBER, ACTUALLY INFINITE. An existing number greater than which none can be conceived, so that it is incapable of increase and cannot be exhausted by successive subtractions.

NUMBER, POTENTIALLY INFINITE. A number which is finite and limited in itself, but is capable of being increased indefinitely, without limit.

OBJECT, FORMAL. The formal object of a science is that special aspect of the common (material) object which is distinctive for a particular science. In theodicy it is 'God as known by natural human reason.

OBJECT, MATERIAL. The material object of a science is the general subject-matter which it treats. In theodicy it is 'God.'

OMNIPOTENCE. The capability to produce anything intrinsically possible, i.e., which does not involve a contradiction; the ability to give existence to whatever can receive existence.

OMNIPRESENCE. The relation of God's presence to the beings which actually exist and to the real space which they occupy. Ubiquity.

ONTOLOGISM. The doctrine which holds that God and Divine Ideas are the first object of our intelligence and the intuition of God the first act of our intellectual knowledge.

OPTIMISM. The philosophic doctrine that the present universe is the best of all possible worlds.

ORDER. The arrangement of various items into a system or whole according to some relationship existing or placed between them. It is 'static,' if the items are ordered with regard to their entity; it is 'dynamic,' if the items are ordered with respect to the performance of a unified function.

ORGANISM. Biologically, an organism is an individual constituted to carry on the activities of life by means of parts and organs more or less separate in function but mutually dependent.

PANTHEISM. The theory which holds that God is identical with either a part or the whole of the physical world.

PANTHEISM, EVOLUTIONISTIC. A form of realistic pantheism which maintains the evolution of the Deity into the world.

PANTHEISM, IDEALISTIC TOTAL. The form of total pantheism which holds that all being, including God or the Absolute, is actually thought-being, so that things have existence only in a mind and only in so far as they are thought.

PANTHEISM, IMMANENT, TOTAL. A form of pantheism which applies the principle of evolution to God and maintains that the divine reality has evolved into the present world, so that world-beings are modifications of the divine reality and that God is 'immanent' in the world.

PANTHEISM, PARTIAL. The type of pantheism which maintains that God is not the totality of world-beings, but

only a part of the world.

PANTHEISM, REALISTIC TOTAL. The type of pantheism which holds that the reality which is identified with God is a physical entity (not a mere product of mind or thought).

PANTHEISM, TOTAL. The theory which maintains that all reality is but one, so that God is identified with total reality.

PANTHEISM, TRANSIENT REALISTIC. The form of realistic pantheism which holds that all beings in the world emanate or flow from the divine substance, so that they originate, not by means of God's causal action, but through a transformation of God's substance. Emanationism.

PERFECTION. Any reality or real entity which is present in any kind of being. It may be potential or actual, mixed or simple.

PERFECTION, ABSOLUTE. Perfection which pertains, not to a certain type of being, but to every line of being without restriction.

PERFECTION, ACCIDENTAL. Perfection which does not belong to the essence or nature of a being, but is connected with the essence or nature as a superadded modification or determination.

PERFECTION, ACTUAL. Perfection which exists in reality.

PERFECTION, ESSENTIAL. Perfection referring to the essence or nature of beings.

PERFECTION, EXTENSIVE INFINITE. Possession of all perfections possible.

PERFECTION, INFINITE. Perfection which is actually and absolutely without limit.

PERFECTION, INTENSIVE INFINITE. Possession in the supreme degree of all perfections possible.

PERFECTION, MIXED. Perfection which in its very concept implies limitation or imperfection.

PERFECTION, POTENTIAL. Perfection which does not exist but is capable of being brought into existence.

PERFECTION, PREDICAMENTAL. Perfection representing generic concepts; for example, 'animal,' 'body,' 'plant.'

PERFECTION, RADICAL INFINITE. A being is said to possess radical infinite perfection when it is intrinsically determined in such a manner that it demands both extensive and intensive infinity of perfection.

PERFECTION, RELATIVE. Perfection that pertains to a certain type of being.

PERFECTION, SIMPLE. Perfection which does not include in its concept limitation or imperfection.

PERFECTION, TRANSCENDENTAL. Perfection which is found in, or can be applied to, all beings; for example, 'one,' 'being,' 'good,' 'true.'

PERFECT PANTHEISM. See Pantheism, Total.

PESSIMISM. The philosophic doctrine which contends, at least as far as man is concerned, that there is nothing good in life and in the world.

PHILOSOPHY. The science of beings in their ultimate reasons, causes, and principles, acquired by the aid of human reason.

POLYTHEISM. The philosophic and religious doctrine which maintains that a plurality of deities exists.

POSITIVISM. The theory which holds that man's knowledge cannot reach beyond the phenomenal.

POSSIBILITY, EXTERNAL. A thing is said to possess external possibility when a power exists which can produce it.

POSSIBILITY INTERNAL. A thing is said to possess internal possibility, when it can have or receive existence, without regard to the actual existence of a power which can, as a matter of fact, actually produce It.

POSSIBLE. Something is said to be 'possible' when it does not actually exist but is capable of existence.

POSSIBLE, FOUNDATION OF.. The reason or ultimate ground for internal possibility; the imitability of God's essence.

POSTULATE. A proposition which is either self-evident or which is taken over without proof by one Science from another science because it has been proved by this other science. The postulates of theodicy are the existence of the physical world and the trustworthiness of human reason in its search for facts and truths.

POTENCY. The condition or state of 'being possible'; capable of receiving existence, though not actually existing as yet. It is the aptitude to receive a perfection, determination, or degree of reality.

POTENCY, OPERATIVE. The capacity for doing something.

POTENCY, RECEPTIVE. The capacity for receiving an act.

POTENTIAL. See Potency.

POTENTIALITY. See Potency.

PRAGMATISM. The doctrine, or rather attitude, which places all knowledge and truth in a direct relation to life and action; it judges the value of ideas, judgments, hypotheses, theories, and systems, according to their capacity to satisfy human needs and interests in a social way. Truth is thus 'made,' not 'discovered.'

PRIME MOVER. God, as the ultimate author of change in the universe.

PRINCIPLE OF CAUSALITY. 'Whatever happens or becomes must have a cause for its happening or becoming.'

PRINCIPLE OF CONTRADICTION. 'A thing cannot be and not be the same thing at the same time under the same respect.'

PRINCIPLE OF EFFICIENT CAUSALITY. 'That which begins to exist demands a cause (an efficient cause) for its beginning; that is to say, it demands an existing being to bring it from non-existence to existence.'

PRINCIPLE OF EXCLUDED MIDDLE. 'A thing either is or is not (something).'

PRINCIPLE OF IDENTITY. 'Whatever a thing is, it is'; 'Everything is identical with itself.'

PRINCIPLE OF NON-CONTRADICTION. See Principle of Contradiction.

PRINCIPLE OF SUFFICIENT REASON. 'A thing must have a sufficient reason for its being and existence.'

PRINCIPLES, FIRST. The ultimate, most fundamental principles of thought and being. Such are the Principles of Identity, Contradiction, Excluded Middle, Sufficient Reason, and Causality. 203

PRODUCTION. The positive influence of an efficient cause making a being or perfection pass from non-existence to existence.

PROOF, ONTOLOGICAL. A proof for God's existence, based on the idea of God as the most perfect being.

PROVIDENCE, DIVINE. The plan of the order of things in the world foreordained by God toward an end.

PROVIDENCE, MORAL. The plan of God's providence providing man with the means needed by him to live in conformity with his moral nature.

PROVIDENCE, PARTICULAR. The practical ordering of the individual beings for the achievement of the various ends proper to them.

PROVIDENCE, PHYSICAL. The plan of God's providence providing each creature with the means needed for its physical well-being.

PROVIDENCE, UNIVERSAL. The practical ordering of the universe of things for the attainment of the end proper to the universe as a whole.

SCIENCE. A body of proved truths concerning a general subject-matter, resting on fundamental principles and arranged into a system.

SCIENTIA MEDIA. See Knowledge, Intermediate.

SERIES, FINITE. A series which is limited in the number comprising it, so that it can be counted. A finite series always presupposes a first number.

SERIES, INFINITE. A series without beginning and end; a series consisting of a number of items in such a manner

that no amount of subtraction or division will be able to exhaust it.

SIMPLE COGNITION IN GOD. See Knowledge of Simple Cognition in God.

SIMPLICITY. The absence of composition in the reality of a being.

SIMPLICITY, ABSOLUTE. Simplicity is said to be absolute, when the being excludes all parts of whatever nature, be they real or conceptual. Such a being is not only actually undivided but also potentially indivisible.

SIMPLICITY, RELATIVE. Simplicity is said to be relative when the being in question excludes parts of one kind but has parts of another kind. Such a being is indivisible in one respect but divisible in another.

SPINOZISM. The immanent evolutionistic pantheism propounded by B. Spinoza.

SPONTANEOUS GENERATION. See Abiogenesis.

SUBSTANCE. A being which exists in itself and needs no other being in which it must inhere.

TEMPORAL. Pertaining to time.

THEODICY. The philosophical science of God, or the science of God acquired by means of natural reason. Same as 'natural theology.'

THEOLOGY, DOGMATIC. The science of God acquired by the application of reason and of the reasoning process to truths furnished by supernatural revelation.

THEOLOGY, NATURAL. The philosophical science of God, or the science of God acquired by means of natural reason. Same as 'theodicy.'

THEOLOGY, SUPERNATURAL. See Theology, Dogmatic.

THEOSOPHY. A modern version of Indian pantheism, a form of immanent pantheism.

TIME. The measure of movement according to 'before' and 'after.'

TRADITIONALISM. The theory or attitude which holds that human reason is incapable, of its own native ability, of reaching certitude regarding any truth or at least regarding truth of the philosophical or religious order; it maintains that the supreme criterion of certitude is the authority of revelation as given to man through tradition.

TRANSCENDENTALISM. The name given to Kant's philosophy, which maintained that all human knowledge is conditioned by certain innate a priori forms present in the mind antecedently to all experience. Such innate forms, on the level of reasoning, are 'God,' 'World,' and 'Soul'; we can think these Ideas, but we cannot know them.

UBICATION. Presence in a place. Whereness.

UBICATION, CIRCUMSCRIPTIVE. The presence of an extended corporeal substance, so that it has parts outside parts quantitatively extended in the place which it occupies.

UBICATION, DEFINITIVE. The presence of a spatially unextended substance in such a manner that it can exercise its activity only within certain limits of space.

UBICATION, REPLETIVE. The presence of a spatially unextended ('spiritual') substance in all places and spaces, past, present, and future.

UBIQUITY. See Omnipresence.

UNICITY. Singleness or uniqueness, the absence of plurality.

UNICITY, IMPERFECT. Unicity is imperfect when no other being of the same kind actually exists, but another being of the same kind is possible.

UNICITY, PERFECT. Unicity is perfect when no other being of the same kind actually exists, and another being of the same kind is impossible.

VIRTUALLY CONTAINED PERFECTION. A perfection pre-contained in the actuality of an efficient cause in such a manner that the latter can produce it.

VISION. With respect to God's knowledge, 'vision' pertains to objects which at sometime, either in the past, or present or future, will have existence.

VOLITION. The exercise of the power of the will; willing.

WAY OF AFFIRMATION. The affirmative predication of 'pure perfections' of God.

WAY OF EMINENCE. Affirmatively ascribing to God a 'pure perfection' and then raising the perfection to the highest degree conceivable.

WAY OF NEGATION. Denying of God every sort of imperfection and attributing to Him the corresponding perfections in such a manner that they apply to Him alone.

WHERENESS. See Ubication.

WILL. Rational, intellectual, appetency.

WILL OF GOD. An infinitely perfect intellectual appetency.